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Technological  
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**EXPO' 24**

**SETU WATERFORD COMPUTING  
PROJECT EXPO '24**  
PROJECT BROCHURE

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# Welcome

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It gives me great pleasure to welcome you all to our Computing Expo 2024.

This year's Expo is kindly sponsored by Kargo and I would like to thank them and in particular Mick O'Brien and John Stacey for their generous support, it is great to have one of the world's leading ad tech companies sponsor this important occasion in our academic calendar.

This year's event is expanded in scope with some interesting opportunities, activities, and events throughout the morning. You will see demonstrations of a diverse array of projects that reflect the breadth and depth of the knowledge acquired by our students from our BSc (Hons), MSc & HDip Computing programmes. These projects reflect the creativity, hard work, dedication, and innovation gained by our students, whilst studying in our courses. We are immensely proud of their achievements, and we look forward to sharing their project work with you, as it marks a significant point in their transition from academia into industry.

To our students, I say well done to you all, the quality of your projects is a testament to your time with us and I have no doubt that the knowledge and skills gathered in your respective courses will facilitate you to embark on a successful career in Computing.

This year's Expo will once again will be complemented with an Industry Showcase, where our external partners, who play a critical strategic role in our department get a chance to take a stand, provide guidance and knowledge on internships, potential jobs and other opportunities to our graduates.

To our Industry partners, I welcome you all and thank you for your support of our department over the past academic year. Today, not only will you see demonstrations from over 100 of our undergraduates and postgraduate final years students, but also get a chance to delve into the intricacies of their projects and interact with our students to see the journey they have been on and how their time here at SETU has shaped them as ICT professionals and inspired them to develop some of the most creative and innovative software development projects ever seen on campus.

In addition, I would like to thank the companies that are presenting awards this morning, your recognition of the quality of the projects developed by our students is a stamp of approval that is worth so much to us and the recipients. These awards will be presented to students by Sun Life Financial, Red Hat, Dataworks & UNUM to recognise their excellence in creativity, innovation and design, peer support and groundbreaking approaches in their final year projects.

Finally, I would like to thank Lucy White, Noelle Dalton & Eleanor Reade for the immense work they have put in to ensure this year's Expo is a success, your dedication to detail and delivering excellence is very much appreciated by all at SETU.

Enjoy the day.



**Dr TJ Mc Donald,**  
**Assistant Head of Computing & Mathematics Department,**  
**South East Technological University (SETU)**

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## *Welcome from Lucy White, the FYP Co-ordinator*

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It is with great pleasure and deepest pride that we in the Computing and Maths department at SETU Waterford, present to you, our colleagues, students and industry partners, the outstanding work of our final year in computing students.

The final year project allows students to demonstrate what they have learned over the course of their studies, integrate their knowledge in a capstone project, and produce a significant piece of work to ultimately showcase at the Computing Project Expo.

As the students have studied across a range of different programmes that specialise in their own distinct disciplines and subject areas they have cumulatively produced an extensive catalogue of innovative and creative projects that range in type, discipline and complexity. This brochure/online showcase will help you to easily navigate the final year projects by course or subject area. You're in for a treat!

A final word to our students ...

A heartfelt congratulations to you all on completing your final year project. I know the road was sometimes long but your consistent work, drive, determination and unwavering commitment to the process has brought you to this point.

The Computing Project Expo is your chance to showcase your project. We are delighted to celebrate with you and we are looking forward to seeing your hard work come to fruition.

Enjoy and have fun!

Lucy



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## *Welcome from Colm Dunphy, the HDip Project Co-ordinator*

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The Higher Diploma in Computer Science (online) was the first fully online programme from WIT, now SETU. Students graduate as full-stack oriented developers. The programme was designed to be delivered online, with an emphasis on student experience, engagement, and building a learner community promoting peer learning. The programme has pioneered the innovative Agile Semester approach to delivery. This showcase of projects presented in April 2023 highlights the diverse range of graduate capabilities from this programme. Students on the programme complete their studies while on a six month work placement. During this time they complete a capstone project. Students and graduates continue to be highly sought after. If your company is interested in mentoring a student on work placement please contact [joan.mangan@setu.ie](mailto:joan.mangan@setu.ie)

This year projects include native android app development, web apps, and a combination of both, in the one project. We also saw some leverage hybrid and progressive web approaches to building both web and mobile apps. There were projects focusing on DevOps, SysOps, creating cloud CI/CD pipelines, testing gradles, and IOT and physical computing projects involving hardware sensors with web and mobile interfaces. We had workplace projects leveraging the Microsoft Power platform, Amazon's AWS, MS-Azure, and Red Hat OpenShift. A number of workplace projects are private (the details of which are withheld under NDAs). A number of projects contributed to the open source community including tutors.dev, and Strimzi. We also had dashboard and data analytics projects. Student projects use multiple APIs, and are deployed in different environments (AWS, AZURE, OpenShift).

Within the HDip section of this booklet, student thumbnails link to project videos, student names link to the project page. The project pages summarise the project and includes links to github, Youtube and web pages for the project, deployment details, etc. QR codes for each project are also provided.

In summary, we are often asked what our course is about and what can you do after completing it? Well, this showcase answers both questions through our students' hard work. Enjoy the diversity, innovation and creation. From the entire team, we would like to thank the students for their work over the last few years, and we wish you every success which you will no doubt have in the future.

Regards,  
Colm Dunphy



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## *Projects by Programme*

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**SECTION 1**  
**UNDERGRADUATE PROGRAMMES —**  
**BSC (HONOURS)**  
PROJECT BROCHURE

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# BSc (Hons) in Applied Computing

The BSc (Hons) in Applied Computing is a 4-year ab-initio Level 8 programme.

## The aim of the BSc (Honours) in Applied Computing is

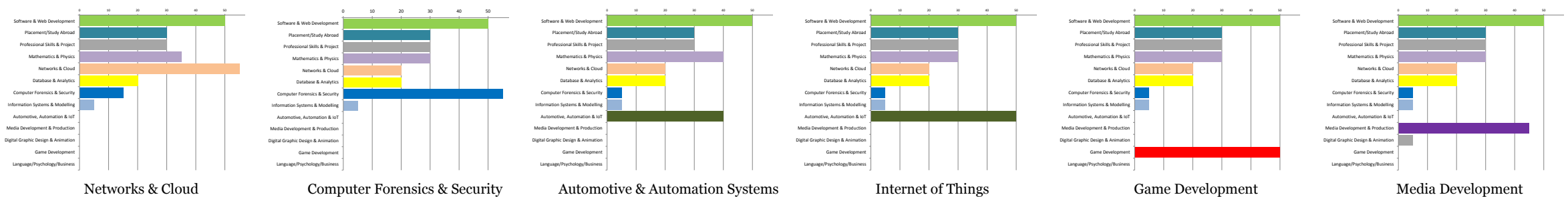
to provide a broad but focused, curriculum of computing and software development concepts. This is complemented by the study of particular problem domain areas (e.g. Games Development, Cloud Computing). The intention is for the student to not only learn the technical skills, but also to form an appreciation for the context in which the technologies are used and the processes involved in successful development.

At the start of their study, the student will be introduced to a broad range of subject material, with an emphasis on applying the scientific method. Later, the student will be exposed to challenging and rigorous study of system development (from analysis to design to implementation and verification) and apply these principles to small to medium sized systems. The student will be given a foundation in an application area of their choosing (from Media Development, Computer Forensics & Security, Cloud Infrastructures, Automotive & Automation Systems, Game Development, and the Internet of Things) and gain strong proficiency in developing systems in this area.

It is important that the student be conversant with current trends and paradigms when they enter the job market. However, it is equally important that they will have transferable skills that will facilitate their career progression (e.g. project management, communication skills). To this end, throughout their study, the student will be introduced to these topics so that the practice of these skills will occur in a seamless and integrated way throughout the program.

A graduate of the BSc (Honours) in Applied Computing will be an enthusiastic and confident practitioner, comfortable with their ability to learn, and adapt to the ever-changing world of computing. They will be ready to embark on a challenging and rewarding career either in research or in the computing industry.

The breakdown of course credits across the four years on each specialism is illustrated by the following charts.





Academic Title

## Referendum As-a-service for Inclusive Voting Through AWS Serverless Architecture

Project Areas

- Cloud Computing
- Software Development: (Back End / Web)

Project Supervisor

John Rellis

# AccessiVote

Not presenting

by Jack Aherne

**Referendum as-a-Service for Inclusive Voting Through AWS Serverless Architecture**  
AccessiVote

**Project Abstract**

AccessiVote, built on AWS Serverless architecture, is designed to revolutionize digital voting, focusing on accessibility for individuals with disabilities. It employs AWS Lambda, Cognito, and CloudFormation to ensure a scalable, secure, and user-friendly platform. This initiative simplifies the voting process and addresses the critical need for inclusivity within democratic participation. By following best practices for digital accessibility, AccessiVote aims to empower all voters, ensuring that every vote is counted securely and efficiently. This project highlights the potential for cloud technology to enhance the current democratic process and to make voting more accessible to everyone, regardless of physical or locational limitations.

**System flowchart**

**Multi-tenancy**

**AccessiVote Features**

**Scalability:** Designed architecture to scale with AWS services like Lambda and DynamoDB, which can handle variable loads and traffic patterns.

**Security:** Implement best practices for security, including regular audits, encryption at rest and transit, and strict access controls.

**Compliance:** The application complies with regulatory requirements, especially those concerning elections and data protection.

**Customisation:** Customisation of the basic referendum needs such as description of the vote.

**Anonymity & Privacy:** Ensures votes can't be traced back to an individual.

**Voting Period and Deadline Management:** Start and end time creation for the voting system.

**Accessibility Features:** Enhanced features for those with disabilities such as larger buttons and simpler font for those that might be in need of such features

Jack Aherne | 20093747  
B.Sc. In Applied Computing Cloud & Networks

AccessiVote, built on AWS Serverless architecture, is designed to revolutionize digital voting, focusing on accessibility for individuals with disabilities. It employs AWS Lambda, Cognito, and CloudFormation to ensure a scalable, secure, and user-friendly platform. This initiative simplifies the voting process and addresses the critical need for inclusivity within democratic participation. By following best practices for digital accessibility, AccessiVote aims to empower all voters, ensuring that every vote is counted securely and efficiently.



**Technologies:** AWS, Cloudformation, Python, Trello, Cognito, Github

<https://sites.google.com/view/20093747jackaherne/home>



Academic Title

## Faceguard: Revolutionizing Attendance with Cutting-edge Face Recognition Technology

Project Areas

- Cloud Computing

Project Supervisor

Sinead O'Neill

# Face Attendance System

#1 / TL252

by **Kedaranath Ambekar**

My final year project uses face recognition technology to record attendance. The system will automatically scan faces, generating an accurate employee report at the end of each day. The entire project operates on a simple premise: when an employee joins the team, they provide a photo, which is stored in the database. Upon arriving at the office, the employee stands in front of the camera, and the system captures their face and compares against employee records. Attendance sheet is then updated with data and time.

## AI-Based Face Recognition

**Abstract**

My project aims to facilitate face attendance. The purpose of this idea lies in the rapid growth of technology, where we are constantly discovering new things to make life easier. The significance of this face recognition system is its ability to quickly identify and capture faces, recording them in the attendance database. The system will automatically scan faces, generating an accurate employee report at the end of each day. From a health perspective, it promotes safety, cleanliness, and hygiene.

The entire project operates on a simple premise: when an employee joins the team, they provide a photo, which we store in the database. Upon arriving at the office, the employee stands in front of the camera, and the system recognizes and captures their face, storing the information in the record sheet along with the date and time.

**Technologies**

**Architecture Design**

**Kedaranath Ambekar**  
20091631  
B.Sc(Hons)Applied Computing Yr4



**Technologies:** AWS S3, DynamoDB, Rekognition, Lambda, JavaScript

<https://github.com/kedaranathambekar/fyp-landingPage>



Academic Title

## Content Distribution Infrastructure for Education Environments

Project Areas

- Cloud Computing
- Internet of Things
- Software Development: (Web)

Project Supervisor

Richard Lacey

VuLPES (Virtual Learning Platform for Educators and Students) is an infrastructure that's deployed in a learning environment. The infrastructure has both software and hardware deliverables, where a Web App is deployed on low-powered hardware in the aforementioned learning environment.

The idea takes inspiration from “Moodle”, where content is hosted and displayed for students in the environment to view and interact with. The idea with VuLPES is that content such as a YouTube video can be uploaded for students to view during a lesson period and can access the video through the Web App.



**Technologies:** JavaScript, IPTables, DynamoDB

<http://jasonanca.com/vulpes>

# VuLPES

#2 / TL252

by Jason Anca

**Content Distribution Infrastructure for Education Environments**

**VuLPES**  
Virtual Learning Platform for Educators and Students

**Abstract**

VuLPES is a content distribution infrastructure designed for deployment in educational environments. The project makes use of a database-backed web application which is assisted by a content filter that's powered with the use of a Raspberry Pi.

When deployed in the environment Educators can make use of the web application to upload their course materials and online resources which can then be viewed by students in the educational environment with the use of the same web application.

Viewable content is restricted for students with the use of a Raspberry Pi which filters online content allowing students to only view educator's materials and specific whitelisted online websites.

**Technologies**

Visual Studio Code, Raspberry Pi, JavaScript, GitHub, DynamoDB

**Methodology**

DevOps development methodology was used to plan, build, test, deploy and monitor the development of the project. I was able to make use of iterative development to add features to the project.

code, build, test, deploy, release, monitor, Operate

SE TU, Jason Anca, BSc (Hons) in Applied Computing (Cloud and Networks), Department of Computing | SETU Waterford

#3 / TL252

# Auto Ethernet Security: A Comparison



Academic Title

## Comparative Analysis of Automotive Ethernet Security Protocols

Project Areas

- Automotive and Automation
- Computer Networks
- Computer Security

Project Supervisors

Joe Daly, Sonya Hogan

by Alexander Berbenitskiy

With the current growth in connectivity to cloud services and infrastructure, automotive cybersecurity is now a big concern to car manufacturers. This is a research study project with associated experiments to evaluate and compare common automotive Ethernet security protocols, TLS, IPsec, and MACsec.

A literature review is conducted to explore relevant studies, experiments and cybersecurity threats to vehicles. Each protocol is then implemented in a Vector CANoe simulation environment for testing and analysis to evaluate the comparative performance of each protocol, with emphasis on MACsec.

**SE TU** Official Technological Centre in Galway South East Technological University

**COMPARATIVE ANALYSIS OF AUTOMOTIVE ETHERNET SECURITY PROTOCOLS**

Bachelor of Science (Hons) Computer Science - Automotive and Automation **ALEXANDER BERBENITSKIY**

**ABSTRACT**  
With the current growth in connectivity to cloud services and infrastructure, automotive cybersecurity is now a big concern to car manufacturers. This is a research study project with associated experiments to evaluate and compare common automotive Ethernet security protocols, TLS, IPsec, and MACsec. A literature review is conducted to understand previous relevant studies and experiments, cybersecurity threats to vehicles, how each protocol works, and how they can be used together. Each of the protocols is then implemented in a Vector CANoe simulation environment for testing. Measurements are taken to evaluate the comparative performance and effectiveness of each protocol, with emphasis on MACsec, which is being widely adopted by the automotive industry at the moment.

**TECHNOLOGIES USED**  
→ Vector CANoe  
**VECTOR**  
Vector CANoe is a comprehensive software tool for development, testing and analysis of individual ECUs and entire ECU networks in the automotive and various other industries.  
In this project, it is used to simulate and test Ethernet security protocols.

**RESEARCH QUESTIONS**  
→ What are the differences in throughput and latency among the automotive security protocols TLS, IPsec, and MACsec when simulated and tested in Vector CANoe under average system load?  
→ How does the security effectiveness vary between TLS, IPsec, and MACsec when evaluated through Vector CANoe, considering the reaction of protocols to fault injection, eavesdropping, and denial of service?  
→ In terms of system resources utilized, how efficient are TLS, IPsec, and MACsec in an automotive context using Vector CANoe simulations under average system load?

**SECURITY PROTOCOLS**  
TLS, IPsec, MACsec

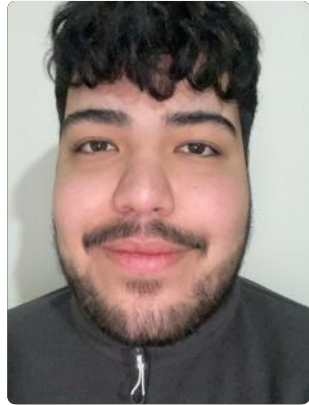
**PROJECT DIAGRAM**  
CANoe, CANoe, Secure Ethernet Link, Automotive Ethernet Switch

More Information at: <https://20093212.wixsite.com/alexander-berbenit-1>



**Technologies:** Vector CANoe - Ethernet

<https://20093212.wixsite.com/alexander-berbenit-1>



# EduHost

#4 / TL252

Academic Title

## EduHost - A Student Website Hosting Platform Web Application Powered by React and AWS

Project Areas

- Cloud Computing
- Software Development: (Back End / Front End / Web)

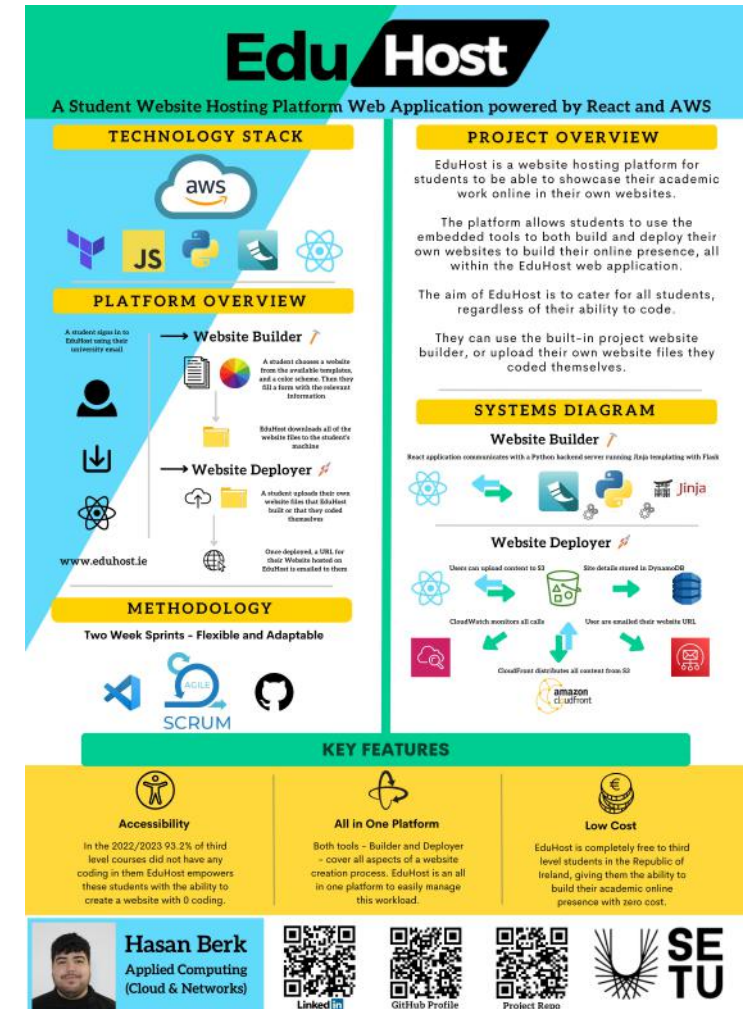
Project Supervisor

Denis Flynn

by Hasan Berk

EduHost is a website hosting platform for students to be able to showcase their academic work online in their own websites. The platform allows students to use the embedded tools to both build and deploy their own websites to build their online presence, all within the EduHost web application.

The aim of EduHost is to cater for all students, regardless of their ability to code. They can use the built-in website builder, or upload their own website files they coded themselves to deploy their websites. EduHost is powered by modern cloud technologies, to provide a fast and seamless experience.



**Technologies:** React, JavaScript, Python, Amazon Web Services, Terraform

<https://projectshowcase.eduhost.ie>



#5 / TL252

# Automotive Lane Correction Assist



Academic Title

## Lane Correction Assistance, an ADAS Concept

Project Areas

- Automotive and Automation

Project Supervisor

Brendan Jackman

by Eric Butler

Incorrect Direction Assist is a simulation project based on the CANoe software architecture that will detect a vehicle going the incorrect way through a route and deploy aids to correct this based upon current ADAS systems. The ADAS systems simulated here include EBA (Emergency brake assist), Blinking LED from a Dashboard (Simulate RADAR sensors), LA (Lane Assist). UI operated by the CANoe panel system using Bitmap formatted issues that include different states of the bitmaps to represent LEDs blinking or a traffic light system.

**Technologies:** CANoe, CAPL, Lucid Chart, Vector Testing



<https://ericdebutleir.github.io/FYP-WebPage/>



Academic Title

## Top-down Auto-shooter Wave-based Survival Godot 4 3D Game

Project Areas

- Game Development

Project Supervisor

Patrick McInerney

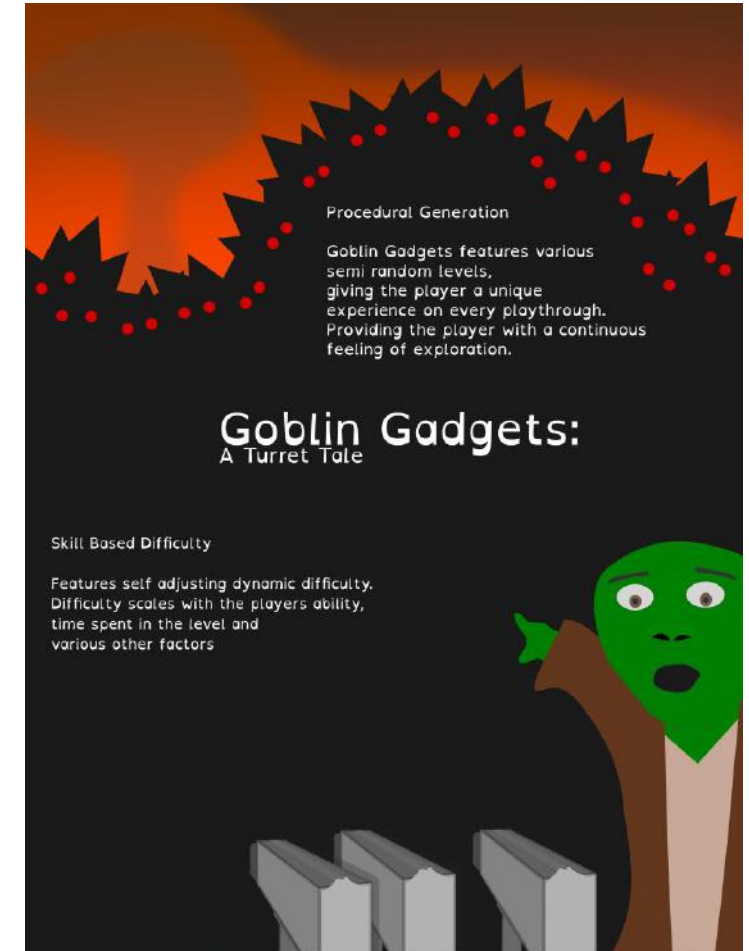
# Goblin Gadgets: A Turret Tale

#6 / TL252

by Keith Butler

The project aims to develop a 3D Wave-Based Survival video game. The player will have to strategically evade hoards of rogue robots using advanced movement abilities to guide them into player made traps. Set in a post robot uprising world where the few remaining goblins are hidden in isolated communities around the world.

Set out on a procedurally generated mission to put an end to the robots once and for all, with the help of a friendly sentient turret enemy AI will fend off the player using swarm mechanics and time based difficulty.



**Technologies:** Godot, Blender, GDScript, Aseprite, C#, Git, Github, Trello, Jekyll

[https://keithbutler-wit.github.io/final\\_year\\_project/](https://keithbutler-wit.github.io/final_year_project/)



Keith Butler, Bsc (Hons) Applied Computing, Department of Computing and Mathematics, SETU



#7 / TL252

# Digital Memorials



Academic Title

## A React, Cloud Based, Web Application for the ‘Digital Memorials’ Toolkit Service

Project Areas

- Cloud Computing
- Database and Analytics
- Software Development: (Back End / Core / Front End / Web)

Project Supervisor

Muhammad Iftikhar Umrani

by Dean Crowley

The aim of Digital Memorials is to modernise Ireland’s rich tradition of remembering those who have passed. Building upon what is already out there, each app produced from the developed architecture in this project will aim to create an original, high quality and custom space online that anyone can visit and contribute to from anywhere in the world. It can be a private area for people to remember their loved ones while also a community of people, uploading and collecting memories on the domain of the namesake.

**Digital MEMORIALS**

A React, Cloud Based, Web Application for the 'Digital Memorials' Toolkit Service

**Project Overview**

The aim of Digital Memorials is to modernise Ireland's rich tradition of remembering those who have passed. Building upon what is already out there, each app produced from the developed architecture in this project will aim to create an original and custom space online that anyone can visit and contribute to. It can be a private area for people to remember their loved ones while also a community of people, uploading and collecting memories on the domain of the namesake. Those who own their family's domain name will be able to build a family tree of memorials using subdomains and have them all linked together through each member's own app.

**Methodology**

The methodology that was used in this project is the Agile Methodology. Agile development is a project management methodology that values individuals and interactions over tools directly.

Traditional software development used to avoid change because it was considered an undesired expense. An advantage of Agile is that it completely removes this idea. The short sprints in the Agile cycle allow changes to easily be made, helping the team modify the development process to best fit their needs. ("Agile software development" – Kate Bush)

**System Architecture**

The diagram shows a system architecture with components including User Authentication, React Front End, Node.js Back End, Data Storage & Retrieval, Storage, Content Delivery Network, Monitoring, and Database. It also lists Key Technologies: React, AWS, HTML5, and Node.js.

**Key Technologies:** React, AWS, HTML5, Node.js

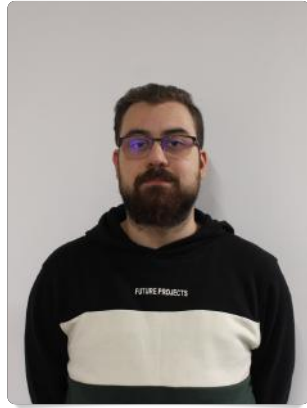
SE TU Official Technological University South East Technological University

Dean Crowley  
BSc (Hons) in Applied Computing  
South East Technological University



**Technologies:** React, HTML/CSS, JavaScript, Node.js, Express.js, Multiple AWS Services

<https://deancrowley24680.github.io/>



Academic Title

## IoT-based Entry Control System Hosted on AWS

Project Areas

- CI/CD & Testing
- Cloud Computing
- Database and Analytics
- Internet of Things
- Software Development: (Back End / Core / Front End / Web)

Project Supervisor

John Rellis

KapU is a multi-tenanted, software-as-a-service entry control system, focused on affordability. This product utilizes widely available components such as a Raspberry Pi to create an entry control system, while the back end is hosted on AWS for reliability and affordability. With this product, a company or individual can buy the purpose-made Raspberry Pi, which comes with an NFC Scanner and pre-programmed NFC tags, and after signing up, their Raspberry Pi will be able to securely communicate with the back end. Additionally, a website is provided, which shows how busy the premises are.



**Technologies:** Raspberry Pi, Python, ISO/IEC 14443 (NFC), AWS DynamoDB

<https://github.com/MateDomonics/entry-control-system/>

# KapU - Entry Control for U

#8 / TL252

by **Máté Domonics**

## IoT-based Entry Control System Hosted on AWS

"KapU - Entry Control for U"



### Project Description

- KapU ("cap-u") is a multi-tenanted, software-as-a-service entry control system, focused on affordability.
- This product utilizes widely available components such as a Raspberry Pi to create an entry control system, while the back end is hosted on AWS for reliability and affordability.
- With this product, a company or individual can buy the purpose-made Raspberry Pi, which comes with an NFC Scanner and pre-programmed NFC tags, and after signing up, their Raspberry Pi will be able to securely communicate with the back end.
- Additionally, a website is provided, which shows how busy the premises are.

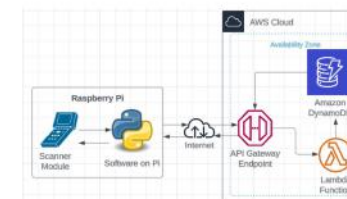
### Methodology

I made use of the Agile Methodology for my project as it allowed me to iteratively create features of my project, receive feedback to them, then fine-tune those features.

AGILE METHODOLOGY



### System Architecture



### Technologies



Máté Domonics  
BSc (Hons) in Applied Computing (Cloud & Networks)  
Department of Science & Computing  
Supervisor: John Rellis



Academic Title

## 3D Turn-based Game with Elemental Combat System

Project Areas

- Animation
- Game Development

Project Supervisor

Patrick Felicia

# Elementalist

#9 / TL252

by Jack Donohoe

*Elementalist* is a 3D Turn-Based Dungeon Crawler with a focus on a unique system in which elements can be acquired from defeated enemies. These elements can then be combined by the player to create new combinations, which will provide the player new abilities to use. The player will make their way through several procedurally generated floors of a dungeon environment, defeating enemies and growing in power to progress. The game features a turn-based combat system which provides players with many different options and strategies to use in battle.



**Technologies:** Unity, C#, Blender, Github, Trello, HLSL

<https://jack-donohoe.github.io/Elementalist-FYP-Website/>

#10 / TL252

# InProv



Academic Title

## Automated Server Provisioning and Configuration Using Infrastructure as Code

Project Areas

- Cloud Computing
- DevOps
- Software Development: (Back End)

Project Supervisor

Rahul Mhapsekar

by Jack Duggan

InProv is an automated infrastructure provisioning solution making use of DevOps and Infrastructure as Code practices, as well as various local and cloud technologies to provision and configure established Linux servers effortlessly.

In many enterprises, the process of server provisioning and configuration is still reliant on manual procedures. This inefficient approach impacts the productivity of infrastructure teams, consuming valuable time that could be utilized elsewhere. An implementation of InProv in enterprise would allow infrastructure engineers and Linux system administrators to free themselves from the burden of manual provisioning.

With InProv, servers can be created, fully-configured and seamlessly integrated into the existing infrastructure, at the click of a button.

**InProv**  
Automated Server Provisioning & Configuration using Infrastructure as Code

**Project Abstract**  
InProv is an automated infrastructure provisioning solution making use of DevOps and Infrastructure as Code practices, as well as various local and cloud technologies to provision and configure established Linux servers effortlessly.

In many enterprises, the process of server provisioning and configuration is still reliant on manual procedures. This inefficient approach impacts the productivity of infrastructure teams, consuming valuable time that could be utilized elsewhere. An implementation of InProv in enterprise would allow infrastructure engineers and Linux system administrators to free themselves from the burden of manual provisioning.

With InProv, servers can be created, fully-configured and seamlessly integrated into the existing infrastructure, at the click of a button.

**Key Technologies**  
Terraform, Python, Bash, and Terraform

**Supports Multiple Major Cloud Platforms**  
AWS, GCP, Azure

**Other Technologies & Tools**  
Python, JS, Trello, GitHub, VS Code

**Key Features**  
Simple user interface (UI)  
Customised virtual machines (VMs)  
Supports multiple cloud providers like Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure  
Multi-factor authentication with AWS Cognito  
Approve/Deny functionality for added security

**Automation**  
**Provisioning**  
**Configuration**

SE TU  
BSc (Hons) Applied Computing (DevOps & Networks)  
Dept. of Computing & Information Systems  
Software Development Engineer  
Supervisor: Rahul Mhapsekar  
20240101000100010001



**Technologies:** Terraform, Puppet, Python, BASH, Linux, Cloud-init, Amazon Web Services, React

<https://jackjduggan.github.io/>



Academic Title

## Procedurally Generated 3D Open-world Unity Game with In-depth Resource Management and Advanced AI

Project Areas

- Game Development

Project Supervisor

Patrick Felicia

Blueprinted is a 3D game where a player starts in an infinitely expansive procedurally generated world. The player takes the role of a lost adventurer stranded in an abandoned environment. Players must find resources and defend themselves from the elements in the blocky open world.

Blueprinted contains many complex features such as advanced procedural generation to allow for unique playthroughs each time, advanced enemy AI that will keep players alert and dynamic difficulty that will ensure the game matches the player's skill level as they progress through the game.



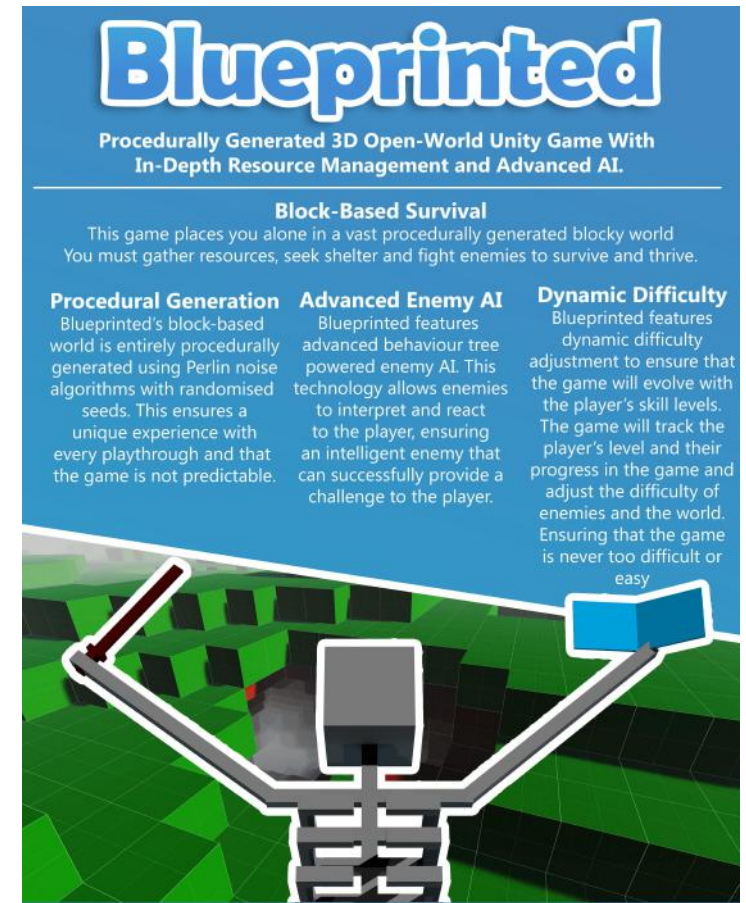
**Technologies:** Unity, C#, JetBrains Rider

<https://cfarrell02.github.io/fyp-blueprinted-site/>

# Blueprinted

#11 / TL252

by Cian Farrell



Cian Farrell, BSc (Hons) Applied Computing, Department of Computing And Mathematics, SETU.

#12 / TL252

# Gjallarhorn



Academic Title

## Python Based Team Management and Workload Monitoring Tool

Project Areas

- Computer Networks
- Computer Security
- Software Development: (Back End / Core / Front End / Web)

Project Supervisor

Michael McMahon

by Cormac Farrell

The poster features a dark blue background with a white circular logo of a horn. It includes a QR code labeled 'Website' and the SE TU logo. Three columns describe the project: 'Technologies' (Apache, JS, HTML, CSS, Flask, Twilio), 'Concept' (automated alert system for multinational offices), and 'Method' (agile and sprint development). A footer contains logos for JS, HTML, APACHE HTTP SERVER PROJECT, Flask, twilio, PYNPUT LIBRARY, Visual Studio Code, and python, along with a small portrait of Cormac Farrell.

Gjallarhorn is an automated alert system and workload management tool, specifically tailored for use in multinational offices or those adopting a hybrid work-from-home model, especially in continuous operation centres such as those operated by security teams or IT support centres. The primary function revolves around a client-side script that diligently monitors endpoint activities, including mouse movements and keyboard interactions. This data is then transmitted to the server, where it is presented in a user-friendly format for employees and managers to track online presence and coordinate tasks effectively.



**Technologies:** Python, Javascript, html, css

<https://cormacwit.github.io/>

#13 / TL251



# Q-Up: Your Queuing Companion

Academic Title

## Cloud-based Virtual Attraction Queuing System with Accompanying Android App

Project Areas

- Cloud Computing
- Software Development: (Mobile Native)

Project Supervisor

John Rellis

by Dylan Fennelly

Q-Up is a virtual queuing system for attraction-based facilities that enables visitors to wait for an attraction in a ‘virtual queue’ rather than a physical queue. Using the app, a visitor can view attractions in a facility and enter into a virtual queue for an attraction, being able to enjoy other attractions while still in the queue for the first attraction. This system allows visitors to queue for the attractions they want while being able to enjoy the rest of the facility, and redirect traffic to attractions with shorter queues, better distributing visitors.

**Cloud-Based Virtual Attraction Queuing System with Accompanying Android App**

**Q-Up**  
Your Queuing Companion

**Abstract**  
Q-Up is a virtual queuing system for attraction-based facilities that enables visitors to wait for an attraction in a ‘virtual queue’ rather than a physical queue. Using the app, a visitor can view details of attractions in a facility, with queue-time estimates. The user can enter a virtual queue for an attraction and enjoy other attractions while still in the queue for the first attraction.  
When it is time to enter the attraction, the user’s current distance from it is taken into account, and the notification sent accordingly early. This system allows visitors to queue for the attractions they want to experience while still being able to enjoy the rest of the facility, and acts to redirect traffic to attractions with shorter queues, better distributing visitors throughout the facility.

**Infrastructure**  
The infrastructure diagram shows the Q-Up Android App connected to Google Maps, an API Gateway (REST API), AWS Lambda, Amazon S3 (Asset Storage), Amazon Cognito (Anonymous IDs), and Amazon DynamoDB (Attraction Data).

**Methodology**  
An Agile development methodology was used throughout the Q-Up project. The iterative approach to development helped to break down tasks - along with visualisation of tasks using a Trello Kanban board - and allowed for flexibility in the direction of development and priority of tasks.

**Technologies**  
The technologies used include Kotlin Programming Language, Android Operating System, Android Studio IDE, Git Version Control, Amazon Web Services (AWS) Cloud Infrastructure, and Google Maps Facility Map.

**SE TU**  
Dylan Fennelly  
BSc (Hons) in Applied Computing (Cloud & Networks)  
Department of Science & Computing  
South East Technological University  
Supervisor: John Rellis



**Technologies:** Android, Kotlin, AWS, DynamoDB, S3, Cognito, Google Maps, QR

<https://dylanfennelly.github.io/Q-Up/>

#14 / TL251

# EthicalShield: AI, Ethics & Security



Academic Title

## Investigating Ethical AI – Capabilities & Implications in the Cybersecurity Space

Project Areas

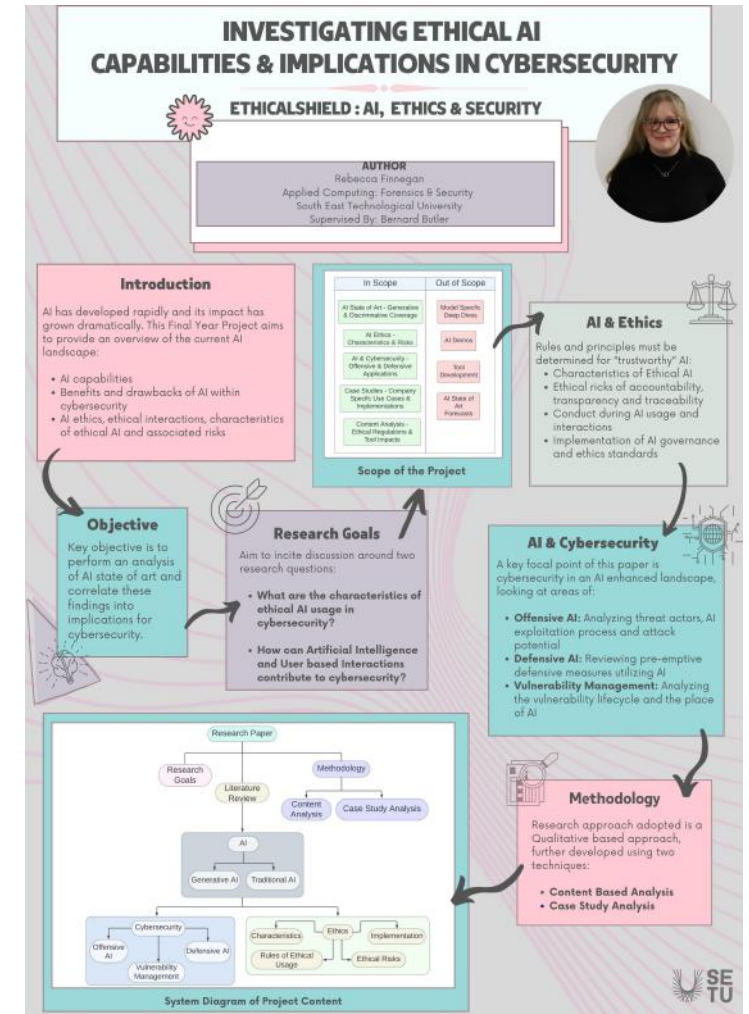
- Artificial Intelligence
- Computer Security

Project Supervisor

Bernard Butler

by Rebecca Finnegan

This project analyses the Artificial Intelligence state of art and the impact on cybersecurity. The project covers AI Ethics, scoping characteristics of Ethical AI alongside risks and concerns. Identifying measures to address these concerns to yield a positive result. To address the research questions posed the paper takes a qualitative research approach: content analysis and case study analysis from an end user perspective. The project aids to understand the security landscape within AI. Providing guidance to organizations seeking implementation strategies for AI in cybersecurity.



**Technologies:** Overleaf LaTeX, GitHub, GitHub Pages, Trello, Visual Studio Code

<https://rfinnegan111.github.io/FYP-Research-Repo/>



#15 / TL251

# Tick-It



Academic Title

## Event Ticket Distribution Website Hosted on AWS

Project Areas

- Cloud Computing
- Computer Networks
- Software Development: (Front End)

Project Supervisor

Deirdre O’Halloran

by Ilija Gacov

The overarching strategy for this project was to develop a web application hosted on AWS EC2 instances. This web application facilitates the purchase of tickets for upcoming events. To ensure seamless performance, the website incorporates auto-scaling mechanisms such as an application load balancer and CloudWatch Alarms and Metrics. When CloudWatch alarms trigger, AWS dynamically adjusts and/or creates server resources to accommodate surges in traffic. The web app itself has a simple design, is user-friendly and has features that are lacking from other similar products on the market today.

The brochure is a green-themed document with the following sections:

- Header:** Includes the project title "Tick-It", subtitle "Event Ticket Distribution Website Hosted on AWS", and the SE TU logo.
- Abstract:** A paragraph describing the project's strategy to develop a web application on AWS EC2 instances with auto-scaling and CloudWatch integration.
- Main Features:** A bulleted list including search events, create events, event filters, map/weather integration, and hotel/transport extras.
- System Diagram:** A cloud architecture diagram showing a multi-availability zone setup with VPC, Public Subnets, Application Load Balancing, and EC2 instances.
- Key Technologies:** Logos for AWS, Node.js, JavaScript, Discovery API, Google Maps, and GitHub.
- SCRUM Methodology:** A diagram of the SCRUM process (Backlog, Planning, Daily, Review, Retrospective) and a text block explaining the benefits of SCRUM for collaboration and iterative development.



**Technologies:** Amazon Web services, Javascript, HTML, CSS

<https://ilegacov.wixsite.com/tick-it-landing-page>



#16 / TL251



# Sun Life Dental Mobile App Upgrade

Academic Title

## Enhancing Sun Life Mobile Application: A Comprehensive Upgrade Project

Project Areas

- Software Development: (Back End / Front End / Mobile Native)

Project Supervisor

Sonya Hogan

by Michael Gerber

This final year project aims to enhance Sun Life’s existing mobile application, particularly their Benefits tools app. With a primary objective of improving user experience and meeting the evolving needs of Sun Life’s userbase. Key focus areas include app redevelopment, where the current mobile app will undergo a comprehensive overhaul using the Flutter cross-platform framework to ensure a seamless user experience across various mobile operating systems. Additionally, the upgraded app will integrate a newer API sourced from Sun Life, enabling access to newer features and functionalities. Emphasis will be placed on future-proofing the app, ensuring that it can easily be improved and upgraded in the future.

### Dental Benefits Portal Mobile Application

#### Project Description

This project aims to improve and redevelop one of Sun Life's existing mobile apps, namely the benefits tools app. The upgrade pays close attention to the following:

- **App Redesign:** The app's UI is completely redeveloped for cross platform using Flutter
- **New Features:** New features from more recent Sun Life APIs are added to the new application.
- **Future Proofing:** The development of this app is keeping in mind future upgrades and feature additions.

#### Functionality

- **Benefits** - Show the user an overview of their dental plans.
- **Claims** - Manage and view user claims.
- **Dental ID Card** - View the user's digital Dental ID card.
- **Wallet Support** - Users can add their dental ID cards to Apple or Google Wallet.
- **Find a Dentist** - Use the device's location or specified address to find dentists nearby.
- **View & Edit User Data** - Users can view and update their user information.

#### UI Design

- Material design is Google's design system that offers the following:
  - Flutter is designed to use Material Design principles.
  - Material design emphasizes elegant and clean user interfaces.
- The app's UI follows Sun Life branding guidelines, these guidelines specify the following:
  - Sun Life color schemes.
  - Typography
- These branding guidelines allows for continuity with Sun Life users.

#### Scrum Methodology

Scrum is an Agile framework that provides structure for iterative and incremental product development. This following Scrum techniques are applied to this project.

- **Backlog** - The project has a backlog of features and fixes.
- **Sprint** - Sprints are spread over 2 weeks where items are selected from the backlog and completed over the allocated time.
- **Sprint Reviews** - After each sprint. Meetings are held that go over what have been achieved and the difficulties in the past sprint.

#### Technologies & Tools

Michael Gerber (20093265)

Bachelor of Science (Hons) Applied Computing

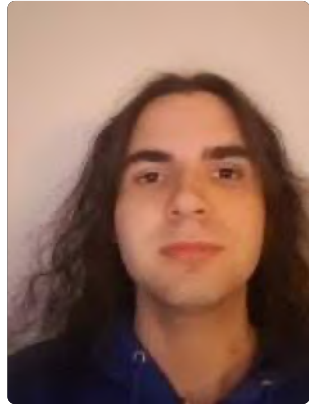


**Technologies:** Flutter, Dart, Android, iOS, SourceTree, JIRA

<https://sites.google.com/mail.wit.ie/michael-gerber-200932656/home>

#17 / TL251

# VoiceGuard



Academic Title

## Voice Authentication System Using Voice Analysis for Security

Project Areas

- Computer Forensics
- Software Development: (Back End / Front End / Mobile Native)

Project Supervisor

John Rellis

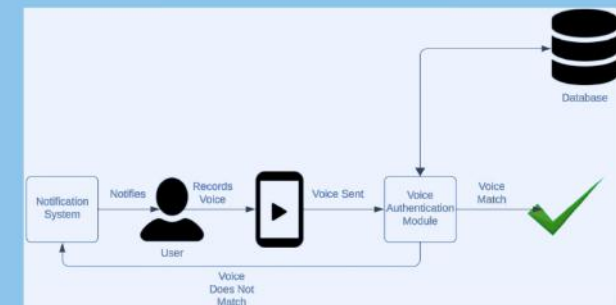
by Marko Glavic

## Voice Authentication System Using Voice Analysis for Security - VoiceGuard

### Abstract

**VoiceGuard** is a multi-factor authentication system designed to enhance security and accessibility in user authentication processes. Leveraging biometric technology, **VoiceGuard** compares unique voice patterns to verify user identities.

### How it Works



### Technologies



Marko Glavic  
Applied Computing  
(Cloud & Networks)



With more and more information being collected every day, security and proper authentication are more important than ever. VoiceGuard is a multi-factor authentication system designed to enhance security and accessibility in user authentication processes. Leveraging biometric technology, VoiceGuard compares unique voice patterns to verify user identities, offering a seamless and secure authentication experience. With its ability to integrate into existing systems and accommodate users with mobility impairments, VoiceGuard aims to provide another way of authentication and mitigate security risks.



**Technologies:** Python, Kotlin, AWS, FastAPI

<https://voicemfa.github.io/FYP-Website/>

#18 / TL251

# Electric Vehicle Diagnostics



Academic Title

## ZEVonUDS Protocol Stack Implementation

Project Areas

- Automotive and Automation
- Software Development: (Core)

Project Supervisor

Brendan Jackman

by **Conor Gleeson**

With Electric Vehicles becoming more and more common in our lives questions arise about keeping them running and in good condition in the long term. With standards and expectations long set out for combustion engine vehicles we must now adapt these processes for use with new technologies.

The project aims to simulate the diagnostic functionalities of an EVs electronic control unit using a Raspberry Pi and Vector CANoe software. Using standards like OBD, UDS, and the emerging ZEVonUDS, the simulation will monitor battery health, fault detection, and data transmission over a CAN bus network.

**Technologies:** Vector CANoe, Vector CANdelaStudio, Raspberry Pi, C,

**ZEVonUDS Protocol Stack Implementation**

**Overview**

With Electric Vehicles (EVs) becoming more and more common in our lives questions arise about keeping them running and in good condition in the long term. With standards and expectations long set out for combustion engine vehicles we must now adapt these processes for use with new technologies. The project aims to simulate the diagnostic functionalities of an EVs electronic control unit (ECU) using a Raspberry Pi and Vector CANoe software. By leveraging standards like OBD, UDS, and the emerging ZEVonUDS, the simulation will monitor battery health, fault detection, and data transmission over a CAN bus network. Key components include setting up the DEM and DCM modules on the Pi, and establishing communication with CANoe.

**Methodology**

The Agile Methodology was chosen. This methodology involves iterating over the product in periods of time called 'sprints' with features being added to the product at each iteration. This allows for testing at each stage and functionality to be added in chunks.

**Vector Tools**

Vector provides software services for networking technologies in the automotive industry. Vectors CANoe software is used to review messages from the Raspberry Pi via Canbus network. CANdelaStudio creates files for CANoe to read containing the appropriate diagnostic data.

Tools: CANoe, CANdelaStudio, Visual Studio, Raspberry Pi

Conor Gleeson  
BSc (Hons) in Applied Computing (Automotive and Automation)  
Dept of Computing and Maths  
School of Science

<https://conorgleeson.github.io/ZEVonUDS-fyp-site>





Academic Title

## Unity 2D Procedurally Generated Game with Advanced Enemy AI and Dynamic Difficulty

Project Areas

- Game Development

Project Supervisor

Patrick Felicia

# Twilight Sun

#19 / TL251

by Gedvydas Jucius

Twilight Sun is a captivating RPG Roguelike game set in a mystical 2D world. The protagonist, Ilivan, an aging wizard, embarks on a quest to prevent a looming apocalypse by retrieving ancient artefacts. The game's world is procedurally generated, offering a fresh experience in each playthrough. It boasts advanced Enemy AI, a dynamic difficulty system, and a puzzle system, enhancing both the challenge and immersion. Players navigate through varied terrains, including mysterious mazes and dark dungeons, where strategic decision-making influences the game's narrative.

Unity 2D Procedurally Generated Game with Advanced Enemy AI and Dynamic Difficulty

**Methodology:**  
This Project was developed using the SCRUM methodology. Development of the Project took place over monthly Sprints. Planning took place at the start of each sprint with the work being reviewed at the end of the sprint.

**Introduction:**  
"Twilight Sun" is an action-packed RPG Roguelike game developed in Unity, blending spellcasting combat with dynamic puzzles in a quest to avert an apocalypse. The story follows Ilivan, an aging wizard, as he embarks on an adventure to find lost artefacts and prevent a looming disaster.

**Procedural Generation:**  
Procedural Generation is a way to generate content randomly. Twilight Sun uses the drunkard's walk algorithm technique where an entity randomly moves step-by-step in any direction, simulating a drunken walk, to create unpredictable and varied paths or environments. The result leads to levels that are random and can lead to very interesting dungeons and levels.

**Dynamic Difficulty:**  
Twilight Sun features dynamic difficulty adjustment to cater to the player's ability. The player's performance is tracked, and the game will adjust to the player's performance. The game will adjust features such as level generation and enemy AI. This keeps the player always engaged by not allowing the game to become too difficult or too easy.

**Advanced Enemy AI:**  
Twilight Sun's enemy AI features enemies able to perform complex actions such as dodging player attacks and switching between combat phases. This sophisticated AI system aims to provide a more dynamic and engaging combat experience, making each encounter unpredictable and requiring players to adapt their strategies constantly.

Technologies: Unity, C#, GIMP, Git, Github, Trello

Unity Trello GitHub GIMP Rider

Gedvydas Jucius, Bsc Applied Computing, Department of Computing and Mathematics, SETU

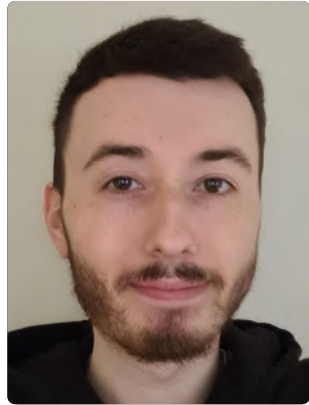


Technologies: Unity, C#, GIMP, Git, Github, Trello

[https://ged-j.github.io/Twilight-Sun-Website/dark\\_index.html](https://ged-j.github.io/Twilight-Sun-Website/dark_index.html)



#20 / TL251



# Driver Awareness System

Academic Title

## Applying the Principles of Functional Safety to the Development of an Automotive Software Component

by **Dean Lonergan**

Project Areas

- Automotive and Automation
- Software Development: (Core)

Project Supervisor

Brendan Jackman

The Driver Awareness System aims to enhance automotive safety and driver engagement. This is achieved by utilising the sensor data gathered by the Autonomous Driver Assistance Systems (ADAS) and presenting it in real-time to the occupants using subtle lighting cues through the dashboard, heads-up display, and cabin lighting. This approach will greatly increase spatial awareness without using abrasive alerts or warnings. The development process will use industry-standard tools such as Vector CANoe and adhere to the principles of functional safety in alignment with the ISO 26262 standard.

### Driver Awareness System

**Overview**

The Driver Awareness System aims to harness the sensor arrays present in modern vehicles to:

- Increase Driver Safety
- Enhance Driver Engagement
- Improve spatial awareness

This is achieved through subtle lighting cues on the dashboard and throughout the cabin; the benefits of this approach are:

- No abrasive alerts/warnings
- Not distracting
- Driver informed in real-time

The development of this system will follow industry-standard practices and use tools such as:

- ISO 26262
- Vector CANoe

**ISO 26262**

ISO 26262 sets safety standards for automotive electronics systems, focusing on risk management, functional safety, and lifecycle processes to ensure safety throughout the design, development, production, and operation of automotive software and electronics.

**Vector Tools**

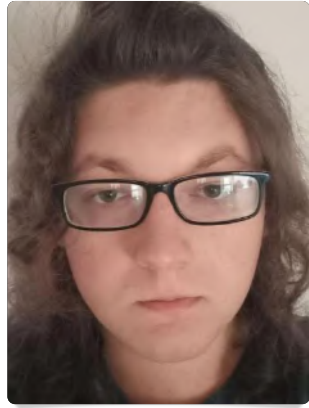
Vector CANoe is a comprehensive software tool for developing, testing, and analysing individual ECLs and entire automotive networks. Its scripting language, CAPL (Communication Access Programming Language), allows for simulating complex scenarios, automating tests, and analysing network behaviour in real time. Together, CANoe and CAPL enable engineers to simulate and validate the behaviour of vehicle networks and ECLs efficiently.

Dean Lonergan  
BSc (Hons) in Applied Computing, Automotive and Automation Systems  
School of Science and Computing  
Dept of Computing and Maths

**Technologies:** Vector CANoe, CAPL, CAN, Car2X, ADAS



<https://20092570.wixsite.com/deanlonergan>



Academic Title

## IoT Application for Recording GPS Data

Project Areas

- Cloud Computing
- Database and Analytics
- Internet of Things
- Software Development: (Mobile Native)

Project Supervisor

Rahul Mhapsekar

The project is comprised of an arduino, a bluetooth module and a GPS module. The whole point of the project is for it to give you an accurate reading of the distances you've cycled while being completely self reliant with no need for an internet connection. The project is meant to be durable and fit onto a bike while surviving the elements. All the information about cycled distance calories burned etc will be displayed to the user on an app which connects to the arduino using bluetooth. Data is saved in text files and can be analyzed.



**Technologies:** Python, Bluetooth, Javascript, C++

<https://github.com/20094523/IoT-GPSComputer>

# The IoT GPS Computer

#21 / TL251

by **Dominik Martynski**

## IoT Application for Recording GPS Data

The IoT GPS Computer

### Description

This is an IoT project that lets you record and access your GPS data using a Bluetooth terminal on your phone. The project works in remote areas with no internet connections as it connects directly to satellites.

### Technologies Used

- An Arduino Uno used for processing data, writing code on and connecting everything together.
- Neo-6M GPS Module for letting us access our coordinates via satellite.
- HC-05 Bluetooth Module for letting the device connect to our phone.
- MIT App Inventor for creating an app to connect and display the GPS data on.



### Key Features

- Constant data regardless of internet connection.
- Accompanying app on phone used to visualize and display data gathered.
- Calories burned and Distance cycled displayed.
- Cheaper alternative to GPS Computers and cycling apps.
- Cycling after dark with flashlight module.



**Dominik Martynski**

Bachelor of Science (Honours) in Applied Computing – Internet of Things  
Supervisor: Rahul Mhapsekar



Academic Title

## Pilgrim Portal - A Website for Pilgrim

**Full Stack Development of a Web Application Using Angular, AWS and DynamoDB**

Project Areas

- Database and Analytics
- Software Development: (Back End / Web)

Project Supervisor

Rahul Mhapsekar

#23 / TL228

**by Cillian Murphy**

The inspiration for this project stems from the developer's personal experiences with the Camino, noting the outdated nature of existing websites. The objective is to leverage modern web development practices to offer a full-stack website that enhances the pilgrimage experience for both solo and group travelers. The project targets a niche market, focusing on attracting a younger audience and providing support to solo travelers through a user-friendly platform that facilitates route planning, social interaction, and access to critical information without paywalls.



**Technologies:** Angular, AWS and DynamoDB.

<https://cillian00.github.io/FYP-Landing-Page/>







Academic Title

## ISO 15118 Protocol Stack: Implementing Secure EV Charging for Efficient Vehicle-station Comm with UI

Project Areas

- Automotive and Automation
- Database and Analytics

Project Supervisor

Sonya Hogan

This project implements secure communication between electric vehicles and charging stations, ensuring standardized and efficient information exchange through the ISO 15118 protocol. Employing a microcontroller to simulate the EV end of the ISO 15118 protocol and Vector CANoe a simulation tool is utilized to simulate the charging station protocol, creating a reliable test environment.

The user-friendly interface enhances the charging experience, supported by a robust database and front-end application for managing parameters and viewing charging history.



**Technologies:** Vector CANoe, MySQL Workbench, Raspberry Pi, Ethernet cable, AWS, C, PHP, Foundation 6

<https://emmanolan2019.wixsite.com/iso-15118-protocol-s>

#24 / TL228

by Emma Nolan

**PowerFlow Pro: Seamless EV Charging UI**

**ISO 15118 Protocol Stack: Implementing Secure EV Charging for Efficient Vehicle-Station Comm with UI**

**Methodology**  
Scrum effortlessly accommodates evolving requirements, seamlessly incorporating updates in upcoming sprints. Although daily stand-up meetings are typically tailored for team projects within the Scrum framework, specific adjustments will be needed to align with the unique context of my individual project.

**Abstract**  
This project implements secure communication between electric vehicles and charging stations, ensuring standardized and efficient information exchange through the ISO 15118 protocol. Employing a microcontroller to simulate the EV end of the ISO 15118 protocol and Vector CANoe a simulation tool is utilized to simulate the charging station protocol, creating a reliable test environment. The user-friendly interface enhances the charging experience, supported by a robust database and front-end application for managing parameters and viewing charging history.

**Technologies**  
Raspberry Pi, CANoe, MySQL, C#, PHP, Amazon RDS.

**System Diagram**  
1. CLIENT  
2. Microcontroller  
3. Amazon RDS  
4. Server Client

The client initiates the charging process by connecting their 'vehicle' to the 'charging station', specifying the desired charging level, such as 80%, and opting for a trickle charge implementation.

2. The Raspberry Pi will then execute the above client request, generating and transmitting protocol-specific messages from the electric vehicles and.

3. The Raspberry Pi seamlessly transmits these messages to the Charging Unit Node on Vector CANoe, thereby facilitating the establishment of a secure and efficient connection between the electric vehicle and the charging infrastructure.

4. Upon completion of the charging session, the client is promptly notified of the incurred charges.

SE TU  
Emma Nolan (20093200) - Applied Computing (Automotive & Autmation) - Computing & Maths - SETU



Academic Title

## USV-Lir Micro: Bit Sensor Pod Abstraction and API

Project Areas

- Automotive and Automation
- Internet of Things
- Software Development: (Core)

Project Supervisor

Jason Berry

The purpose of this project is to enhance the Unmanned Surface Vehicle (USV) Lir ecosystem by refining its sensor pod system.

This involves calibration procedures, enhancing the vehicle's ability to collect and process data and designing a printed circuit board that has a Micro: bit interface.

By using a Micro: bit interface this simplifies communication between the sensors and the USV's central control system, enabling both technical and non-technical people to view data transmission and analysis through using the sensor pod library



**Technologies:** Microbit, QGroundControl, PixHawk, Typescript, MQTT, GitHub, Autodesk Eagle

<https://github.com/AdamOBrien/USV-LIR-Microbit-Abstraction>

# Micro:Bit Sensor Pod Breakout Board

#25 / TL228

by Adam O'Brien

USV-Lir Micro: Bit Sensor Pod Abstraction and API  
Adam O'Brien  
Applied Computing (Internet of Things)  
Department of Computing and Mathematics SETU

### Abstract

This project carries on from the work done by the students of the SETU Applied robotics lab.

The purpose of this project is to enhance the Unmanned Surface Vehicle (USV) Lir ecosystem by refining the sensor pod system. Starting with calibrating sensors and designing a printed circuit board that has a Micro: bit interface. This involves calibration procedures, enhancing the vehicle's ability to collect and process data.



### Implementation

The integration of a Micro: bit interface into the PCB aims to streamline communication between the sensors and the USV's central control system, enabling seamless data transmission which can be used later for analysis.

This PCB also makes sensor components easily replaceable in the circuitry because if a sensor breaks a new one can be plugged into the PCB's I/O headers.



### Outreach Potential

Additionally, a custom Micro: bit library was created in order to program the Sensor pod and USV.

This allows both technical and non-technical people to contribute and launch their own sensor pod missions.



### Technology














## Academic Title

## A 2D, Roguelike, RPG Unity Game Utilizing Advanced AI, Dynamic Difficulty and Procedural Generation

## Project Areas

- Animation
- Game Development

## Project Supervisor

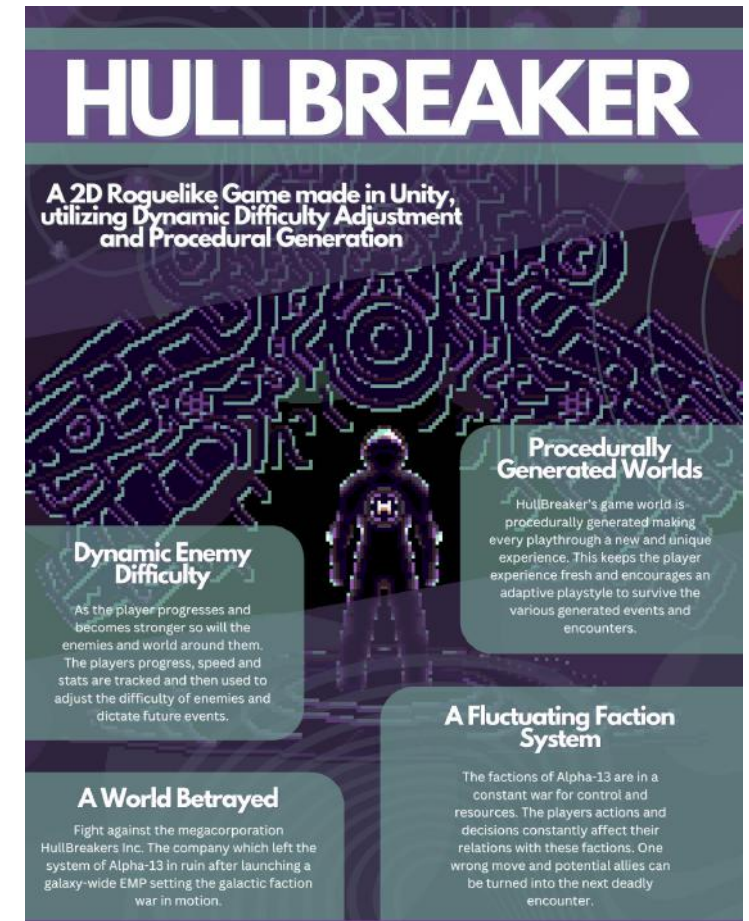
Brendan Lyng

# Hullbreaker

#26 / TL228

by Anthony O'Keeffe

HullBreaker is a 2D role playing, roguelike game. A roguelike game is a genre of game in which death is permanent and the game is restarted upon dying. The game is set in a war-stricken galaxy called Alpha-13, based in the far future. HullBreaker features many complex and engaging mechanics such as procedurally generated solar systems with roaming AI ships that can affect the worlds around them, an RPG inspired combat system with dozens of ships and weapons to be used. The game also features a dynamic difficulty systems that adjusts and adapts to the players skill level.



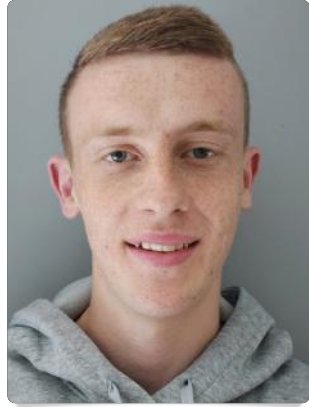
Anthony O'Keeffe, BSc (Hons) Applied Computing, Department of Computing and Mathematics, SETU



**Technologies:** Unity, C#, GitHub, Trello

<https://guygoose.github.io/HullBreaker-FYP-Website/>





Academic Title

## Implementing Diagnostics in an Automotive System Through SOME/IP Communication Protocol

Project Areas

- Automotive and Automation
- Software Development: (Back End)

Project Supervisors

Sonya Hogan, Joe Daly

As automotive technology continues to develop, there has been a need for modern communication protocols that are capable of handling the demands of connectivity and automation. This project focuses on the development of a diagnostics application that implements the Service-Oriented Middleware over Internet Protocol (SOME/IP) communication protocol. SOME/IP's service-oriented capabilities offer an alternative communication to traditional signal-based protocols. The incorporation of SOME/IP key features highlights the role of SOME/IP in empowering modern automotive applications.



**Technologies:** SOME/IP, Vector CANoe, CAPL

<https://stephenpower37.github.io/FYP-Landing-Page/>

# Service-oriented Diagnostics

#27 / TL228

by Stephen Power

IMPLEMENTING DIAGNOSTICS IN AUTOMOTIVE SYSTEMS THROUGH SOME/IP COMMUNICATION PROTOCOL

**SERVICE-ORIENTED DIAGNOSTICS**

**OVERVIEW**

As automotive technology continues to develop, there has been a need for modern communication protocols that are capable of handling the demands of connectivity and automation. This project focuses on the development of a diagnostics application that implements the Service-Oriented Middleware over Internet Protocol (SOME/IP) communication protocol. SOME/IP's service-oriented capabilities offer an alternative communication to traditional signal-based protocols, thereby enhancing the efficiency, flexibility, and interoperability of the diagnostics system. The incorporation of SOME/IP key features such as Service Discovery and Publish/Subscribe highlights the role of SOME/IP in empowering modern automotive applications.

**SYSTEM DIAGRAM**

VECTOR CANoe

SOME/IP Communication Setup

```

graph LR
    subgraph SOME_IP_Setup [SOME/IP Communication Setup]
        direction LR
        C[CONSUMER] -- REQUEST --> P[PROVIDER]
        P -- RESPONSE --> C
    end
  
```

**TECHNOLOGIES**

CANoe is a powerful software tool developed by Vector Informatik, a leading provider of software tools for the development of electronic systems, specifically in the automotive industry. CANoe is designed to support the development, testing, and analysis of ECUs and entire electronic systems within a vehicle.

**VECTOR**

**METHODOLOGY**

I used the Agile methodology for developing this project. Working in sprints of two weeks helped me efficiently plan tasks in advance so all deliverables could be done on time. A Kanban board allowed all tasks to be visualised in order to easily keep track of all the work being done.

**AGILE**

1. Backlog  
2. Planning  
3. Daily Standup  
4. Review  
5. Retrospective  
6. Release

**STEPHEN POWER | BSc (Hons) APPLIED COMPUTING**



Academic Title

## Unity Based Multiplayer Video Game in Virtual Reality

Project Areas

- Computer Networks
- Game Development

Project Supervisor

Brendan Lyng

# Chaos Chefs

#28 / TL228

by Corey Shanahan

Chaos Chefs is a VR cooking simulator game where players play as chefs in a fast-paced kitchen. Players can join others and cook recipes together. Each round lasts 5-10 minutes, with customers ordering burgers with different toppings. Players grill patties, chop ingredients, and put them on a plate. Impatient customers demand quick completion, and if players take too long, they lose customers. Players who complete their orders on time earn cash to upgrade their kitchens. The game encourages patience and creativity in cooking.

## Chaos Chefs

Unity based Multiplayer Video Game in Virtual Reality

**Virtual Reality**

This project was developed for Virtual Reality (VR) using Unity's XR interaction toolkit. The XR Interaction Toolkit is a high-level interaction system for creating VR and AR experiences. This toolkit uses OpenXR, which is an open standard that provides access to Augment Reality (AR) and Virtual Reality (VR) devices. The game was developed with the Meta Quest 2 & 3 but will work with SteamVR.

**Co-op**

The game features multiplayer where players can join each other and cook recipes together. This was implemented using Unity's Netcode for GameObjects. Netcode is a high-level networking library specially built for Unity, it uses a custom protocol called Unity Transport. It allows data about GameObjects and the world to be sent across networking sessions to other players.

**Methodology**

SCRUM is an agile methodology that was applied in this project. The development process is divided into two-week periods known as sprints, and each sprint is preceded by a planning meeting. The tasks needed to finish the project are added to a product backlog, which is then transferred to the sprint backlog during the biweekly meeting.

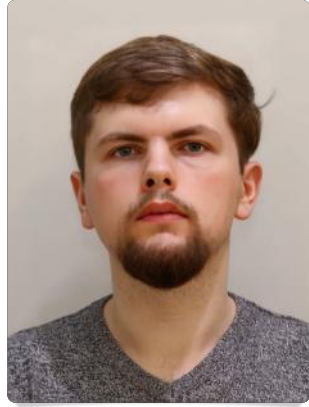
Corey Shanahan  
BSc (Hons) in Applied Computing  
Department of Computing & Mathematics



**Technologies:** Unity, C#, Netcode, Relay, Lobby, Trello, Git, Github

<https://corshan.github.io/FYP/>





Academic Title

## First-person Retro-inspired Dungeon Crawling RPG

Project Areas

- Animation
- Artificial Intelligence
- Digital Graphic Design
- Game Development

Project Supervisor

Denis Flynn

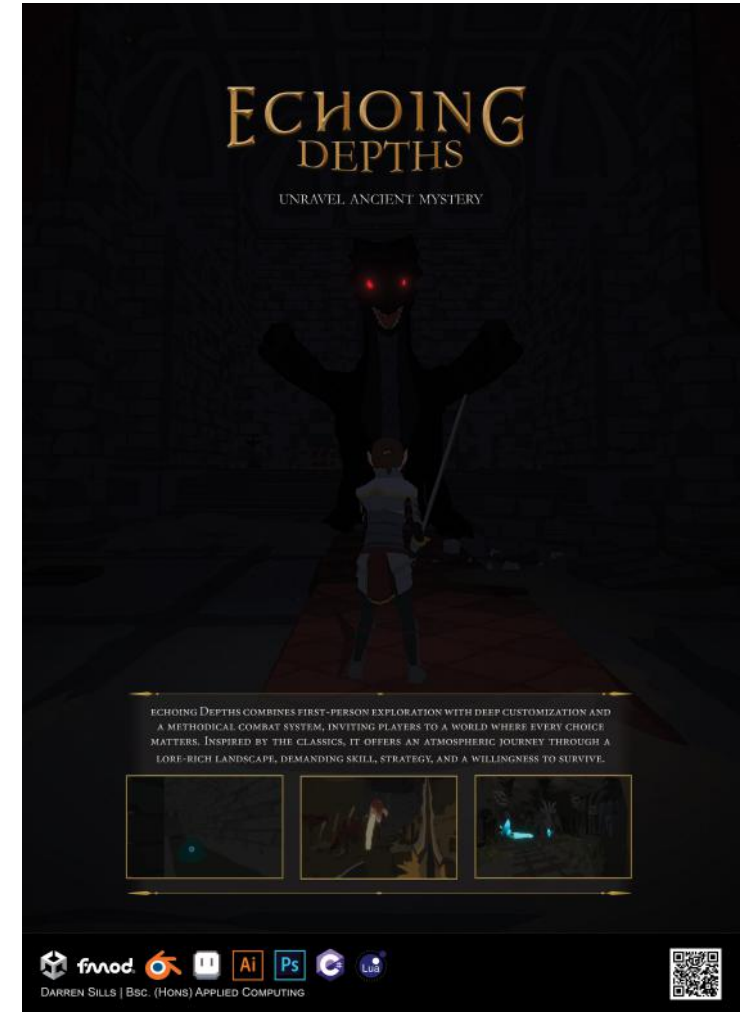
# Echoing Depths

#29 / TL228

by Darren Sills

In 'Echoing Depths', you will create your character and arrive at a gloomy settlement called The Fringe. This encampment is filled with would-be adventurers seeking glory, answers, and treasure in the nearby Depths: a haunting and perilous underground realm, the remnants of a civilization that sought to transcend mortality.

The game emphasizes deep exploration and rewards your curiosity. Combat is strategic and meaningful, offering a wide range of options through detailed character customization. There will be many choices to be made, both good and evil, all set to a captivating soundtrack.



**Technologies:** Unity, Blender, Aseprite, FMOD, C#, LUA

<https://d-sills.github.io/Echoing-Depths/>





Academic Title

## Procedurally Generated Unity3D Game with Voice Recognition Spell-casting and Enemy AI

Project Areas

- Game Development

Project Supervisor

Brendan Lyng

# Mystic Mayhem

#30 / TL228

by Moses Ugwulo

Mystic Mayhem is a 3D, open-world, spell-casting game. The game takes place in a mystical realm where the laws of magic supersede the regular laws of physics. The user plays as Aleister who lives in the village of Spriggansfield. Today is no ordinary day as the ground starts to rumble and shake. Dark rolling clouds begin to form in the sky and disastrous weather begins to rain across the realm. Aleister is tasked with investigating and purging the evil behind this mysterious weather.

Mystic Mayhem offers a unique experience utilising speech recognition to allow the player to cast spells using their voice which allows for an engaging experience and the game world is procedurally generated to allow for a different world exploration experience every time.



**Technologies:** Unity, C#, GitHub, Trello

<https://sites.google.com/mail.wit.ie/fyp-landing-page>



#31 / TL228

# Smart Incident Sentinel



Academic Title

## LogGuard: An Intelligent Machine Learning Incident Detection System

Project Areas

- Automotive and Automation
- Computer Networks
- Database and Analytics
- Media Development and Production

Project Supervisor

Richard Lacey

by William Vasilev

My Final Year Project, LogGuard is a state-of-the-art machine learning programme that will transform incident detection through seamless log scanning. The sheer amount of data generated in today’s complicated digital ecosystem makes finding and resolving incidents a difficult task. My creative solution offers a proactive and quick method of incident identification by utilising machine learning algorithms to analyse logs effectively. My programme improves cybersecurity measures and gives organisations the ability to keep ahead of potential threats by utilising advanced pattern recognition and anomaly detection.

**Abstract**  
My Final Year Project, LogGuard is a state-of-the-art machine learning programme that will transform incident detection through seamless log scanning. The sheer amount of data generated in today's complicated digital ecosystem makes finding and resolving incidents a difficult task. My creative solution offers a proactive and quick method of incident identification by utilising machine learning algorithms to analyse logs effectively. My programme improves cybersecurity measures and gives organisations the ability to keep ahead of potential threats by utilising advanced pattern recognition and anomaly detection.

**Technologies**  
jupyter, Python, aws, Git, Docker, Flask

**Architecture Diagram**  
LOG → jupyter → aws

**Methodology**  
Agile methodology is a project management approach that prioritizes cross-functional collaboration and continuous improvement. It divides projects into smaller phases and guides teams through cycles of planning, execution, and evaluation

Phase 1 : Exploratory Data Analysis  
Phase 2 : Training and Testing  
Phase 3 : Deployment Phase



**Technologies:** Jupyter-Lab, Python, scikit learn, pandas, numpy, matplotlib, seaborn.

<https://williamvasilev.wixsite.com/william-vasilev-fyp>





Academic Title

# An Exploration into Data Collection

#32 / TL228

## How Regulated Should Data Collection Be and How May it Develop in the Future

Project Areas

- Computer Security
- Database and Analytics

Project Supervisor

Lizy Abraham

by Georgina Walsh

Throughout the internet, most organisations who provide their services online will make use of data collection and processing in order to better cater themselves to consumers and help plan their future developments more effectively. If an establishment collects data, they must then follow a set of regulations that vary on location. This paper aims to provide readers with an overview into the topics of data collection and data regulations, some of their prominent features and effects, as well as possible developments that may occur within data collection and regulation as of recent events.

**Introduction:** Due to the internet and advances made in technology, it is much easier for organisations to record and find information about their current and future consumer base. With so many resources available to them, it would be very easy for these organisations to just take as much data about consumers as they can regardless of whether a consumer is aware of the development. This is why organisations have their practices regulated.

**Objective & Goals:** For this project, the subject of data collection and data regulation will be explored, including the past, present and possible future of the collection and regulation of data. There are two research questions that are being answered:
 

- How regulated should consumer data and data regulation be?
- What are some of the possible ways in which collection and regulation of consumer data may develop?

**History:** To get to where it is today, numerous advances in technology had to be first take place. Some of these more noteworthy events include:
 

- 1890: Herman Mollerith invents the punch card system.
- 1993: The internet is made public.
- 1998: Google Search is launched.
- 2005: Tim O'Reilly introduces Web 2.0.
- 2006: Apache Hadoop is created.

**EU and US Regulations:** While the US and the EU both employ, and enforce to a varying degree, multiple regulations to ensure the security of consumers, there are some differences between the two.
 

- US:** Has more regulations, Uses separate regulations for different sectors of data, Provides more flexibility to businesses to collect data as long as they aren't conducting malpractice.
- EU:** Uses a comprehensive data privacy law, Provides individuals to access, erase, or restrict the data businesses have recorded about them.

**Methodology:** For the Methodology of the project a qualitative research approach will be taken. Using content based analysis and case study analysis, recent cases involving the breach and creation of data protection laws will be studied. Taking these events into account, possible ways in which governments may attempt to counteract or prepare for future developments will be discussed. This methodology allows for readers to develop their own opinions regarding the matter, and decide for themselves if they think such actions are necessary.

**Research Paper Content:**

- Definition:** The definition of data collection, Main methods used in data collection, Main uses for data collection.
- History:** Events contributing to the development of data collection, Why was data collection being developed, What issues arose as a result of the development.
- Data Protection Regulations:** Prominent EU and US data regulations, How do EU and US regulations compare to one another, Regulation breaches in the EU and US.
- The Affects of Collecting and Regulating Data:** How consumers are affected, How businesses are affected, How consumers and businesses attempt to mitigate affects.
- Recent Regulations:** New regulations that have taken affect.
- Recent Breaches:** Data breaches that have occurred within the last 2 years.
- Possible Developments:** As of recent events, what regulations may be formed.
- Research Questions:** Using the information gathered from the literature review and the case studies in the methodology, are readers able to discuss their conclusion to the set research questions.

**Data Collection and Regulation Cycle:**

- Companies Take Action:** In order to work around regulations, new data collection methods are developed.
- Consumers are Affected:** Through an attack or through an organisation's actions, consumers are negatively impacted.
- Companies are Affected:** Due to new regulations, companies are forced to change their strategies and possibly pay fines.
- Consumers Take Action:** In order to protect themselves, consumers will try to get regulations modified or find their own mitigation methods.



**Technologies:** Github, Github Pages, Canva, Miro, Trello, Overleaf

<https://georginawalsh.github.io/FYP-Website/>



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## ***BSc (Hons) in Computer Forensics and Security***

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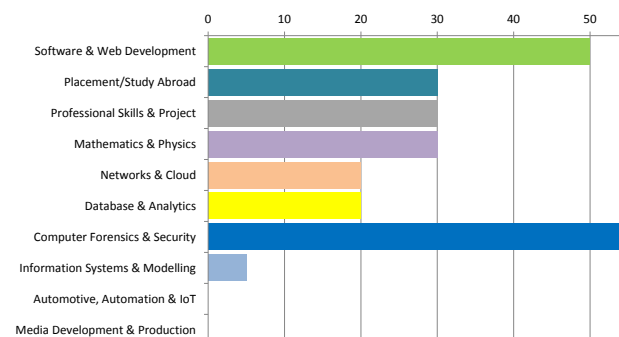
The BSc (Hons) in Computer Forensics & Security is a 4-year ab-initio Level 8 programme.

### **The aim of the BSc (Honours) in Computer Forensics & Security programme is**

to produce graduates with the necessary knowledge, skills and expertise to pursue a career in computer security and computer forensics. Graduates should be able to build, use and adapt software and hardware solutions to conduct investigations or to secure networks and systems. The course will also confer on the graduates a set of personal and professional attributes that will allow them greater flexibility in the development of their own career options. Specifically the course aims to produce graduates who can

- Reason and problem-solve to a high level in the area.
- Design specific security solutions.
- Provide security support to systems development teams.
- Participate constructively in the deployment of new security technologies.
- Participate in the development of forensic solutions in response to a security solution.
- Undertake research-based projects where required.
- Manage technology-based projects that require the handling of innovation and change in dynamic environments.
- Present and communicate clearly.
- Work with others in a group environment.

The breakdown of course credits across the four years on each specialism is illustrated by the following charts.





Academic Title

## A Web-based Software Module to Combat Malvertising and Malicious URLs

Project Areas

- Computer Networks
- Computer Security
- Software Development: (Back End / Front End / Web)

Project Supervisor

John Sheppard

#33 / TL225

by Ian Barnes

Malverticus is a groundbreaking web-based software module designed to address escalating dangers of malvertising and malicious URLs that plague our digital landscape. This innovative cybersecurity solution offers both academic and commercial value by providing proactive defence mechanisms against these prevalent threats. By leveraging advanced Data Mining and Data Modeling Classification Techniques, Malverticus provides a robust shield against the infiltration of harmful content and URLs to end users. By doing this it can anticipate and neutralize potential dangers before they can cause harm, ensuring a safer online environment for users and enterprises alike.



**Technologies:** Data Modeling and Clasification, Web based plug in extension. AWS

<https://barnesian.github.io/MyFYPWebsite/>

#34 / TL225



# StegCatcher - Hidden Data Detector

Academic Title

## Steganography Detection Plugin for Autopsy

Project Areas

- Computer Networks
- Database and Analytics
- Media Development and Production

Project Supervisor

John Sheppard

StegCatcher, specifically designed for the Autopsy digital forensics platform, significantly enhances steganalysis capabilities. It aims to detect hidden data within digital media, a common tactic in cybercrime, through steganography. This plugin integrates seamlessly with Autopsy, offering a user-friendly interface and machine learning detection methods to identify files with covert data. It's vital for forensic analysts to efficiently uncover concealed information, playing a crucial role in modern digital investigations.



**Technologies:** Autopsy, Java, Python, Github, Google Colab, Kaggle Kernels, Machine Learning, Deep Learning

<https://andrewbaxter123.github.io/>

by Andrew Baxter

## Steganography Detection Plugin for Autopsy

**Abstract**

A LSB steganography detection plugin for Autopsy that utilizes scripting and machine learning to analyze and detect hidden data within images. This tool streamlines the investigative process by allowing real-time, automated steganographic analysis. It plays a critical role in modern digital forensics, reflecting the increasing need for sophisticated detection methods to combat advanced concealment techniques.

**Motivation**

Autopsy, being one of the most widely used platforms in the field, lacks a dedicated steganography plugin for investigators.

**Platform**

The Autopsy plugin was built from scratch using NetBeans, which enables the ability to run the Autopsy environment within NetBeans for testing purposes.

**Core Work and Methodology**

- Developed Autopsy plugin functionality that has 2 core classes:
  - Factory class.
  - Ingest Module.
- Created three steganography detection methods:
  - LSB detection script.
  - ML model.
  - DL model.
- Trained model with personally created dataset
  - 51K data entries, 343 features. (Subtractive Pixel Adjacency Matrix features)
  - Leveraged Kaggle for model training.
- Integrated Python scripts / models with Java for Autopsy.
- Packaged tool for others to use.

**Flow Chart**

Connect With Me on LinkedIn

**Andrew Baxter**  
 BSc Computer Forensics & Security  
 Department of Computing & Maths  
 South East Technological University



Academic Title

### System Attack Landscape

Project Areas

- Computer Security

Project Supervisor

Bernard Butler

# Attack Shield

#35 / TL225

by Killian Halpin

**System Attack Landscape**  
Attack Shield

**Introduction**

This project is a research project aimed at identifying the attack landscape industries may face and raising awareness for them to be able to try stop these attacks. I set up a honeypot and left it open to the web and analysed the files to see what type of attacks were tried. I then analysed the files using loggly to what attacks were being tried on my honeypot and compared it to what was happening in industry at the time.

**Research Questions**

Q1: What kind of attacks are being tried to gain access to the honeypot?  
 Q2: Were there any successful logins?  
 Q3: Are these the same attacks that are being carried out in industry?

**Results**

These are sample results which I would expect to see from this project

- Brute forcing attacks were the most popular with 20 attempts made
- Port scanning came in at a close second with 15 attempts
- Ddos attacks came in at thirds with 2 attempts

**Methodology**

To carry out this project I will be using an agile approach with an over lying waterfall method also. As this is research the waterfall approach must be used as I have an overall goal to reach. I have chosen this hybrid approach because:

- I can make updates to the project as I go
- Short work periods with constant testing
- More control over the progress
- Reduced risk of failure
- Best method to keep me on track throughout the project.

From this I am able to answer my research questions.

- No successful login ins.
- Yes these attacks are going on in industry. I know this from my own experience and from comparing my results to latest threat news on open source intelligence tools.

SE TU Official Incorporating an Online South East Technological University

Killian Halpin  
20093283  
Computer forensics and Security

amazon web services

ATLASSIAN

solarwinds loggly

This project is a hybrid research project aimed at identifying the attack landscape industries may face and raising awareness for them to be able to try stop these attacks. With this I aim to help system administrators build defence against attacks to mitigate their risk of falling victim to a cyber-attack. I will create a honeypot and collecting logs, from this I will then analyse the logs and see what kind of attacks were attempted to try gain access to the honeypot. From there a script will be created focusing on the main threats which were logged. The script will be put on a system and ran continuously for vulnerabilities and check if there have been any previous attempts to breach the system. The goal would be to get this script real time alerting.



**Technologies:** Loggly, Amazon web services, word, formspree, Overleaf:, Online Gantt: Jira: W3schools, Python:;

<https://killian-halpin.github.io/>



Academic Title

## Machine Learning-based Assessment of Relationship Compatibility and Romantic Dealbreakers

Project Areas

- Database and Analytics
- Software Development: (Back End / Front End / Web)

Project Supervisor

Clodagh Power

In an era of increasingly fast-paced dating dynamics, navigating the early stages of getting to know a potential partner has its complexities. Early Days' overarching aim is to provide users with an application that aids them as they get to know a potential partner. It does so by providing users with an engaging questionnaire that encapsulates a series of prompts to uncover romantic dealbreakers. Users are categorised into a relevant group before additional comparison scoring with others can be completed. Such functionality is delivered through a stylistic interface to engage users.



**Technologies:** Python, HTML, SQLite, SQLAlchemy, CSS, Github, Git, Render, K-Modes Clustering, PostgreSQL, Pandas

<https://saoirseodonovan.github.io/fyp/>

## Early Days

#36 / TL225

by Saoirse O'Donovan

**Early days.** SE TU

**A Machine Learning Relationship Compatibility Assessing Application**

Early Days' mission is to aid individuals as they navigate the early stages of getting to know a potential partner. It does so by engaging the user in a questionnaire which identifies what dealbreakers and preferences that the individual has when considering a romantic partner. The user will then be placed into a category based on their responses using a machine learning technique, clustering. A description of the decided category is provided and the user has the option to progress and compare their responses with those of another user of their choice. A scoring algorithm will then perform some permutations to provide both users with a compatibility score.

**Technologies**

Python: chosen development language.  
Flask: supporting web framework.  
SQLite: chosen database management system.  
SQLAlchemy: enhance the capabilities of SQLite.  
Clustering algorithm: categorise users.

**Key Features**

**Sign up / Log in**  
The user must make use of the secure sign up or log in functionality to gain access to the application.

**Welcome**  
This screen guides the users movement through the application and defines its purpose. It also has a live feed of posts from the Early Days instagram account.

**Quiz**  
The questionnaire is presented to the user. After completion, the clustering process will begin, where a large dataset of user responses is used to train the clustering model to accurately place the user in a corresponding category, amongst similar users.

**Graphing**  
Visualisations of the individuals clustering results are presented alongside a description of the category in which the user was placed.

**Compatibility Assessment**  
Users can assess their compatibility with a user of their choice to receive a score returned by the scoring function which compares the users quiz answers and identifies similarities.

**Machine Learning**  
A machine learning technique named clustering is utilised to categorise the users based on the responses they gave to the chosen survey questions. Each of the categories are defined by all of the clusters identified by the clustering algorithm. The addition of this machine learning tool adds increased complexity.

Saoirse O'Donovan  
BSc (Hons)  
Computer Forensics and Security  
Department of Computing and Maths  
South East Technological University

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## ***BSc (Hons) in Creative Computing***

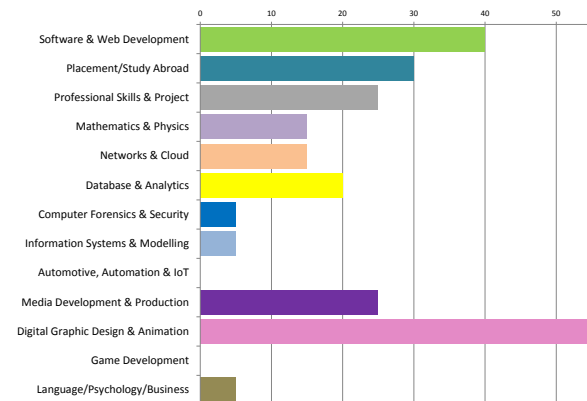
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The **BSc (Hons) in Creative Computing** is a four-year Level 8 programme. Many students transfer to the final year of the programme having completed the Level 7 **BSc in Multimedia Applications Development**.

### **The aim of the BSc (Hons) in Creative Computing is**

To provide students with the knowledge and practical experience of industry standard innovative tools and technologies, within the domains of technology and creative media. This enables graduates to pursue a career in both the computing and creative media industry. Ireland's globally recognised digital and creative economy has experienced significant growth in recent years. Enterprise Ireland aims to expand even further the export footprint of this growing sector, and skilled workers are required to do this. Creative Computing graduates will be qualified to fulfil the needs of this sector and many others.

The breakdown of course credits across the four years on these programmes is illustrated by the following chart.





## Academic Title

## Underwater - Original Song and Music Video with 2D Animation

## Project Areas

- Animation
- Digital Graphic Design
- Open Source

## Project Supervisor

Jacqui Woods O'Brien

The title “Underwater” is based on keeping your feelings hidden or underwater in this case. It tells the story of the protagonist hoping that today will be a good day when all of a sudden she starts thinking about her past self and how life is so much better when you are younger with no worries.

Accompanied with the song is a music video that tells the story visually of the protagonist. It incorporates 2D animation alongside live-action filming. The 2D animation will be of a stop-motion style where each frame will be hand drawn separately. The style of the animation will be a child-like drawing of a girl that becomes a personification of the thoughts and the “old friend” that the protagonist is meeting throughout the music video.



**Technologies:** Logic Pro X, ShotGrid, Adobe Premiere Pro, Adobe After Effects, Adobe Photoshop, Trello

<https://chitasjessica.wixsite.com/portfolio/about-6>

# Underwater

#41 / TL250

by Jessica Chitas



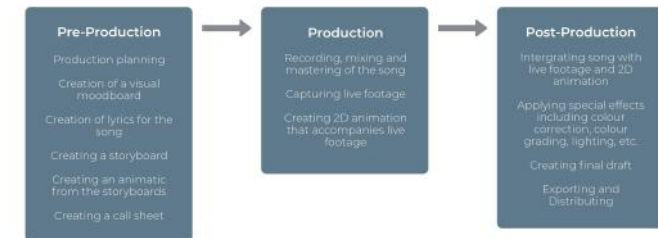
## Abstract

The title “Underwater” is based on keeping your feelings hidden or underwater in this case. You are having a good day when all of a sudden feelings such as stress and anxiety bubble up to the surface and the day turns sour. It tells the story of the protagonist who is hoping that today will be a good day. She then starts thinking about her past self and how life is so much better when you are younger with no worries. This song is very thought provoking for the listener to dig into themselves and maybe assess their own feelings and see if they relate to this song.

Accompanied with the song is a music video that tells the story visually of the protagonist. It incorporates 2D animation alongside live-action filming. The 2D animation will be of a stop-motion style where each frame will be hand drawn separately. The style of the animation will be a child-like drawing of a girl that becomes a personification of the thoughts and the “old friend” that the protagonist is meeting throughout the music video.

## Methodology

Film Production Process



## Technologies Used





#42 / TL250

# 3D Printing & Prosthetic Limbs



Academic Title

## Empowering Access to Prostheses with 3D Printing

Project Areas

- Open Source
- Personal Independent Project

Project Supervisor

Patrick McInerney

by Mark Flynn

The basis of the project is to show how 3D printing technology has made the availability and creation of limb-based prostheses more accessible to the public. The project’s primary goal is to create a multi-tool attachment for an open-source prosthetic designed in Fusion 360. The report has a brief history of prosthetics, an overview of types of 3D printing with a focus on FDM and LCD printing, the types of materials commonly used with these types of printing, and an overview of the environmental impacts associated with these materials.

**Empowering Access to Prostheses with 3D Printing**  
3D Printing & Prosthetic Limbs

**Technologies**

- Cura
- Fusion 360
- Chitubox

**Abstract**

The basis of the project is to show how 3D printing technology has made the availability and creation of limb-based prostheses more accessible to the public. The projects primary goal is to create a multi-tool attachment for an open-source prosthetic designed in Fusion 360.

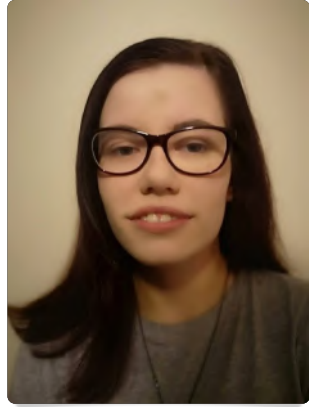
The report has a brief history of prosthetics, an overview of types of 3D printing with a focus on FDM and LCD printing, the types of materials commonly used with these types of printing, and an overview of the environmental impacts associated with these materials.

Mark Flynn  
BSc (Hons) in Creative Computing  
Department of Computing & Mathematics



**Technologies:** Fusion 360, UltiMaker Cura, Chitubox, Ender 3 V2 Neo, Elegoo Mars 3, Sovol SV07

<https://markflynn20025214.wixsite.com/fyp-showcase>



## The Witches Outcast

#43 / TL250

Academic Title

### An Animated Short Story Using 3D and 2D

Project Areas

- Animation
- Media Development and Production

Project Supervisor

Jacqui Woods O'Brien

by Lauryn Gore

**The Witches Outcast**  
An Animated Short Story Using 3D and 2D

The Witches Outcast is a story about a girl struggling through school, learning in a school full of jealousy and insecurities festering among the students. The school quickly becomes a battleground of sabotage and deceit. She will have to navigate deception to overcome the challenges to come.

Told from the perspective of a witch reminiscing on her past, it explores the themes of growing up, self-improvement, and doubt using both 2D and 3D animation techniques. The two techniques, between 2D and 3D, bring to life the world steeped in the magic wonder and the reality that lies beneath the surface.

**Technologies used:**

Ae Pr M S  
AVA SG

**Methodology:**

Pre-Production	Production	Post Production
<ul style="list-style-type: none"> <li>• Script</li> <li>• Concept Art</li> <li>• Story Board</li> <li>• Animatic</li> </ul>	<ul style="list-style-type: none"> <li>• Animation</li> <li>• Audio Recording</li> </ul>	<ul style="list-style-type: none"> <li>• Timeline</li> <li>• Music</li> <li>• Effects</li> <li>• Render</li> </ul>

Lauryn Gore,  
BSc (Hons) in Creative Computing,  
Department of Computing and Maths,  
SETU Waterford

The Witches Outcast is a primarily 2D animated short story with a 3D prologue. It is a story about a girl struggling through school, learning in a school full of jealousy and insecurities festering among the students. The school quickly becomes a battleground of sabotage and deceit. She will have to navigate every trap, and every deception to overcome the challenges to come.

Told from the perspective of the witch reminiscing on her past, The Witches Outcast explores the themes of growing up, self-improvement, and doubt using both 2D and 3D animation techniques. The two techniques, between 2D and 3D, bring to life the world steeped in the magic wonder and the reality that lies beneath the surface.

**Technologies:** Procreate, Adobe Premiere Pro, Adobe After Effects

<https://lauryngore.github.io>





## Academic Title

## 2D-animated Lyric Video with Artist Interview

## Project Areas

- Animation
- Digital Graphic Design

## Project Supervisor

Clodagh Power

# Runnin

#44 / TL250

by Mia Gough

A 2D-animated lyric video for the song Runnin', which will be featured on an upcoming album, written and produced by my brother. The song is about two minutes long and can be described as upbeat and fast paced. This lyric video should be suitable for upload across various social media platforms, so that it can be used as promotional material for the song and album. This project also involves an artist interview, where the artist will answer questions about the song, lyrics and his music career in general for a more in-depth perspective of the music making process.



**Technologies:** Adobe Animate, Adobe Illustrator, Adobe Premiere Pro, Adobe After Effects, Procreate

<https://goughmia.wixsite.com/runnin>

**RUNNIN'**  
2D ANIMATED LYRIC VIDEO AND ARTIST INTERVIEW

**PROJECT DESCRIPTION**  
A 2D-animated lyric video for the song Runnin', which will be featured on an upcoming album, written and produced by my brother. The song is about two minutes long and can be described as upbeat and fast paced. The story I have created involves a young man running through a city as though he is trying to run away from the thoughts in his mind and blow off some steam. This lyric video should be suitable for upload across various social media platforms, allowing it to be used as promotional material for the song and album.

In addition to this, I have filmed an artist interview as a separate video. For this, I have sat down with my brother and asked him questions about the song, lyrics and his music career in general for a more in-depth perspective of the music making process.

**TECHNOLOGIES**  
Ai An Pr Ae

**METHODOLOGY**

**Pre-Production**  
Idea - Concept Art - Initial Sketches - Storyboard - Animatic

**Production**  
Character Creation - Character Animation - Background creation - Film Live Footage

**Post-Production**  
Compiling - Editing

Mia Gough (20093073)  
BSc (Hons) in Creative Computing  
Department of Computing and Mathematics

SE TU  
South East Technological University



# Ascend

#45 / TL250

Academic Title

## Exploring Gameplay Mechanics in a Third-person Action-adventure Game Developed in Unreal Engine 5

5

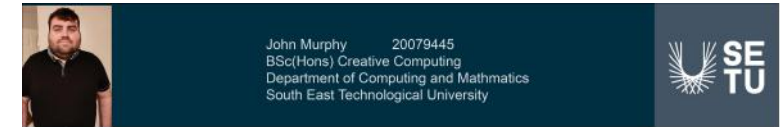
by John Murphy

Project Areas

- Game Development
- Media Development and Production
- Software Development: (Back End / Core / Front End)

Project Supervisor

Patrick McInerney



Game Concept:

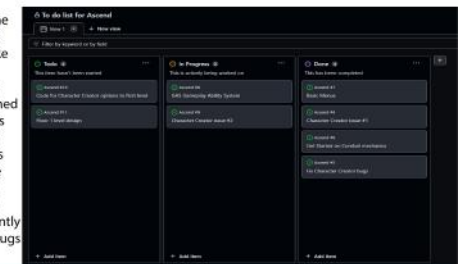
Ascend is an action role playing game set in a fantasy world, where the world has been thrown into chaos by evil deities shattering the world. The player is one of the selected climbers to climb one of the towers erected by the god like beings. The towers are full of danger and mystery because it has taken parts of world into it, they might not be explored or known parts of world. Another thing the player will come across is that life for people dragged into the tower has not stopped, wars and grudges continue in the tower and players will have to navigate these obstacles alongside hunting down the floor boss and progressing up the tower.



The image to the left is a screenshot from the character creator, where you can customize your character in a number of ways, from changing your hair colour to what your hair looks like. When you hit the Create button at the end you jump straight into the first floor of the game with your custom character.

Development Methodology:

To the right is a screenshot from my sprints from the project option in github, I have found Github to be great throughout this project mainly for reasons like this. How it has easily provided me a way to keep track of my tasks, what needs to be done and what has been done. Through a module in college I learned about Agile development methodology which uses an iterative and flexible approach to development. Personally I love this approach as it so flexible in its approach leaving you with a lot of freedom and the iterative approach in my opinion is great for game development as it makes it easy to catch bugs and problems quickly to make sure you are able to constantly make progress instead of being stuck looking for bugs at a later point.



This project tests my design and directing skills in game design. The aim is a fully functioning, visually appealing, compelling story with fun game mechanics. I'll use Unreal Engine 5 for game development and Maya for personal assets. The vision I have is a third-person action RPG set in a fantasy world, where Evil deity-like beings have descended, creating a 'game' of climbing magical towers. Beyond this, they farm the life essence of those drawn into the tower. The player, a new victim, discovers an unexpected ally – a voice guiding and warning against the tower master.



Technologies: Unreal engine 5, Maya 2024, Github

<https://20079445.wixsite.com/john-murphy-project>

#46 / TL250



# AmpleMart

Academic Title

## Website for Selling Refurbished Electronic Gadgets

Project Areas

- Database and Analytics
- Software Development: (Back End / Front End / Web)

Project Supervisor

Sonya Hogan

by Binu Peter

This project aims at developing an e-commerce website, Amplemart, specializing in selling refurbished electronic devices. These items have been damaged during the production or shipping process and subsequently fixed.

The website is built using the MERN stack - a whole stack of technologies including MongoDB, Express, React, and Node.js from the basic level or scratch. The website will feature a full-featured shopping cart along with integrated online payment methods such as PayPal and online debit and credit payment methods.



**Technologies:** React JS, nodeJS, Express, Mongoddb, Redux, Github

<https://amplemartlandingpage.my.canva.site/home>

#47 / TL250

# Gracie Massage



Academic Title

## Web Application with Booking System and Shopping Cart for a Small Start-up Massage Business

Project Areas

- Software Development: (Back End / Front End / Web)

Project Supervisor

Deirdre O’Halloran

by Sarah Scanlon

This project is a website for a local business - featuring an online booking system and integrated Google APIs for maps and reviews. A shopping cart was implemented for purchasing essential oil blends, while a new members-only section offers exclusive perks to subscribers. Developed using IntelliJ, employing HTML, CSS, and JavaScript, and ensuring responsiveness with the Semantic UI framework. Firebase was used for hosting and authentication management, along with product database management. Integration of the Fresha app further streamlined appointment bookings, and gift voucher purchases.

The brochure features a teal background with a white header containing the project title and a small portrait of Sarah Scanlon. The main content is divided into several sections: an abstract, technologies used, languages, system architecture, methodology, and contact information. The abstract describes the project as an interactive website for a small business, developed using IntelliJ, HTML, CSS, and JavaScript, with a Semantic UI framework. It mentions the use of Firebase for hosting and authentication, and the Fresha app for appointment bookings. The technologies used section lists Firebase, Fresha, IntelliJ Idea, HTML, CSS, JavaScript, and Semantic UI. The languages section lists HTML, CSS, JavaScript, and Semantic UI. The system architecture section shows a flowchart of the application's components, including a user, website, Firebase, bookings, members, shop, authentication, products, payments, and database. The methodology section describes the Agile methodology used, mentioning Trello and GitHub. The contact information section includes Sarah Scanlon's name, degree, and department, along with a QR code and the SE TU logo.



**Technologies:** IntelliJ, HTML, JavaScript, CSS, Semantic UI, Firebase

<https://scnlshr.wixsite.com/sarah-scanlon-fyp>



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## ***BSc (Hons) in Information Technology Management***

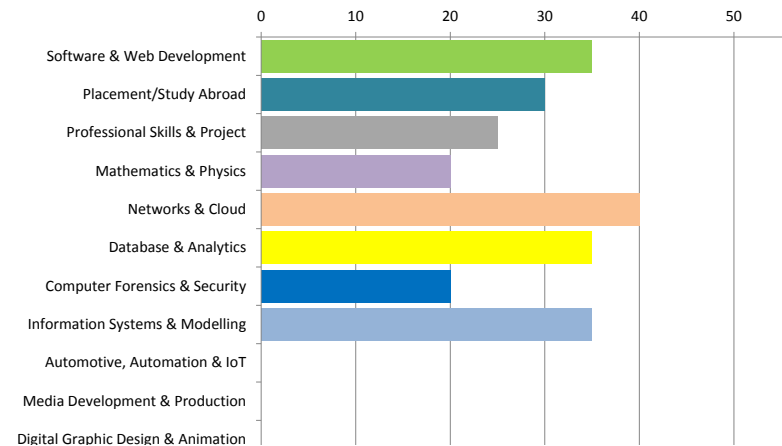
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The **BSc (Hons) in Information Technology Management** is a one-year add-on to the **BSc in Information Technology**. Across the four years of the programmes there is an emphasis on developing strong networking and cloud computing skills allied to a core of database and information systems knowledge.

### **The aim of the BSc (Hons) in Information Technology Management is**

to provide graduates with a focus on the integration of heterogeneous computer systems and the management of various ICT services to support organisations to use diverse types of technology effectively and efficiently. It also aims to provide graduates with the knowledge and skills to handle and transmit data in a secure and safe manner across different types of networks.

The breakdown of course credits across the four years on these programmes is illustrated by the following chart.



A distinctive feature of this programme is that the final year project is worth 10 credits. There is also an emphasis on data-related and research-led projects as distinct from development-type projects.



Academic Title

## Assessing the Impact of Data Masking Techniques on Healthcare Database Systems Performance

Project Areas

- Database and Analytics

Project Supervisor

Sonya Hogan

#37 / TL225

by Nazar Biletskyy

My project is a comprehensive study on the impact of data masking on healthcare database performance, balancing patient privacy and efficiency. As digital healthcare services increase, so does the risk of data breaches, highlighting the need for effective data protection via data masking. My Research project focuses on implementing dynamic data masking(DDM) in MongoDB, assessing and comparing how different techniques affect performance. My goal is to determine if MongoDB can protect patient information without hindering the functionality of healthcare database systems.

**INCognito INFO**  
ASSESSING THE IMPACT OF DATA MASKING TECHNIQUES ON HEALTHCARE DATABASE SYSTEMS PERFORMANCE

**Overview**  
MY PROJECT IS A COMPREHENSIVE STUDY ON THE IMPACT OF DATA MASKING ON THE PERFORMANCE OF HEALTHCARE DATABASES, WHICH EMPHASIZES THE BALANCE BETWEEN MAINTAINING PATIENT DATA PRIVACY AND ENSURING THAT THE DATABASE OPERATES EFFICIENTLY. AS HEALTHCARE SERVICES BECOME MORE AND MORE DIGITALIZED, CAUSING THE RISK OF DATA BREACHES TO INCREASE, IT HIGHLIGHTS THE NEED FOR EFFECTIVE DATA PROTECTION USING STRATEGIES LIKE DATA MASKING. MY RESEARCH PROJECT FOCUSES ON IMPLEMENTING DYNAMIC DATA MASKING (DDM) USING MONGODB, ASSESSING AND COMPARING HOW USING DIFFERENT DATA MASKING TECHNIQUES IN MONGODB AFFECT DATABASE PERFORMANCE BY GENERATING SYNTHETIC HEALTHCARE DATA THROUGH MOCKAROO, CREATING A DUMMY WEBSITE TO BROWSE THE HEALTHCARE DATABASE AS DIFFERENT USERS WITH DIFFERENT PERMISSIONS (E.G. DOCTOR AND RECEPTIONIST), AND USING PERFORMANCE METRICS LIKE BROWSER DEVELOPER TOOLS TO ASSESS THE IMPACT OF DATA MASKING ON QUERY RESPONSE TIMES. MY PROJECT AIMS TO ILLUSTRATE IF MONGODB CAN ACHIEVE SAFEGUARDING PATIENT INFORMATION WITHOUT SIGNIFICANTLY HINDERING THE FUNCTIONALITY OF HEALTHCARE DATABASES.

**Research Question**  
HOW DO DIFFERENT DATA MASKING TECHNIQUES AFFECT THE PERFORMANCE OF HEALTHCARE DATABASE SYSTEMS?

**Technologies**  
C++, HTML, JS, AWS, mongoDB, mongoDB Atlas

**Methodology**  
Generate Fake Healthcare Data for Database, Create Dummy Healthcare Database, Masked API Data, Mock Website Data, Masking Techniques to Mask Sensitive Data, Query Database Using MongoDB Atlas, Analyze Results Using MongoDB Atlas, Compare Performance Using API, Create a Website to Access the Health Database, Analyze Results Using MongoDB Atlas, Analyze Results Using API.

**Top 5 Most Used Database Management Systems In Healthcare**

- ORACLE RDBMS
- IBMDB2
- IBM INFORMIX
- ALTBASE
- IMPROVADO

Nazar Biletskyy | BSC HONS IN INFORMATION TECHNOLOGY | DEPARTMENT OF COMPUTING & MATHS | SOUTH EAST TECHNOLOGICAL UNIVERSITY WATERFORD



Technologies: MongoDB, VsCode, AWS

<https://nazarbill.github.io/Landing-Page/>







Academic Title

## 2D Platformer Game with Leader Board and Multiplayer Cooperative Play Functionality

Project Areas

- Computer Security
- Information Systems and Modelling
- Internet of Things

Project Supervisor

Rahul Mhapsekar

For my FYP I wanted to design and create a simple platform game where players would compete over how much of a high score they can achieve and how quickly they can complete the level. The player's main objective of my game is collecting as much score as possible while simultaneously attempting to reach the end of the level as quickly as possible. The data from the players, such as their scores and completion times, will then be uploaded to a database, where players can then compare and review their statistics.



**Technologies:** Unity, C#, Databases, SQL, GitHub, Visual Studio Code

<https://20090657.wixsite.com/leons-fyp-project>

# Grapple Dash

#38 / TL225

by Leon Chapman

**GRAPPLE DASH**

**PLAYER OBJECTIVES:**  
THE PLAYER MUST NAVIGATE THEIR WAY TO THE END OF THE LEVEL WHILE COLLECTING CHERRIES (/SCORE) AS FAST AS POSSIBLE WHILE MAKING BEST USE OF THEIR GRAPPLING HOOK

**CREATED BY:**  
LEON CHAPMAN

**PROJECT ABSTRACT:**  
For my FYP I wanted to design and create a simple platform game where players would compete over their a high scores, seeing if they can achieve and how quickly they can complete the level. My aim for this project was to learn more about project managment and learn more about the stages in a software development cycle.

**UNIQUE FEATURES OF THE GAME:**

- EASY TO PLAY
- GRAPPLING HOOK MECHANIC
- LEADERBOARD STATISTICS FOR USER RUNS

Technolges Used:



# The Chronicles of Carlson

Not presenting

Academic Title

## The Chronicles of Carlson Cooking Website

Project Areas

- Software Development: (Front End)

Project Supervisor

Richie Lyng

by Faith Iwere

This Project is about showcasing the creativity of cooking and the crafted work of one’s interest in Cooking. The Chronicles of Carlson cooking portfolio is a cooking website about he’s artist cooking and bringing he’s cooking skills to life.

This Project is about taking on a role as a web developer and creating a website for a client who is interested in cooking, my client will like to have a website about himself, his cooking skills and recipes. My client will like to share he’s craft cooking and express he’s personality as a individual.

This website is will not only show my clients creative work, but it will give inspiration to other individuals to take cooking as a hobby and a great career choice.

**THE CHRONICLES OF CARLSON**

**ABSTRACT**

This Project is about taking on a role as a web developer and creating a website for a client who is interested in cooking, my client will like to have a website about himself, his cooking skills and recipes. My client will like to share he's craft cooking and express he's personality as a individual. This website is will not only show my clients creative work, but it will give inspiration to other individuals to take cooking as a hobby and a great career choice.

**METHODOLOGY**

Agile Software Development is a software methodology that focus on producing high quality application using constant feedback from their client, to alter and change for the client satisfaction. As a web developer using Agile methodology, I will be in constant communication with my client about the webstte status and will alter any changes for my client needs

**TECHNOLOGY AND FEATURES**



**Technologies:** JavaScript, Visual Studio Code, Semantic UI, HTML and CSS

<https://200904236.wixsite.com/faithlanding-page>



# Experimentation with Transkribus

#39 / TL225

Academic Title

## Experimentation with Transkribus, Handwritten Text and AI Training

Project Areas

- Artificial Intelligence
- Personal Independent Project
- Work Based Project
- Software Development: (Web)

Project Supervisor

Brenda O’Neill

by Mahfous Karimu

The aim of my project is to implement my system diagram into the real world and then send it off to the repository of Ireland, my database created will outline the mandatory fields that are needed for the metadata core template, these will be the fields on my database, and I will have a user login before the user can access these fields. This will be used by transcribing documents using transkribus, I will use this software to transcribe ancient transcript into readable text, when this is complete and proofread, it will be used in my database and catalogued using the mandatory fields.

*Experimentation with Transkribus, Handwritten and AI Training*

**Abstract**  
The aim of this project for this semester is to implement my system diagram into the real world and then send it off to the repository of Ireland. I will then create a database outlining the mandatory fields that are needed for the metadata core template. these will be the fields on my database, and I will have a user login before the user can access these fields. This is a basic outline of what I will implement I will go into further detail throughout the report.

**System Diagram**  
A detailed flowchart showing the system architecture, including components like User, Admin, and various data flows.

**Agile Methodology**  
I will use the agile method because the waterfall method is a process which is fixed and doesn't allow you to change the process throughout the project. as for the agile method. it allows you to change the process as you are progressing in each step. get feedback and allows you to go back if there is any changes. for my project I will have to change the process numerous times and have mistakes and because of the agile method I will be able to go back and fix the errors. this is why the agile method is perfect for my project.

**Key Technologies**  
Logos for SE TU, Transkribus, and other tools used in the project.

**Key Features**

- user can register
- User can log in
- user can add metadata fields to the database
- user can add data
- user can edit/delete data

**Technologies:** transkribus, xxmp, myphpadmin, vs code



<https://mahfous17k.wixsite.com/final-year-project>



Academic Title

## Creation and Integration of a Database and Visualisation for Homeless Shelters in a City

Project Areas

- Database and Analytics

Project Supervisor

Patrick McInerney

Homelessness in Ireland, especially in urban areas like Dublin, is a critical social issue where the homeless population grapples with challenges like access to shelters, coordination among service providers, and efficient resource allocation. The development of an integrated database and visualization system can significantly address these problems. This innovative approach aims to streamline the process of identifying available resources, improving coordination between agencies, and ensuring that aid reaches those in need more effectively.



**Technologies:** Power BI, SQL, visual studio code,

<https://osasolague1.wixsite.com/my-site-1>

Not presenting

by **Osamudimen Olague**

### Integrated Database and Visualization for Homeless Shelters in a City

**INTRODUCTION**  
Homelessness in Ireland is a pressing social issue that demands some sort of solution, in urban cities like Dublin the homeless population often faces challenges related to access, coordination, and resource allocation. By developing an integrated database and visualization system I feel this will fix this problem

**Inspiration/ Aim**  
What inspired me to do this is seeing homeless people in Dublin and looking up on how the government gets their information on every shelter in Dublin I believed I could make it more efficient people would be able to come in give their details and a card would be printed for them with a Qr code only accessed by the client app

**Agile methodology**  
Agile development relies on a set of established rules and guidelines that can be customized for each unique project. It emphasizes iterative and incremental processes.  
  
I opted for this methodology due to the uncertainties surrounding my work during its initial development stage. It allowed for reassessment my work. By breaking down the project into manageable sections.

**TECHNOLOGIES USED**

Osamudiamen Olague,20084453, BSc(H) in Information Technology Management, SETU



Academic Title

## Creation of Cataloguing Tool for Special Collections

Project Areas

- DevOps
- Software Development: (Web)

Project Supervisor

Brenda O'Neill

The Michael J. E. Cooley Collection at South East Technological University serves as a gateway to exploring the intellectual legacy of Professor Cooley. This meticulously curated archive encompasses a wide array of materials, including research papers, lecture notes, and personal artifacts that collectively chronicle the academic journey of Michael Cooley. The collection offers a unique opportunity to investigate the profound impact of his work in the field of Human-Centred Systems and to trace the evolution of his ideas. Designed as a dynamic platform, the collection allows librarians to systematically catalogue and showcase the contributions of Michael Cooley, thus preserving and promoting his academic heritage.



**Technologies:** MongoDB, HTML, CSS, Dublin Core,

<https://20094277.wixsite.com/my-site-2>

# Michael Cooley Collection

#40 / TL225

by Daniels Zabello

**Key Technologies**

**Description of the Project**

The genesis of this project was a serendipitous blend of inspiration and necessity. It commenced when the university library pinpointed the need to document the extensive collection of Michael Cooley. This recognition catalysed the concept of developing a digital platform. Motivated by the potential to make a meaningful impact, I embarked on creating a website that enables users to seamlessly explore Michael Cooley's collection.

**Account Creation**

- Sign in functionality
- Catalogue items into a collection
- Search functionality

**AGILE**

- Iterative development for continuous improvement.
- Emphasis on collaboration and customer feedback.
- Adaptive planning for early and responsive delivery.

**Query Mongo DB**

**Creation of Cataloguing Tool for Special Collections**

**The Michael Cooley Collection**

Made by Daniels Zabello

# BSc (Hons) in Software Systems Development

This programme is designed to equip students with the skillset required to work in an array of computing roles in industry. Students will develop secure software with the most modern methods of software technology for all areas of application, and they will have the ability to analyse, select, and utilise appropriate emerging technologies for the development of a software solution. They will have the ability to store, manage and mine data for businesses, and to develop systems to enable organisations to extract value from such data.

Companies in Ireland are seeking software developers who possess multi-disciplinary skills in the areas of Business, Psychology or Languages. With this in mind students will have the option to study those areas as elective option from year 2.

In year 3 there is an opportunity for students to complete work placement or study abroad. Studying abroad has become a popular choice for all our students especially those who have chosen the European language elective.

Subject Groups	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8	
Software & Web Development	Programming Fundamentals 1	Programming Fundamentals 2	Data Structures & Algorithms 1	Software Development Tools	Flexible Semester Placement / Study Abroad / Voluntary Organisation Project	Mobile App Development 1	Agile Software Practice	Mobile App Development 2	
	Website Development 1	Website Development 2	User Experience	Web App Development 1		Web App Development 2	Distributed Systems		
Database, IS & Modelling	Systems Analysis Design	Intro to Software Engineering	Database Fundamentals	Database Systems		NoSQL Databases			
		Business Information Systems	Enterprise Applications			Digital Transformation and IS	Enterprise Systems Architecture		
Data Science	Mathematics Fundamentals	Statistical Analysis				Further Statistics	Data Science in Practice	Data Science Essentials	
								Artificial Intelligence	
Computer Systems & Security	Computer Systems 1	Computer Systems 2	Computer Networks	Intro to Computer Security			Automated Cloud Services		Application Security
Professional Studies	Communication Skills			Professional Practice				Project 1	Project 2 (10 credit)
Technology Commercialisation			Creative Problem Solving	Integrated Marketing		Technology Entrepreneurship	Project Management	Technology Commercialisation	
Psychology			Introduction to Psychology Solving	Development Psychology		Introduction to Social Psychology	Intro to Cognition & Perception	Management Psychology	
French			French B1.3	French B1.4		Intercultural Bus Context	French B2.1	French B2.2	
German			German B1.3	German B1.4		Intercultural Bus Context	German B2.1	German B2.2	

Pick any 3 modules in semester 8

#48 / TL235

# First Time Fit-humble Beginnings for Y



Academic Title

## A Fitness Web Application Integrating Google Fitness Store API for Personalized User Insights

Project Areas

- Database and Analytics
- Software Development: (Back End / Core / Front End / Web)

Project Supervisor  
Richie Lyng

by **Jamie Conlon**

The goal of this project is to utilize a fitness API to provide users with detailed information on their fitness progress and manage their workouts. I am creating a Web Application that will involve pulling data directly from an API in order to display this data in a user-friendly way and so it can be used effectively to assist users with tracking and managing their workouts. The idea is to provide a product that can act as a tool for fitness enthusiasts and newcomers to this area. The project will provide functionality for users to log in and out and have the ability to read and favourite workout plans provided by the app. They will be able to create a personal profile that will share their workout progress and will be able to search and add friends to share these accomplishments with.

The brochure template includes the following sections:

- Project Title:** First Time Fit - A Fitness Web Application Integrating Google Fitness Store API for Personalized User Insights
- Project Description:** This project utilizes the Google Fit REST API to provide users with detailed information on their fitness progress and manage their workouts. The project is a full stack website that involves pulling data directly from the API in order to display this data in a user-friendly way so it can be used effectively to assist users with tracking and managing their workouts. Users can create a personal profile that will share their workout progress. Users can search and add friends to share these accomplishments with and build streaks, in order to encourage newcomers on their fitness journey.
- System Diagram:** A flowchart showing the interaction between a mobile app, a web application, a database, and the Google Fit API.
- Methodology:** The framework used for this project was an adapted version of SCRUM which involves core principles of agile allowing me to breakdown the workflow into small manageable sprints to keep my work ethic consistent throughout. Includes a SCRUM METHODOLOGY diagram.
- Key Technologies:** The ChartJS library, MongoDB, Express JS, Google Fit API, node, Node JS, and React JS.
- Footer:** Jamie Conlon 20085217@gmail.wit.ie, BSc (Hons) In Software Systems Development, Department of Computing and Mathematics, School of Science and Computing, South East Technological University.



**Technologies:** React, MongoDB, NodeJS, Javascript, ChartJS, Google Console, FitnessAPI

<https://jamconn.github.io/>



# Sealed

#49 / TL235

Academic Title

## Encryption Messaging Application

Project Areas

- Database and Analytics
- Software Development: (Mobile Native)

Project Supervisor

Catherine Fitzpatrick

by William Crowe

In this project, I will develop a secure messaging application prioritizing confidentiality, integrity, and availability. This application is aimed for individuals, ethical hackers, and law enforcement. The project is inspired by previous messaging applications. I will be utilizing an agile approach with Java, Android Studio, Google Firebase, and RSA/ChaCha20 encryption, the goal is to establish end-to-end encryption, making unauthorized access challenging. The design focuses on user-friendly interfaces, with a plan for account registration, messaging, and encryption. The project allows for collaboration tools like Trello and GitHub for efficient project management. The second semester will see key implementations, providing a secure application in response to the worrying demand for secur

**Sealed**  
Encryption Messaging Application

**Abstract**

In this project, I will develop a secure messaging application prioritizing confidentiality, integrity, and availability. This application is aimed for individuals, ethical hackers, and law enforcement. The project is inspired by previous messaging applications. I will be utilizing an agile approach with Java, Android Studio, Google Firebase, and RSA/ChaCha20 encryption, the goal is to establish end-to-end encryption, making unauthorized access challenging. The design focuses on user-friendly interfaces, with a plan for account registration, messaging, and encryption. The project allows for collaboration tools like Trello and GitHub for efficient project management. The second semester will see key implementations, providing a secure application in response to the worrying demand for security.

**Features**

- Search User
- If character are equal to the same characters in the Firebase Database, then all usernames will display with corresponding data.
- Add users after this and wait for them to accept invitation.
- Max character limit
- Max file size limit
- User will be able to send voice notes.
- Users will be able to communicate almost instantly due to Firebase Realtime Database.
- At the top of chat page, you will see the username of the person you are communicating with.
- Once message is sent it is encrypted.

**Methodology**

**Application Process**

**Tools**

- Trello
- GitHub
- Java
- Android Studio
- Emulators

Liam Crowe - 20093470  
Software Systems Development  
Dept. of Computing and Mathematics



**Technologies:** Java, Google Firebase, Android Studio, Trello, Emulators

<https://liamcrowe2502.wixsite.com/sealed>





#50 / TL235



# Family Trip

Academic Title

## Android Based Social Media Holiday Planning Application

Project Areas

- Software Development: (Mobile Native)

Project Supervisor

Thakshila Wedage

by **Conor Grace**

Family Trip is an android based social media application specifically designed for the planning and sharing of holiday-related posts. Usually, when people decide to do some research on potential holidays, they plan them off travel blogs, by word of mouth, articles from tourism boards, or from checking what destinations are highly rated in google maps. Using Family Trip, users will be able to view other people’s holidays that were shared to gather information and use their experiences to efficiently plan their own, whether it be the cost of the holiday, or an efficient day by day plan.

**Family Trip**  
An Android Based Holiday Planning App

**Abstract**  
Family Trip is a mobile based social media application that allows the user to upload details of their holidays to the app, as well plan out their holiday. Created with a mindset of improving the way that people plan their holidays, with the goal of utilising the experiences of everyone. Powered using Google Maps API, to select specific locations for users to view. Utilising Google Firebase as the cloud, data will be consistent across the userbase.

**Key Features**

- User Friendly interface
- Utilises Firebase Authentication for sign in and login
- Utilises Firebase Storage for storing images
- Utilises Firestore Database to store User and Trip data
- Google Maps API to select locations on the map
- Advanced filtering

**Methodologies**

AGILE METHODOLOGY

The Agile Methodology prioritised an iterative development style allowing me to work on this in sprints, which allowed me to develop features in a timely manner and in an effective manner

**Technologies**

Technologies used: Kotlin, android studio, Firebase, GitHub, Google Maps.

Conor Grace  
BSc Hons in Software Systems Development



**Technologies:** Android Studio, Github, Kotlin, Firebase Authentication, Firebase Storage

<https://cjamesgrace.wixsite.com/familytripproject>



# Dog Breed Identifier

#51 / TL235

Academic Title

## Web App for Dog Breed Identification Using Machine Learning

Project Areas

- Software Development: (Back End / Core / Front End / Web)

Project Supervisor

Michael McMahon

by Dominik Kawka

The project goal is to build a Machine Learning model capable of differentiating between dog breeds. The user is able to upload photos of their dog via web app, which will then be fed into the model, returning the predicted breed, along with extra info.

If the pred. breed is wrong, the user may submit feedback. Users can view their previous submissions.

The project follows an agile-scrum workflow, breaking the project down into 2 week sprints, using Gantt charts as a general outline of the entire development process.

Find out more about your pets, and characteristics of their breed.

**Web App for Dog Breed Identification using Machine Learning**

**Dog Breed Identifier**

**Project Abstract**

A Machine Learning Model capable of differentiating between dog breeds. Users can upload photos of the dog via web app, which the model will analyse and return the result, along with other dog facts.

If the predicted breed is incorrect, users can submit the correct breed. The submission images are saved and will be used to further train the model. Users can view their previous submissions if they are logged in.

**Methodology**

The project is divided into 2-week sprints. Before each sprint, I examine the project state and set a list of clear objectives to complete before the sprint. Each task is given a time estimation, which helps with the pacing and planning of the sprint.

**System Diagram**

The arrows indicate the flow of data in the project. The Front-End and Back-End are inside containers, which provide a consistent environment, and makes deployment and scalability easier to achieve.

**Home Page Preview**

**Key Technologies**

React	Python
TypeScript	FastAPI
Vite	TensorFlow
MongoDB	Docker

Dominik Kawka (20093701) | BSc (Hons) Software Systems Development  
Department of Computing & Mathematics | South East Technological University



**Technologies:** Python, TensorFlow, FastAPI, React, MongoDB, Vite.js, Docker

<https://dominikkawka.github.io/>



#52 / TL235

# ReactStock: Dynamic Inventory Management



Academic Title

## Web Application-based Inventory Stock Management System

Project Areas

- Software Development: (Back End / Front End)

Project Supervisor

Lizy Abraham

by Maciej Marchel

**web application-based inventory stock management system**

**ReactStock: Dynamic Inventory Management**

**Abstract**

My project is a web application inventory stock management system.

The aim of the application is to provide a cheap, reliable and modular application for inventory tracking and managing. This is achieved with the use of modern technologies such as Node.JS, React.JS and a NoSQL database hosted through MongoDB.

**System Architecture**

**Methodology**

As a solo developer for this project Agile methodology offers iterative and adaptable workflows allowing me to quickly be able to respond to any projects requirements that change. Agile puts emphasis on feedback and continuous improvements to ensure that the project will align with the evolving goals.

Agile allows for features to be pushed through in increments providing measurable progress and lowering risks. Using Agile I can also prioritize tasks and focus on them and make well-informed decisions quicker.

**Methodology Diagram**

**Technologies**

- React.JS: A JavaScript library used for building interfaces, simplifies the process of creating interactive UI components. Component based architecture enables developers to build a re-usable modular UI elements faster and be more maintainable.
- Node.JS: server-side JavaScript for high-performance applications. This runtime environment allows developers to build scalable and efficient network applications by utilizing a non-blocking event driven architecture.
- NoSQL: A database approach that allows flexible and scalable solutions having the ability to handle diverse data types and volumes with ease without constraints of traditional relational databases. My project is using MongoDB to host the database.

Maciej Marchel,  
BSc (Hons) in Software Systems Development, Department of Computing and Mathematics,  
School of Science and Computing, SETU

My project using technologies such as Node.js, MongoDB, and React.js aims to achieve the goal of effective inventory tracking and control using a web application to do so. React.js is able to improve the user experience to guarantee a dynamic and responsive user interface for easy use and learning. Node.js is used as the backend and allows for the server-side logic and a smooth database connectivity. Using MongoDB, a NoSQL database it is able to provide an adaptable and scalable data storage. With a easy to use web interface this web app provides a stable and scalable platform for management.

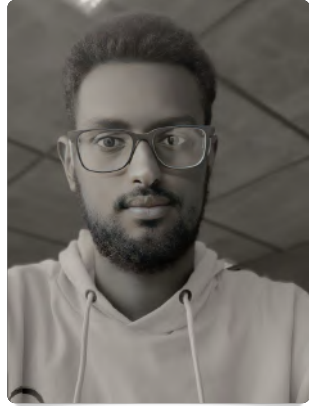


**Technologies:** React.js, Node, js, MongoDB

<https://maciejmarchel14.wixsite.com/fianl-year-project-1>

#53 / TL235

# Hydration Mate: Your Personal Hydration



Academic Title

## Hydration Mate: An Android Application for Personalized Water Intake Tracking

Project Areas

- Software Development: (Mobile Native)

Project Supervisor

Muhammad Iftikhar Umrani

by Maxamed Maxamed

**HYDRATION -MATE**

An Android Application for Personalized Water Intake Tracking.  
Your Personal Hydration Assistant.



**Abstract**

Hydration Mate is a user-friendly Android application designed to help individuals improve their health by tracking and promoting daily water intake. Serving as a helpful hydration companion, the app sends reminders to encourage regular water consumption and keeps a detailed record of hydration habits. Users can easily track their progress through simple charts, gaining insights into their hydration levels.

**Agile Methodology**

The development process follows the Agile Methodology, which emphasises an iterative approach to improve and be flexible continuously. Using a sprint-based structure, this methodology allows systematic development, assessment, and refinement of each feature. This ensures timely delivery and excellent results. The iterative approach not only improves the overall functionality of Hydration Mate but also makes it easier to adapt to changing user needs.

**Hydration Mate -Your Wellness Companion**

Hydration Mate aims to be more than just a utility, it aspires to be a delightful companion on your journey to better health. By merging cutting-edge technology with health-conscious design, the application encourages users to make hydration as a daily habit. Join us in embracing wellness through an agile and user-centric approach, making Hydration Mate a valuable addition to your daily routine.

**Key Technologies:**



Source: <https://asana.com/resources/agile-methodology>

Maxamed Maxamed  
BSc (hons) in Software Sytems Development  
Department of Computing and Mathematics,  
School of Science and Computing  
South East Technological University



Hydration Mate is a friendly app for your phone that helps you remember to drink enough water every day. It's like a helpful buddy that reminds you to take sips and tracks how much water you drink. The app is easy to use and shows you simple charts so you can see how well you're doing. Whether you're into fitness or just want to stay healthy, Hydration Mate is here to make sure you don't forget to drink water. Let's make staying hydrated easy and fun together! Technologies key: Kotlin, Android Studio, Android native frameworks, local storage, Firebase.



**Technologies:** Kotlin, Android Studio, Android native frameworks, local storage, Firebase.

<https://maxamed-maxamed.github.io/FYP-Hydration-app-Mate/>

#54 / TL235



# Fitness Fixed

Academic Title

## A Web App Used to Filter a User’s Social Media Content and Fitness Lifestyle

Project Areas

- Cloud Computing
- Software Development: (Back End / Core / Front End / Web)

Project Supervisor

Sonya Hogan

by Fionn Moran

**Fitness Fixed**

**A Web App used to filter a user’s social media content and fitness lifestyle.**

The “Fitness Fixed” Web App’s primary function is to provide a streamlined and accurate online experience for individuals who are interested in joining, or who are already in the world of fitness.

This primary function is a feature which filters the user’s social media content, this is held on the user’s home page and resembles that of a major social media’s main feed.

The secondary functions of this web app include diet and workout plans, also based on the user’s body type, lifestyle, and goals.

**System Architecture**

Twitter API, Firebase Storage/Authentication, User & User’s Inputs, Web App, User’s Profile & Media Feed

**Key Technologies**

**Methodology**

Agile is the methodology used in this project, it was chosen over others such as the waterfall methodology, as it allows much greater flexibility, as it was needed here to allow for adjustments and delays in the development process

**Features**

- Social media filtration
- Displaying a relevant & fitness-oriented feed
- Tailored workout & meal plans

Fionn Moran - BSc (Hons) in Software Systems Development - Department of Science and Computing - South East Technological University

The “Fitness Fixed” Web App primary function is to provide a streamlined and accurate online experience for individuals who are interested in joining, or who are already in the world of fitness.

This primary function will be a feature which filters the user’s social media content, this will be held on the user’s home page and resembles that of twitter’s main feed.

The secondary functions of this web app will include diet and workout plans, also based on the user’s body type, lifestyle, and goals.



**Technologies:** JavaScript, Python, Github, Trello, Firebase

<https://github.com/fionn-moran/FitnessWebApp>



Academic Title

# Bookmark-it: Power in Self-publishing

## A Dyslexia-friendly Platform, Empowering New Authors to Self-publish and Promote Books

#55 / TL235

Project Areas

- Software Development: (Back End / Front End / Web)

Project Supervisor

Michael McMahon

by Elizabeth Neary

BookMark-It: Revolutionizing the publishing scene for new authors, this dyslexia-friendly web platform is a comprehensive hub for self-publishing, personal profile creation, book promotion, and engaging discussions. Authors retain 100% of their profits, fostering a supportive and collaborative environment. With a focus on accessibility and availability to a wide range of books, BookMark-It empowers all users, especially those with learning disabilities. BookMark-It provides authors with the opportunity to establish their unique identity and overcome the challenges of traditional publishing.

**BookMark-It: Dyslexia-Friendly Platform, Empowering New Authors to Self-publish and Promote Books**

*"Purpose & Passion in Self-Publishing"*

**Abstract**

BookMark-It is a dyslexia friendly web-platform tailored for new authors, providing a hub for self-publishing, personal profile creation, book promotion, and a partaking in insightful discussions with fellow authors fostering a collaborative environment. Here, authors have a platform to upload their work and 100% of the profits flow back to the authors, allowing them to reap the rewards of their hard work compared to other publishing platforms like Kindle Publishing, that take 70% of authors profits. The platform is designed to be dyslexia-friendly and accessible for all users and authors with learning disabilities. Users can delve into free PDF previews of books, exploring the content before deciding to purchase. It will give authors a chance to establish their identity, despite the hurdles of traditional publishing.

**System Architecture**

This system architecture integrates frontend, backend and version control components seamlessly. The frontend uses: HTML, CSS, JavaScript and OpenDyslexic for accessibility. The backend relies on Node.js, Express.js, Cloudinary for image and pdf uploading, MongoDB database and PayPal for secure transactions. VS Code manages all the code and GitHub aids in version control for collaborative development.

**Key Features**

- Content Upload:** Authors can upload cover images and pdf previews of their books, along with profile image uploading and design.
- Discussion Forums:** Engage in discussions with self-publishing authors.
- Customization & Accessibility:** OpenDyslexic text, fonts, and kids mode for better user experience.
- Favourite and Wishlists:** Users and Authors can add books to their favourites and wishlist for further purchases and reads.
- Secure Payments:** In-app payments via PayPal for security.
- Download Books:** Option to download books for offline reading.
- Book Review & Rating:** Users can review and rate books.

**Agile Methodology**

I am employing Agile Methodology coupled with SCRUM to adapt to the constant changes in my project. This approach facilitates the development of a dynamic and user-oriented platform, allowing for continuous enhancement and flexibility. By using SCRUM's iterative sprints, I can effectively manage the development of features like PayPal, Cloudinary image and PDF uploading and Database integration in BookMark-It. This not only ensures flexibility but also shows Agile's efficacy in driving progress in the Design and Prototype phases.

**Technologies**

HTML, CSS, Dys, JS, Node.js, Express, MongoDB Atlas, GitHub, PayPal, Visual Studio

**Target Audience**

BookMark-It is designed to cater to a diverse audience with a main focus on self-publishing authors grappling with both the challenges of promoting their work and learning difficulties, particularly dyslexia. The platform extends its reach to not only support authors but also engage book enthusiasts who may experience dyslexia and seek a user-friendly platform for accessing a wide range of books, whether dyslexia-friendly or in standard formats. By fostering a community where authors and readers can interact and support one another, it not only empowers self-publishing authors to reach a wider audience but also enriches the reading experience for book enthusiasts who are eager to discover new voices and perspectives. Whether users are seeking to explore new books or support new authors BookMark-It provides a welcoming space where everyone can find something to enjoy.

Elizabeth Neary 20071731 | Software Systems Development | Computing and Science | SETU Waterford



**Technologies:** HTML, CSS, Javascript, Node, Express, MongoDB, OpenDyslexic, PayPal, Github, Visual Studio

<https://lizne.github.io/>



#56 / TL235

# Giggly



Academic Title

## Social Networking Platform Facilitating Dynamic Joke Sharing and Engaging User Interaction

Project Areas

- Software Development: (Back End / Core / Front End / Mobile Native)

Project Supervisor

Rizvi Syed

by Evan Sullivan

Giggly, a Android application. Giggly prioritizes humor, interaction and and user privacy, offers features like anonymous joke sharing, verification, and allows editing profiles. The app has post and user interaction and features a search feature. Giggly uses Firebase authentication to provide real-time security, Realtime Database to store posts and user data, this allows to quickly send and receive to data. The project was created using Agile methodology with multiple sprints involved. Giggly is a lively and secure platform that offers a unique experience focused on laughter and connection.

**ABSTRACT**  
This project is derived from the researcher's experience that there was an absence in the comedy app market. This project is to develop a social media app where people can post jokes in the form of an audio recording. My first point of call is research and the market and then when I was satisfied that there is a need for this app, I developed the app through Java and Android Studio. The research finds that there was indeed a gap in the market for a good social media app solely for sharing jokes.

**TECHNOLOGIES**

**SYSTEM**

**AGILE METHODOLOGY**  
The project follows an agile development methodology, allowing for smooth and fast development and continuous integration. Agile development is a good way to build apps because it can change as the project goes on. The team (me) can get feedback from the users and make changes as needed. This makes it a good choice for projects that need to be updated regularly.



**Technologies:** Java, Android studio, Firebase Authentication, Firebase Realtime database, Firebase Storage

<https://evansullivan007.wixsite.com/giggly>

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## ***BSc (Hons) in Software Systems Practice (NUIST)***

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### **The aim of the BSc (Hons) in Software Systems Practice (NUIST) is**

to provide overarching and theoretical frameworks so that graduates will have knowledge of advanced concepts in software development methodologies and disciplines. They will be able to select appropriate paths in designing complex software or in developing computer-based systems. As individuals, they will work effectively independently, but will also experience team work, with the challenges and benefits this can offer. At the heart of the programme is an emphasis on practical development of computing skills, underpinned by a strong theoretical reasoning.

The programme aims to provide an opportunity for students who pursue three years successful education on the NUIST BSc in Software Engineering, the opportunity to complete their fourth year of education in a dedicated one-year add-on degree in SETU. On successful completion of this fourth year in SETU, the student would be awarded a BSc (Honours) in Software Systems Practice from SETU as well as a BSc in Software Engineering from NUIST.





Academic Title

## Spring Boot Powered Goods Supply Platform Management System

Project Areas

- Database and Analytics
- Software Development: (Back End / Front End / Web)

Project Supervisor

Jacqui Woods O'Brien

## Goods Galore

Not presenting

by Jiahan Chen

“Goods Galore: Spring Boot-Powered Goods Supply Platform” is aimed at re-engineering the management and distribution process of the brand suppliers by simplifying it through a centralized web platform. Within the frame of “Goods Galore,” a specialized platform devoted to brand suppliers, can allow them to upload, manage, and list their wares without competition from general B2B platform users who can also become sellers. This system can solve the inventory and logistics challenges faced by the brand suppliers.

**Goods Galore**

Technologies: Vue.js, MySQL, RabbitMQ, Docker

Methodology: AGILE (Requirements, Design, Development, Testing, Deployment, Review)

**Project Overview**

- Supply Chain Management**  
Streamline operations with integrated tools for suppliers, supermarkets, and logistics, enhancing efficiency from inventory to delivery.
- Product Data Analytics**  
Utilize data analytics to identify top-selling products, enabling targeted inventory management and sales strategies.
- User-Friendly Interface**  
Simplify complex processes with an intuitive platform designed for ease of use, ensuring smooth adoption for all users.

Goods Galore Login Page

Jiahan Chen, BSc.(Hons) Software System Practice, Department of Computing and Mathematics, School of Science, SETU



**Technologies:** Springboot, Vue.js; Kafka, Mysql, Mybatis-plus, Redis

<https://dante-cjh.github.io/fyp-goods-galore/landing%20page/>



Academic Title

## A 2D Roguelike Adventure Game on Windows Computer

Project Areas

- Game Development

Project Supervisor

Patrick McInerney

“Wasteland Odyssey” is an engaging game that combines Roguelike and collection elements to create an immersive adventure in a contaminated surface world. Players begin their journey on a floating island, where they establish their survival hub before venturing into contaminated territories. Each exploration leads players through randomly generated maps filled with challenges such as battling mutated creatures and gathering resources. Upon completion or death, players return to their survival hub, utilizing collected materials to upgrade equipment and enhance their shelter for future adventures. The target audience for “Wasteland Odyssey” includes players interested in adventure, action, and Roguelike games, as well as those drawn to pixel art aesthetics and collection elements.



**Technologies:** c#, unity, photoshop, git, dotpict, visual studio

<https://github.com/Bdeparture>

# Wasteland Odyssey

Not presenting

by Sisi Chen

**WASTELAND ODYSSEY**

sisi chen(w20095234) BS(c) Software Systems Practice  
A 2D Roguelike Adventure Game on Windows Computer

◆ **CONCEPT**

Wasteland Odyssey is a game combined with Roguelike and collection element. Players will explore a contaminated surface world through randomly generated maps. There are different events like fighting and exploration. When players finish the events, they will get valuable materials. Sometimes players meet a shop in the map, they can exchange the materials. Players can build a shelter and update their equipment by collecting the materials.

◆ **MAIN FEATURE**

- Roguelike Exploration: Players explore randomly generated maps filled with polluted creatures and events.
- Resource Collection: Gather valuable materials from events and defeated enemies to exchange at shops or use for shelter decoration and equipment upgrades.
- Survival Hub: Establish and customize a shelter as a base of operations between adventures. Permadeath Mechanic: Upon character death, return to the survival hub, losing any powerful weapons acquired but retaining collected materials.
- Pixel Art Style: Enjoy a visually appealing 2D pixel art style

◆ **METHODOLOGY**

- ◇ Game Design Phase: Identify core gameplay mechanics, objectives, and overall game concept. Create design documents outlining game mechanics, levels, characters, and story elements.
- ◇ Development Phase: Choose appropriate development tools and game engine. Implement game mechanics. Develop procedural generation algorithms for randomly generated maps. Design and integrate pixel art assets for visual elements.
- ◇ Testing Phase: Iterate on gameplay mechanics and balance based on user feedback.

◆ **TECHNOLOGY**

Visual Studio, Unity, C#, Ps, git

SE TU South East Technological University



Academic Title

## Recipe Sharing Web Application

Project Areas

- Software Development: (Mobile Hybrid)

Project Supervisor

Michael McMahon

# Recipe Web App

Not presenting

by Haoxuan Gu



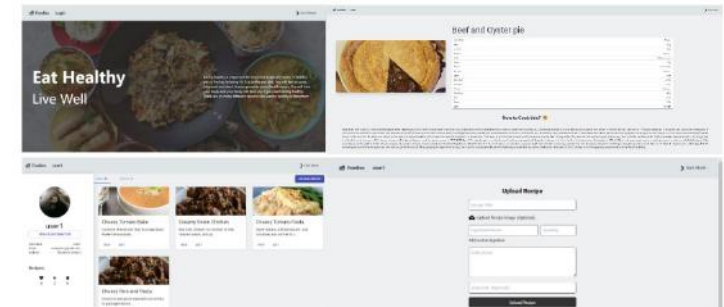
HAOXUAN GU  
20100200@mail.seu.edu.cn

## Recipe Sharing Web Application

### Content of Project

- Recipe Browsing:** Users can explore a variety of recipes, filtered by ingredients, cuisine types, and cooking difficulty levels.
- Recipe Posting:** Users can publish their own recipes, including detailed ingredient lists, step-by-step instructions, and photos.
- Social Interaction:** Users can follow other users, like and comment on their recipes, fostering a recipe-sharing community.
- Personalized Recommendations:** The app will suggest recipes based on a user's browsing history and preferences.
- User Management:** Users can edit their profiles and manage their posts and following lists.

### Interfaces



### Methodology



In my final year project, I explored various development methodologies and ultimately chose Agile development. I believe Agile offers a robust implementation of core functionalities while allowing flexibility to adapt to changes. By adopting Agile, I was able to break down the entire project into smaller iterative cycles, providing visible features at the end of each cycle and adjusting based on feedback. This approach not only alleviated development pressure but also facilitated learning new technologies and skills, especially in optimizing code and user interfaces.

TASK	SCHEDULE	Week 8 and Week 9				
		01-Aug-24	08-Aug-24	15-Aug-24	22-Aug-24	29-Aug-24
1	Research and define project scope and requirements	1	1	1	1	1
2	Design database schema and API endpoints	1	1	1	1	1
3	Develop user authentication and authorization	1	1	1	1	1
4	Implement recipe listing and filtering	1	1	1	1	1
5	Develop recipe posting and editing	1	1	1	1	1
6	Implement user profiles and social features	1	1	1	1	1
7	Final testing and deployment	1	1	1	1	1
TOTAL		7	7	7	7	7
Completion		100%	100%	100%	100%	100%

### Technologies



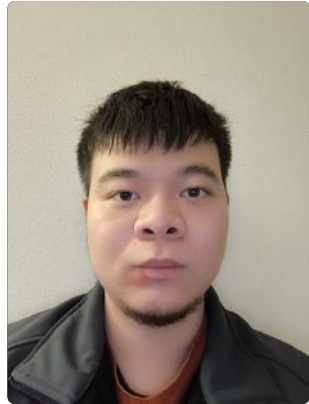
The project is meticulously crafted with React, Express, and MongoDB. React powers frontend development, facilitating swift UI design for an immersive browsing experience. Express orchestrates backend processes, guaranteeing efficient logic handling and seamless data interaction. MongoDB serves as the reliable NoSQL database, proficiently storing user details and recipes. Collectively, these cutting-edge technologies ensure unparalleled scalability and adaptability, culminating in a robust, user-centric platform for seamless recipe sharing and culinary exploration.



**Technologies:** React, Express, MongoDB

<https://github.com/foxeatbread/Fyp.git>





# Student Spoon

Not presenting

Academic Title

## Students Recipe App

Project Areas

- Software Development: (Mobile Native)

Project Supervisor

Catherine Fitzpatrick

by Yifan Gu

This project is an Android based student recipe app which aims to help international students who are in a foreign country which lack cooking skills and don't know about local ingredients and food prices. The student recipe app can recommend local recipes based on the user's area, and the user can also set a budget cap to find recipes, or if the user has ingredients on hand but isn't sure how to cook, the student recipe app can recommend recipes based on what the user already has. User can also upload their own recipes to help other international students. By using the location, the app will show the supermarkets and grocery shops near the user on the map to make it easier for international students to buy ingredients when they are new to the country.

The project brochure for 'Student Recipes App' is a pink-themed document. It features a title 'Student Recipes App' at the top left. Below the title are four main sections: 'Main Function', 'Methodology', 'Technology', and 'System Diagram'. The 'Main Function' section lists: 1. User registration and login, 2. Search recipes by various tags, 3. Upload recipe, 4. Search nearby stores. The 'Methodology' section includes a circular diagram with a central gear and four surrounding segments, and a paragraph describing the development process. The 'Technology' section lists 'node', 'MongoDB', and 'GitHub'. The 'System Diagram' section shows a flowchart with a smartphone icon, a server icon, and a database icon. At the bottom right, there is a small portrait of Yifan Gu. The bottom of the brochure contains contact information: 'BSc(H) Software Systems Practice', 'Supervisor | Catherine Fitzpatrick', 'Yifan Gu', and 'W30096263'.



**Technologies:** node.js, JavaScript, MongoDB, Git, ReactNative

<https://yifan113.github.io/>



# FeastClick

Not presenting

Academic Title

## User-centric Design and Development for Online Restaurant Ordering System

Project Areas

- Software Development: (Back End / Front End / Web)

Project Supervisor

Opeyemi Bamigbade

by Yisi Huang

The project uses javascript, layui, and jQuery as the main development technologies for the front-end, Javaweb for the back-end, and MySQL for the database. In this project, three main improvements are developed. The first one is showing pictures for each dish, administrators can upload pictures when editing the menu, and then users can see them on the menu. The second one is that administrators can set coupons, and users can receive them and use them. The third one is users can add reviews after finishing the order which will show to the restaurant.

**FeastClick: User-centric Design and Development for Online Restaurant Ordering System**

**Introduction**

With the development of the catering industry, online restaurant ordering systems are more and more significant for increasing restaurants' efficiency and improving customers' convenience. However, most restaurants still use paper menus to order, which only contain dish names and main ingredients without pictures of dishes. In addition, customers need to wait for the waitress to complete their order, which costs too much time to wait during rush hours. Paper menus mean many waitresses are needed for restaurants, which also leads to low efficiency. Therefore, User-centric Design and Development for online restaurant ordering system is built to solve these inconvenient phenomena. This project is to implement User-centric Design and Development for online restaurant ordering system.

**Methodology**

Agile Scrum development splits the project into several sub-projects, which are developed independently and realized separately. The project can be iterated many times until satisfied and during the process of iteration.

**Main Functions**

- Upload and show pictures of each dish
- Set and get coupon, including use
- Add reviews
- Manage Menu
- Manage order
- Check cart
- Show details of each dish

**Technologies**

MySQL, Apache Maven, jQuery, Layui, JS, Java

For User-centric Design and Development for online restaurant ordering system, the core tasks can be done at first, such as account management, menu management, etc. Then these tasks can be added features or styles of interfaces. The project can be used as soon as the core tasks have been realized, and the process of adding features will not influence the use of the project.

Yisi Huang 20095257 BSc. (Hons) in Software Systems Practice, School of Science Department of Computing and Mathematics



**Technologies:** JavaScript, jQuery, layui, Java, MySQL

<https://yisihuang.github.io/>





# TruckTrack: Smart Trucking Data Power

Not presenting

Academic Title

## TruckTrack: Fleet Tracking & Management

Project Areas

- CI/CD & Testing
- Information Systems and Modelling
- Software Development: (Back End / Core / Front End / Web)

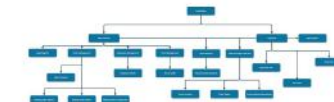
Project Supervisor  
Syed Rizvi

by Ruida Jiang


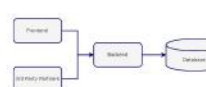
For the project, “TruckTrack,” I designed a system that makes the trucking industry both safer and more efficient by providing real-time updates on trucks’ locations and statuses. By leveraging technologies like Vue for the frontend, Springboot for the backend, and the Mapbox GL JS API for mapping, I created a tool that not only tracks trucks but also helps in managing them better. My goal was to simplify the complex logistics of trucking, making it easier for companies to ensure safety and efficiency in their operations.

### TruckTrack: Real-time Tracking and Management System

**Introduction:**  
For the project, “TruckTrack,” I designed a system that makes the trucking industry both safer and more efficient by providing real-time updates on trucks’ locations and statuses. Aimed at both the managers behind the scenes and the drivers on the road, my solution encourages safer driving practices by reminding drivers to take breaks. By leveraging technologies like Vue for the frontend, Springboot for the backend, and the Mapbox GL JS API for mapping, I created a tool that not only tracks trucks but also helps in managing them better. My goal was to simplify the complex logistics of trucking, making it easier for companies to ensure safety and efficiency in their operations.



AGILE











**Main Features:**

- Automatically generate charts based on data
- Real-time viewing of truck locations on a web map
- Personalized web map settings
- User login & register
- Modify personal information, reset password
- Single file, multiple files upload and download
- Multi-role login displays different pages
- Add, delete, modify, and query truck, order, user information
- Clear and concise system announcements


**Methodology:**  
Adopting the Agile development methodology, this project’s software development follows a microservices architecture and a development model of frontend-backend separation, proceeding in short iterative cycles. The design philosophy emphasizes user experience design, ensuring a user-friendly interface and ease of operation.

**Technologies:**



South East Technological University  
School of Science  
Department of Computing and Mathematics  
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2025793@gmail.wit.ie



**Technologies:** Vue, Springboot, MyBatisPlus

<https://github.com/RuidaJiang33/fyp-TruckTrack>

Page 71



Academic Title

## Player Data Analysis Management System

Project Areas

- Database and Analytics
- Software Development: (Back End / Front End)

Project Supervisor

Oeyemi Bamigbade

# GameTrack

Not presenting

by Xiang Li

GameTrack is a player data analysis management system whose goal is to select players more objectively. The main objective of the system is to collect, collate, and analyze comprehensive on-field technical statistics to gain an in-depth understanding of a player's performance, scientifically assess their ability, and unlock their potential. The core functions of the system include data acquisition, team analysis, goal prediction, player and team data visualization. In addition, GameTrack provides a user-friendly data system that gives users a more intuitive understanding of how a player or team is performing.



**Technologies:** Vue, Pinia, Pandas, node.js, MongoDB

<https://www.github.com/Onion-L/GameTrack>

**GAMETRACK**

Player Data Analysis Management System

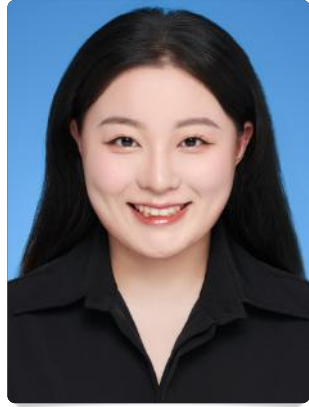
Xiang Li 20095236 BSc(Hons) in Software Systems Practice  
Github: <https://github.com/Onion-L/GameTrack>

### Abstract

GameTrack is a player data analysis and management system. The system is designed to collect, manage, and analyze players' on-field technical statistics, with the aim of investigating players' on-field performance, scientifically analyzing players' abilities, and analyzing and stimulating players' potential. GameTrack hopes to generate ratings of players' on-field performance in order to provide a more objective and concrete picture of a player's overall qualities and his role in the team.

The core functions of the system include data acquisition, team analysis, goal prediction, player and team data visualization. In addition, GameTrack provides a user-friendly data system that gives users a more intuitive understanding of how a player or team is performing.

### Key Technology



Academic Title

## Neural Network Based Image Style Transformation Platform

Project Areas

- Artificial Intelligence
- Database and Analytics
- Software Development: (Back End / Front End)

Project Supervisor  
Syed Rizvi

# Lovely Transfer

Not presenting

by Yangqing Li

Now that art is more integrated into everyday life, artists are increasingly exploring AI to blend technology and art. My final year project, LovelyTransfer, was an AI-based image style transfer web application using VGG16 that involved front-end and back-end development using React.js and Python. It provides various style transformations to foster creativity and employs pre-trained models to enhance responsiveness and usability. This is a practical application of AI in art, providing a platform for users to explore their artistic capabilities through technology.



**Technologies:** React.js, python, VGG16, Tensorflow, MySQL, VSCode

<https://yvonneliyq.github.io/>





Academic Title

## An Agricultural Online Community Platform with Target Detection-based Plant Disease Detection

Project Areas

- Artificial Intelligence
- Database and Analytics
- Software Development: (Back End / Front End / Web)

Project Supervisor

Sinead O’Neill

# AgroGuard

Not presenting

by Haopeng Liang

This article introduces an agricultural platform using an AI hybrid model based on target detection for plant disease detection. It combines precise image analysis for quick and accurate disease identification, enhancing disease management. The platform also serves as a hub for farmers and experts to exchange knowledge and strategies, fostering a collaborative environment. This synergy between advanced technology and community engagement aims to improve agricultural productivity and plant health, illustrating a significant step forward in agricultural innovation and shared learning.

The brochure for AgroGuard includes the following sections:

- Header:** W20095258, Haopeng Liang, BSc(Hons) Software System Practice.
- Title:** AgroGuard - A Crop Disease Detection System Utilizing Target Detection for Enhanced Precision and Speed.
- Abstract:** Discusses the importance of quick plant health detection in modern farming and how AgroGuard provides an online solution for identifying crop problems.
- Main Technology:** Describes the use of deep learning models (convolutional neural networks) for accurate crop health identification and disease control.
- Features:**
  - Hybrid Model for Crop Health Detection: Utilizes a cutting-edge hybrid model to accurately detect the health status of crops.
  - Online Community Platform: Features a developed online community functionality for user engagement.
  - Web-Based Usability Enhancement: Implements a user-friendly web interface.
- Methodology:** Mentions the use of the Agile Scrum framework for project management.
- Technologies:** Lists VUE, PyTorch, Kafka, GitHub, Spring boot, CoLAB, IntelliJ IDEA, and MongoDB.



**Technologies:** Pytorch, Vue.js, Springboot, Opencv, Kafka, MongoDB, Dubbo

<https://agcy.github.io/fyp-AgroGuard/landing%20page/>



## Academic Title

## Seek to Survive: A Comprehensive Design and Development of a Side-scrolling Survival Game Incorporat

## Project Areas

- Game Development

## Project Supervisor

Sinead O'Neill

# Base Defense: The Last Stand

Not presenting

by Long Liu

Seek to Survive merges strategic base-building with intense tower defense in a side-scrolling adventure. Players upgrade bases, fend off enemy onslaughts, and navigate through upgrades and attacks that intensify over time. This game invites players into a pixelated world where strategy and quick thinking are key to survival. The player's journey is filled with challenges that test their ability to defend, upgrade, and expand their stronghold against waves of enemies. Utilizing materials collected from fallen foes, players enhance their base's defenses and capabilities, aiming for victory by outsmarting enemy attacks and fortifying their bastion against the relentless siege.

**Abstract**

This game is a side-scrolling video game. The player can move left or right. Players have a base to upgrade abilities. The enemy will appear at some fixed locations, the nest, and attack the player. As time goes on, the player can collect materials to make tools and update buildings. When the game enters some specific days, some enemies will actively attack the player's base. The player needs to guard the base to avoid failure of the game. Player can gain materials by killing enemies. Materials can be used to upgrade base and player. On the base, player can build defense buildings.

**PlayFlow**

```

graph LR
    Start(( )) --> Construct[construct]
    Construct --> Nest[NEST]
    Nest --> Attack[attack nest]
    Attack --> End(( ))
    Construct --> ALoop[A LOOP]
    ALoop --> Nest
  
```

**Technology stack**

GODOT

GitHub C# PS

Name: Long Liu  
Student Number: 20104729



Technologies: Godot, GDScripts, C#,

[https://1730177143.github.io/FYP\\_doc/](https://1730177143.github.io/FYP_doc/)



# Sing with Vocarina

Not presenting

Academic Title

## Music Producing and Sharing Application with Voice Synthesizing and Tuning

Project Areas

- Software Development: (Core / Front End / Web)

Project Supervisor

Lasantha Thakshila Wedage

by Yiwei Liu

### Sing with Vocarina

Music Producing and Sharing Application with Voice Synthesizing and Tuning



### Abstract

Creating one's own music always sounds cool and attractive. In recent years, many people want to satisfy their personalized quest for music by customizing it to their personal preferences and needs, so music producing with virtual singers based on voice synthesizing are very popular in the world. Therefore, *Vocarina* aims to design and implement a full stack web application that allows users to create music with synthesized voices and share their works in community in a easy way.

### Methodology

Agile methodology is widely used in modern software development as well as in this project, because it has good ability at handling change requirements, even in late development.

In this project I use agile methodology with the Scrum framework, which divides the develop processes into short timeframes called sprints to get better maintainability and scalability.

### Main Features

- ✓ Create your own music with score editor
- ✓ Choose a synthesized voice for music
- ✓ Publish your music in community
- ✓ Browse music created bu other users
- ✓ Leave comments to communicate with others

### Technologies

Yiwei Liu (20104723) - BSc (Hons) in Software Systems Practice

Creating one's own music always sounds cool and attractive, especially when achieving this by producing music with virtual singers that based on voice synthesizing. This project, called Vocarina, is a full stack web application that allows users to create music with synthesized voices and share their works in community. This project aims to provide a visualized, interactive, straightforward and user-friendly platform that enables people to satisfy their personalized quest for music by customizing it to their personal preferences and needs. The front-end is developed with React and TypeScript, while the back-end is implemented with Django framework and Python. MySQL database is used to store data.



**Technologies:** TypeScript, React, Python, Django, MySQL, Azure

<https://lyw02.github.io/vocarina-landing-page/>





# GreenSort: Better Sorting and Recycling

Not presenting

Academic Title

## Android Based Garbage Sorting and Recycling App

Project Areas

- Software Development: (Mobile Native)

Project Supervisors

Sinead O’Neill, Siobhan Roche

by Yingying Lu

The Android app GreenSort simplifies waste sorting and recycling through three modules: waste information, waste type query, and waste collection point positioning. It utilizes advanced image recognition and positioning technology to identify waste categories and locate recycling centers for a more sustainable environment. Additionally, it provides real-time data and a comprehensive database of waste categories to enhance recycling accuracy and efficiency. GreenSort helps residents/tourists responsibly dispose of waste to reduce their carbon footprint before leaving a city or vacation spot.

**Technologies:** android studio, Firebase, TensorFlow

**Android-based Garbage Sorting and Recycling App**  
GREENSORT: BETTER SORTING AND RECYCLING

**PROJECT DESCRIPTION**  
My Android app, GreenSort, simplifies and enhances waste sorting and recycling through three modules: waste classification introduction, garbage classification query, and garbage collection point positioning. GreenSort is useful for both residents and tourists who can responsibly dispose of their waste before leaving a city or vacation spot to reduce their carbon footprint. The aim of GreenSort is to improve waste management by promoting accessible features that encourage eco-friendly practices.

**GreenSort Wonderful Trip!**  
Login to account  
Enter email  
Enter password  
SIGN IN  
LOGIN AS TOURISTS  
Don't have an account yet?

**Return**  
Waste type  
Collection Points  
Garbage News/Information

73% Waste Diversion  
21% Compost  
52% Recycle

It utilizes advanced image recognition technology (OpenCV and TensorFlow) and positioning technology (Google maps) to identify waste categories and locate nearby waste collection centers for a more sustainable environment. Additionally, it leverages Firebase to provide real-time data and a comprehensive database of garbage categories to improve recovery accuracy and efficiency.

Student: Yingying Lu  
Student Number: 20096278  
Course: BSc (Hons) in Software System Practice  
Supervisor: Ms. Sinead O'Neill

Technologies: ANDROID STUDIO, Firebase, OpenCV, TensorFlow, Google Maps



<https://wszfln.github.io/>



Academic Title

## Live Streaming Media Server Based on Real Time Streaming Protocol

Project Areas

- Media Development and Production
- Software Development: (Back End / Front End)

Project Supervisor

Rahul Mhapsekar

This is a live streaming video server based on the RTSP protocol. It provides users with two main segments: video on demand and real-time live viewing. After logging in, users can favourite videos, post comments, interact with pop-ups and upload their own videos to share with others. At the same time, the site also provides column services, users can share content and interact with others, social. The live broadcast function is based on RTSP protocol, which has the advantages of low latency, cross-platform compatibility and easy expansion.



**Technologies:** Vue, FFmpeg, MySQL, Node.js, Golang

<https://sunmingju.github.io/FYP-pages/>

# Simple-Video-Net

Not presenting

by Mingju Sun

## RTSP Streaming Video Live Sites

Introduction :

This is a real-time streaming video server based on the RTSP protocol. It provides users with video-on-demand, real-time viewing and pop-up interaction, as well as supporting users to upload their own videos for sharing. The webcasting service relies on the RTSP protocol, which enables low-latency data transmission and provides a near real-time viewing experience.





Academic Title

## A User-centered Online Movie Ticketing System

Project Areas

- Software Development: (Back End / Front End / Web)

Project Supervisor

Opeyemi Bamigbade

This project develops a user-centric online movie ticketing platform, leveraging React.js, Node.js, Next.js and Firebase for seamless browsing and booking. By enriching the browsing and booking process, this system enables users to seamlessly browse movie listings and book tickets. All of these features are designed with a focus on usability, efficiency, and user engagement with features such as seat selection, personalized recommendations, and virtual payment. Through optimization based on user feedback, the project aims to be a practical and user-friendly ticketing solution.



**Technologies:** React, Node.js, Next.js, Firebase

<https://wang-jingyi09.github.io/>

# CineSlot: Your Ticketing Guide

Not presenting

by Jingyi Wang

**CineSlot: Your Ticketing Guide**

## A User-Centered Online Movie Ticketing System

**ABSTRACT**

The objective of this initiative is to develop a user-centric online movie ticketing platform, utilizing cutting-edge technologies such as React, Node.js, and Firebase. The system aims to streamline the process of exploring movie options and securing tickets, with a strong commitment to user efficiency and engagement. Key features like intuitive seat selection, custom recommendations, and streamlined payment are designed to enhance the user experience. The platform seeks continuous improvement through user feedback, striving to provide a seamless and effective solution in movie ticketing.

**MAIN FEATURES**

- User log in, log out
- Browse movie information
- Book movie tickets
- Seat selection
- Virtual payment
- Personal recommendation

**METHODOLOGY**

Agile Methodology is a software development methodology that is centered on adaptability, flexibility, and rapid response to change. This approach not only helps to improve product quality and user satisfaction, but also enhances team collaboration and efficiency.

My system utilizes Agile methodology, suited to its scale and dynamic user needs. Agile allows for continuous adaptation to changing requirements, ensuring the system aligns with user expectations. Emphasizing user experience, Agile ensures product development remains user-focused, enhancing customer satisfaction and loyalty.

**TECHNOLOGIES**

React.js, Node.js, Next.js, Firebase, VSCode



Jingyi Wang  
20104728 @ mail.wit.ie

BSc (H) Software Systems Practice  
Department of Computing and Mathematics  
School of Science and Computing  
South East Technological University





## LitConnect: Tailored Reading & Community

Not presenting

Academic Title

**Intelligent Book Sharing and Communicating System That Includes Recommendations and Grouping**

Project Areas

- Artificial Intelligence
- Information Systems and Modelling
- Software Development: (Back End / Front End / Web)

Project Supervisor

Jacqui Woods O'Brien

by Jia Yang

LitConnect is an innovative platform designed to enhance the reading experience by connecting readers through personalized book recommendations and interactive community features, allowing authors to upload selections and chapters of their books, match them with more appropriated book reviews, find book lovers of similar interests, and interact with them in real time. The platform also features algorithmic recommendations that can push books they are interested in, while everyone can customize their own personal interface, so that avid readers can engage with a like-minded community.

**Review** LitConnect  Official Technologists at OnDemand South East Technological University

**TAILORED READING & COMMUNITY HUB THAT SATISFY ALL YOUR NEED**

*September 2023 - March 2024*

**Description**

LitConnect is an innovative platform designed to enhance the reading experience by connecting readers through personalized book recommendations and interactive community features, allowing authors to personalize and upload selections and chapters of their books, match them with more appropriate book reviews, find book lovers of similar interests, and interact with them in real time.

The platform also features algorithmic recommendations that can push books they are interested in, while everyone can customize their own personal homepage and decorate it on their own. At the same time, users can find the users that they are interested in and choose to go to private chat or set up chatting groups to have live chat with each other. Realize to meet the needs of users to the greatest extent possible. With its special design, LitConnect offers an enriching experience for avid readers to explore new titles and engage with a like-minded community.

**Key Features**

- 1 Simplified Book Reviews
- 2 Intelligent Recommendations
- 3 Private and Group Chat
- 4 Personalized User Homepages

**Technology**  
React  
Node.js  
MySQL

**Sprint-Scrum Development**

- Daily Scrum
- Reflective Improvement

**Author**  
Jia Yang  
20104736@mail.wit.ie



**Technologies:** JavaScript, React, Node.js, MySQL

[https://github.com/Yolanda2002/FYP\\_LitConnect](https://github.com/Yolanda2002/FYP_LitConnect)



Academic Title

## Comfort Talker

Project Areas

- Software Development: (Back End / Core / Front End)

Project Supervisor

Michael McMahon

# A Place for Emotion Companion

Not presenting

by Yuanzhe Yang

The brochure features a header with the project title 'Comfort Talker: A Place For Companion' and the author's name 'Yuanzhe Yang'. It includes an introduction, a list of functions, a list of features, and a section on technologies used. The technologies listed include Vue.js, Express.js, Websocket, and Node.js. The brochure also includes a QR code and a GitHub link.

**INTRODUCTION**

'Comfort Talker', is an innovative, secure, and user-friendly online platform dedicated to providing emotional support and fostering companionship. Utilizing cutting-edge technologies such as Vue for an engaging frontend experience, and Node.js with Express for a robust backend, coupled with WebSocket for seamless real-time communication, the platform ensures a dynamic user experience. This project provides interactive chatrooms, where users can connect with friends and classmates to share experiences and support each other, and empathetic chatbots.

**FUNCTIONS**

It is structured around three main functional categories: user account management, personal and direct communication, and community and group interactions. In user account management, the system will provide user-centric features for account creation and access. Users will be able to register for an account and log in to the platform, ensuring a personalized and secure experience. In personal communication and companions will have the ability to search for friends and initiate private conversations. The platform will support one-on-one chat, with the capability to share a range of media including emojis, pictures, text, and files. Furthermore, it will facilitate direct voice and video calls between users, providing an intimate and immediate way to connect. In group interactions, Users will be able to enhance their social experience by adding friends, creating group chats, inviting others into these groups, and engaging in group video conversations. This fosters a sense of community and collective support, allowing users to share and discuss in a broader, group-based context. What is more, this platform integrates with the advanced 'New Bing' AI, offering real-time emotional support to users whenever they are feeling down. This feature is designed to engage users in conversation, provide soothing interactions, and deliver psychological assistance tailored to individual moods and needs.

**FEATURES**

- Establish a nurturing and interactive online environment for individuals seeking support and social connection.
- Provide a platform for users to engage in meaningful conversations, share experiences, and so on.
- Use advanced technologies, featuring a user-friendly and responsive interface, and efficient human-computer interaction.

**TECHNOLOGIES**

The technologies used in the project are: Vue.js, Express.js, Websocket, and Node.js.

Yuanzhe Yang 20104764 BSc. (Hons) Software Systems Practice South East Technological University

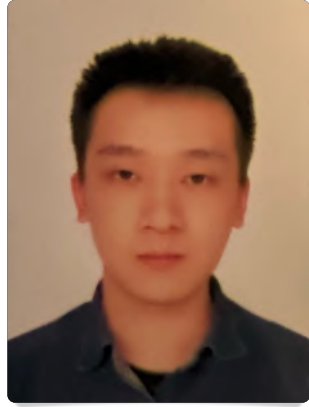
'Comfort Talker', as an innovative, secure, and user-friendly online platform is dedicated to providing emotional support and fostering companionship. Utilizing cutting-edge technologies such as React for an engaging frontend experience, and Node.js with Express for a robust backend, coupled with WebSocket for seamless real-time communication, the platform ensures a dynamic user experience. This project provides interactive chatrooms, where users can connect with friends and classmates to share experiences and support each other, and empathetic chatbots for personalized, private emotional guidance



**Technologies:** Vue, Express, Websocket

<https://github.com/20104796/fyp.git>





## Globetrot Guru

Not presenting

Academic Title

### A Web Application Based on Spring Boot for Tourists Who Want to Travel

Project Areas

- Software Development: (Back End / Front End / Web)

Project Supervisor

Jacqui Woods O'Brien

by Sirui Yao

This web application can provide people with descriptions and basic information about different attractions, hotels around the attractions, and people can view pictures and prices. After a trip, people can also post honest reviews of attractions to provide suggestions for people who want to visit in the future. The application protects users' privacy to the fullest extent possible, and in the event of a review violation, the administrator will immediately delete the review. In this application, the two key roles are the user and the administrator, the user needs to log in to view the relevant information and publish their own comment, the administrator can be in the background of the attraction information, hotel information, user evaluation to add, delete, change and check the operation.



**Technologies:** JAVA, JQuery, Springboot, MYSQL

<https://sirui125.github.io/>



Academic Title

## Medical Question Answering System Based on Knowledge Graph

Project Areas

- Artificial Intelligence
- DevOps
- Media Development and Production
- Software Development: (Core / Mobile Native)

Project Supervisor

Michael McMahan

For ordinary people, going to the hospital for medical treatment is an option, but for international students who are not familiar with the local area, medical question and answer robots will provide a great with help, the medical Q&A robot can provide advice on maintaining health, including information on diet, exercise, vaccinations, etc., to help international students better maintain their health in a foreign country. TSo, I plan to build a medical question-and-answer robot to solve these problems and help people understand their physical conditions more conveniently.



**Technologies:** neo4j, react

<https://github.com/yym9420/final-year-project.git>

# MedGraphQA

Not presenting

by Yiming Yu

MEDICAL QUESTION  
AND ANSWER SYSTEM



An convenient  
website for  
people to know  
more about  
their health

- 1 Use your email address to register
- 2 Search for information you want to know about medical
- 3 Remark and give advice about the answer
- 4 Gain and share medical knowledge, experience and advice.

visit our website

<https://github.com/yym9420/final-year-project.git>



EMERGENCY CALL  
**+353 834260265**





# Spiral: The Dynamic Rhythm Game

Not presenting

## Academic Title

### Spiral: An Android Rhythm Game Based on Unity

## Project Areas

- Digital Graphic Design
- Game Development
- Software Development: (Mobile Native)

## Project Supervisor

Richie Lyng

by Shaobo Zang

“Spiral” is a rhythm game for Android that pushes the boundaries of rhythm game by introducing a dynamic, rotating judgment line in the form of a circle, diverging from the traditional static line used in other games. This innovative mechanic necessitates a blend of timely taps in sync with the rhythm and strategic manipulation of the circle’s rotation to hit the notes accurately. With its interactive note types that demand precision and its custom chart creation feature, “Spiral” allows players to express their musicality and challenge their dexterity. Moreover, the game includes a competitive online leaderboard that motivates players to perfect their skills and rise through the ranks. “Spiral” provides an engaging platform for rhythm game enthusiasts.



**Technologies:** Unity Engine, Android Studio, C#

<https://sbzng.github.io/landingPage/>

**SPIRAL** AN ANDROID MUSIC GAME BASED ON UNITY

**ABSTRACT**

“Spiral” introduces a fresh take on the rhythm game genre, where players experience an escalating complexity of games, demanding precision and reflexive responses to an expanding range of musical sequences. The game’s core mechanic revolves around a central circle, which serves as the dynamic judgment line for players to align their taps and swipes with the rhythm of the music.

The play flow is seamless—from selecting a track to engaging in the rhythm play, climaxing with the chase for high scores to be shared and boasted online. Players interact with the game via a touch-based control system, tapping for notes and swiping for holds and rotations, which is realized through Unity’s robust 2D rendering capabilities for a smooth and visually appealing experience on Android devices.

**KEY TECHNOLOGIES**

Choose Unity for its exceptional 2D graphics support and user-friendly interface, which simplifies the game development process. Unity’s vast community resources and optimization tools for Android ensure that “Spiral” offers a seamless gaming experience across a wide array of devices.

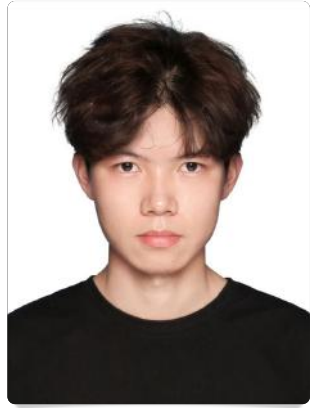
**METHODOLOGY**

Agile Scrum—The project adopts the Agile Scrum framework to ensure a flexible and adaptive development process. This approach is particularly suitable for mobile game development, where features often evolve based on continuous testing and user feedback.

Playtesting—At the end of each sprint, I conduct playtesting sessions to gather feedback on game mechanics and usability, which is crucial for refining gameplay and enhancing the user experience.

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Official Technological Institute of the South East Technological University



# Emerald-ParcelHub: Delivery Redefined

Not presenting

Academic Title

## Spring Boot Express Parcel Virtual Delivery Platform with Visual Tracking

Project Areas

- Database and Analytics
- DevOps
- Information Systems and Modelling
- Personal Independent Project
- Software Development: (Back End / Core / Front End / Web)

Project Supervisor

Richard Lacey

This project is dedicated to addressing the major challenges in urban areas' courier delivery. Against the backdrop of rapidly growing e-commerce, traditional direct delivery services may fail when the recipient is not at home. Our system introduces an innovative solution: setting up temporary parcel stations in communities to securely store parcels when direct delivery is impractical, until customers can pick them up personally. This strategy not only optimizes the delivery process and reduces the number of failed deliveries but also significantly enhances the customer's receipt experience.



**Technologies:** Next.js, React, Java, Vercel, MySQL, Node.js, RabbitMQ, SpringBoot, Redux, Firebase

<https://dovis01.github.io/>

by Shijin Zhang

### SpringBoot Express Parcel Virtual Delivery Platform With Visual Tracking

Seamless Parcel Management Redefined

Emerald-ParcelHub Visual Parcel Delivery Platform

#### Abstract

This project is dedicated to addressing the major challenges in urban dense areas' courier delivery. Against the backdrop of rapidly growing e-commerce, traditional direct delivery services often fail when the recipient is not at home.

Our system introduces an innovative solution: setting up temporary parcel stations within communities to securely store parcels when direct delivery is impractical, until customers can pick them up personally. This strategy not only optimizes the delivery process and reduces the number of failed deliveries but also significantly enhances the customer's receipt experience.

#### Technology Tools

#### Development Methodology

To make sure projects can easily change when needed and give good results quickly, we use agile ways of developing. Agile development aims at quick changes, ongoing comments and working together with different teams

- Iteration process: At the end of each cycle (usually two weeks), our team will show what we did and get comments to help us with work for next time.
- User story and Task decomposition: We break down needs into user stories, which show what each person wants. At the beginning of a timeframe, team members choose stories from their work list to start on.
- Daily stand-up meetings: Groups have quick meetings each day to talk about progress, fix issues and decide what happens next.
- Continuous Integration and Continuous Delivery (CI/CD): We use CI/CD methods to make testing and putting new programs online automatic. This helps us check code quality quickly. It also speeds up how fast we can give out these changes

Shijin Zhang  
201104636

BSc (Hons) in Software Systems Practice (NUIST)  
Department: Computing and Maths  
South East Technological University  
Github Link: <https://github.com/Dovis01/FYP-Emerald-ParcelHub>

SE TU  
South East Technological University



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TU**

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South East  
Technological  
University

## **SECTION 2**

# **HIGHER DIPLOMA IN SCIENCE — HDIP**

PROJECT BROCHURE

**SPONSORED BY**

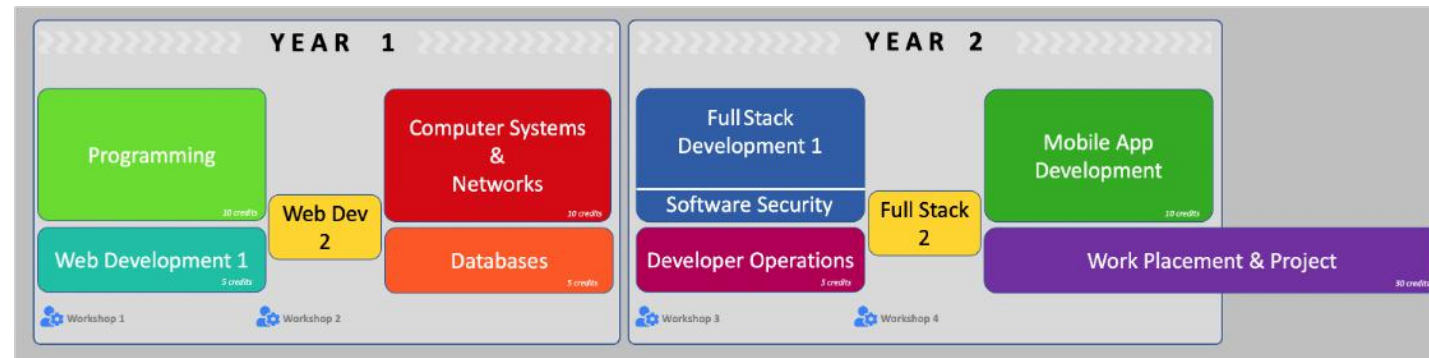
**KARGO**

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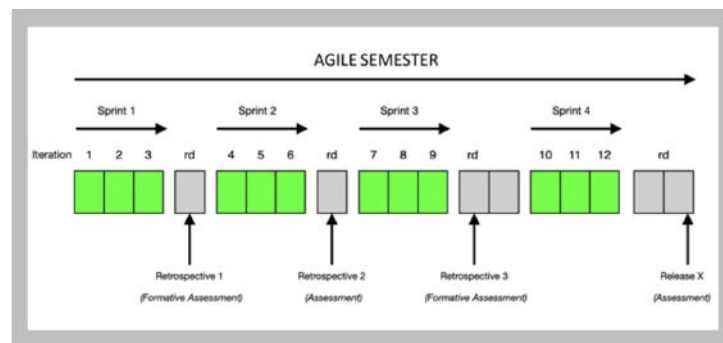
## Higher Diploma in Science in Computer Science (Online)

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The ONLINE **Higher Diploma in Science in Computer Science** is an accelerated 24-month ICT Conversion Course focused on full stack oriented development. It is designed to allow honours graduates from non-computing disciplines to acquire the industry-relevant ICT and software development skills, expertise and practical experience required to become suitable candidates for employment in the ICT domain in general and in software development in particular.



As an accelerated course, there is an average time commitment of 16 hours per week required. Students with less ICT experience may need to factor in more time. The course is delivered using our award-winning online delivery platform—TutorStack. Pioneered on this programme with industry, we follow an “Agile Semester” approach, typically consisting of 4, three-week sprints followed by 1-week breaks for retrospective, after each sprint.

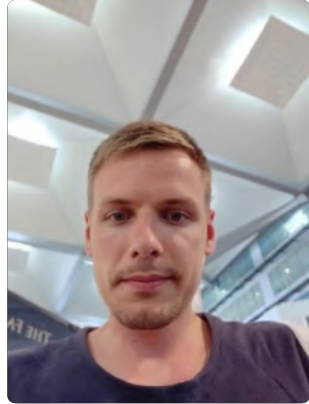


In addition there is a six lesson on-demand module each summer. Online delivery over the two years is supplemented by four onsite workshops to further enhance and deepen the learning experience, and learning community. Although not mandatory, these should be deemed essential. While all taught modules are delivered within two years, Work Project & Placement runs into the following year so as not to over burden students.

For a more in depth preview of the course content and structure, please watch this [video](#).

Try out a sample of the course [here](#).

Find out more [here](#).



# Food Log

Not presenting

Academic Title

## Hybrid App for Monitoring Food Intake

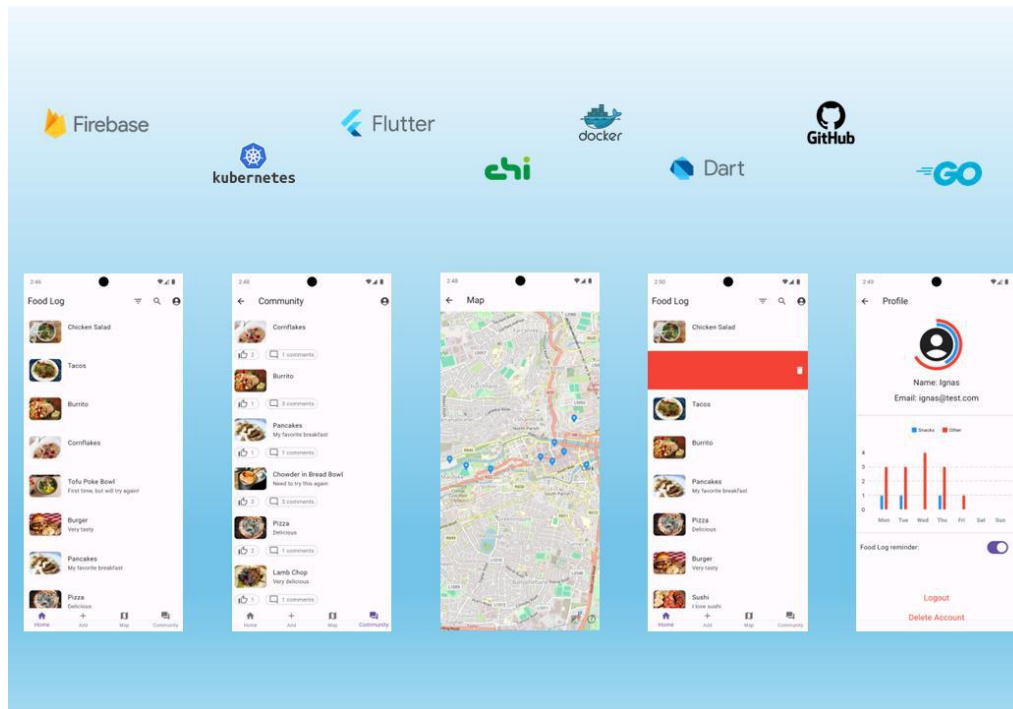
Project Areas

- Open Source
- Personal Independent Project
- Software Development: (Back End / Mobile Hybrid)

Project Supervisor  
Richie Lyng

by Ignas Baranauskas

FoodLog, a food tracker application designed specifically for those who prefer simplicity and convenience. This application is perfect for individuals who want to take control of their eating habits without the hassle of manually tracking calories. It allows individuals to monitor their food intake, it's not just about logging meals, it's about making informed choices that align with your health and wellness goals. With FoodLog, you can maintain a comprehensive record of all your daily consumptions. This allows you to gain insights into your eating patterns, helping you make healthier choices.



**Technologies:** Flutter, Golang, Chi framework, Firebase, Docker



<https://bit.ly/3UKCzxx>



Academic Title

## Server-rendered Web App with Hateoas

Project Areas

- Open Source
- Personal Independent Project
- Software Development: (Back End / Web)

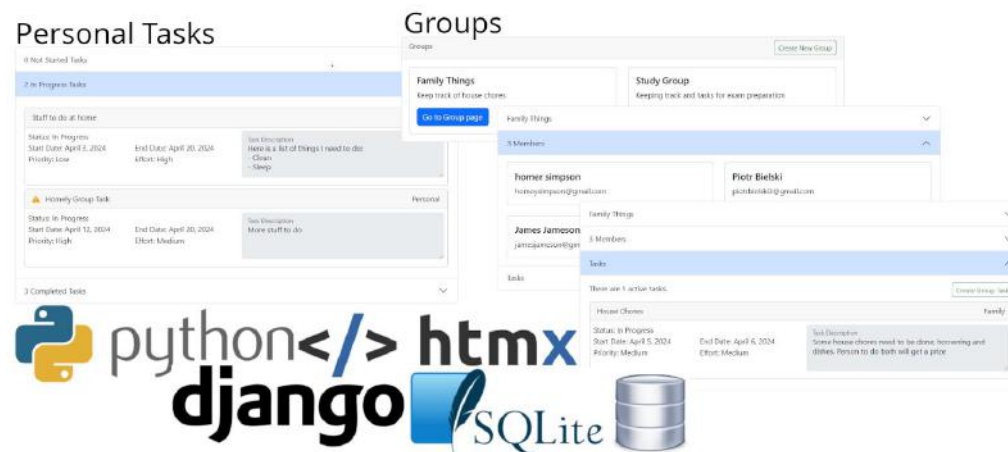
Project Supervisor

Dave Hearne

# Task Management Web App

Not presenting

by Piotr Bielski



Task Manager is a web application without a frontend framework and fully relies on server-side rendering using Hypermedia as the engine of application state (HATEOAS). Its features include the ability for users to create custom templates for tasks, groups, and group tasks. The tasks can have various fields enabled or disabled depending on their template, and can be organized using labels such as assignments, lectures, or personal things. As for the groups, these support group tasks that are accessible to anyone in the group, but not visible to anyone else.

**Technologies:** Python, Django, HTMX, SQLite, Bootstrap



<https://circleorange.github.io/>







## Submissions

#57 / TL238

Academic Title

### A Full Stack Web Application for Assignment Submission and Grading

Project Areas

- Open Source
- Personal Independent Project
- Software Development: (Back End / Front End / Web)

Project Supervisor

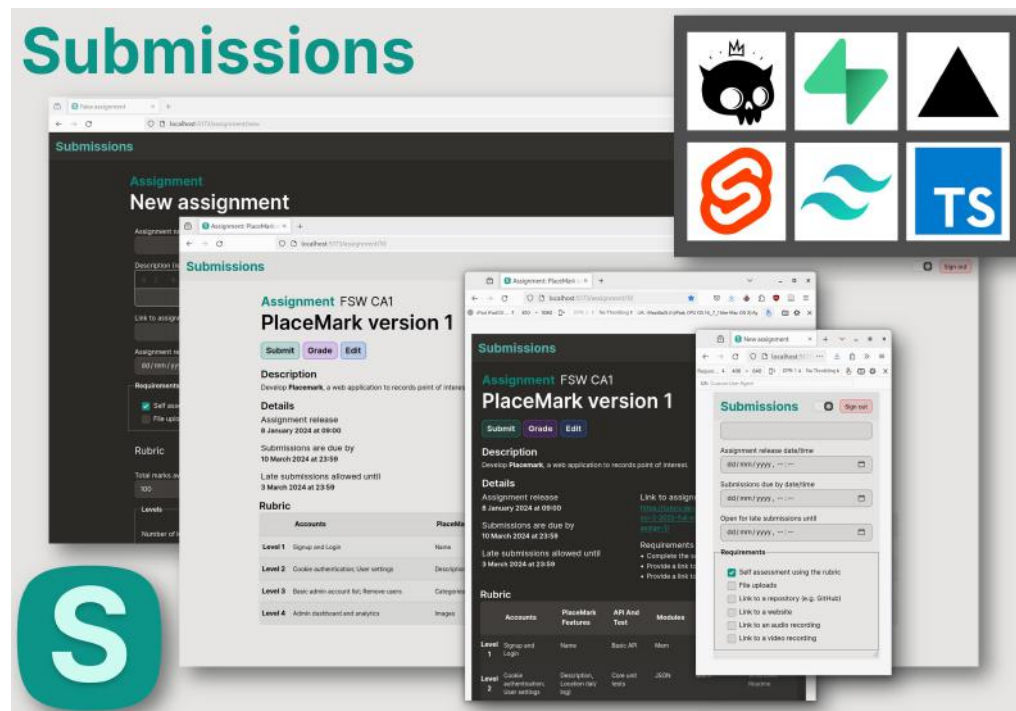
Catherine Fitzpatrick

by Ian Blake

Submissions is a full stack web application for assignment submission and grading, inspired by the Tutors Open Source Project.

Educators can set up assignments with assessment information, rubrics, marking schemes and due dates. Students complete their assignments online with file uploads, form completion, and links to external resources. Educators can then mark these assignments, providing grades and feedback for the students to view. Submissions is designed to work alongside the Tutors Open Source Project or any other learning environment, whether online or classroom-based.

**Technologies:** Skeleton, Supabase, SvelteKit, Tailwind, TypeScript



<https://ianbl8.github.io/submissions/>





Academic Title

## GrubShare: One App, Many Tastes

### GrubShare: An Application to Share Recipes and Meal Ideas

Project Areas

- Database and Analytics
- Personal Independent Project

Project Supervisor

Mary Lyng

The aim of Grubshare, is to establish a community of chefs of all experience levels. Whether they are professional, or just have a passing interest, Grubshare brings these people and their recipes together. Whether the user wants to find a recipe containing a certain ingredient or a recipe of a certain category/type of cuisine, or if the user simply wishes to post their own recipe for others to enjoy and compliment, Grubshare is the only app you will need.

I have chosen React Native as the main framework of the app. JavaScript the language which I intend to use.



**Technologies:** React Native, JavaScript, Firebase

<https://dannyledecaf.github.io/>

Not presenting

by Daniel Coffey



Daniel Coffey  
08559350

GrubShare:

One app, many tastes

Mobile App

<https://dannyledecaf.github.io/>

GrubShare, your one stop shop for recipes to use and share

A Social Recipes App.

GrubShare, your one stop shop for recipes to use and share

This page was generated by GitHub Pages.



Academic Title

## **BIM File Console: React Platform Console to View and Interact with Files in a BIM Model**

Project Areas

- Database and Analytics
- Information Systems and Modelling
- Work Based Project
- Software Development: (Front End / Web)

Project Supervisor

Sonya Hogan

Not presenting

**by Darragh Conneely**

As a work-based project as part of a larger system, this project aims to design a user-friendly, front-end console for viewing, interacting with, and querying files in a Building Information Model (BIM) in one centralised location in the form of a web app page. As part of a larger app and system, this project builds on existing data models, internal platform services, and front-end design conventions using front-end technologies like React, and JavaScript, and platform technologies, such as front-end, back-end, and API services.



**Technologies:** JavaScript, React, MongoDB, internal platform services

<https://darragh-c.github.io>



Academic Title

## A Multi-platform Catalogue Application for Community Sharing

Project Areas

- Personal Independent Project
- Software Development: (Mobile Hybrid)

Project Supervisor

Richie Lyng

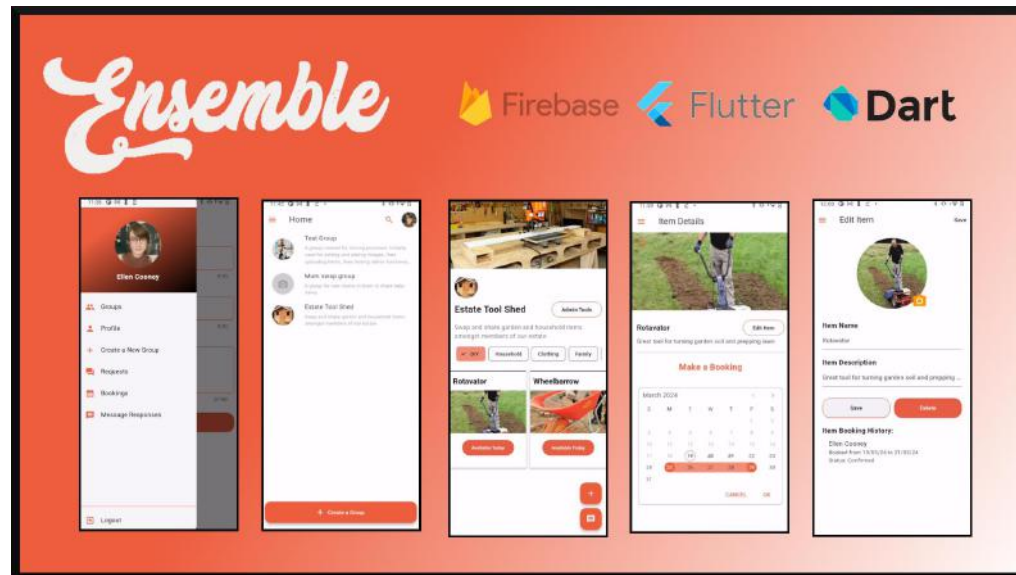
# Ensemble

Not presenting

by Ellen Cooney

Ensemble is a cross platform application built using Flutter and Firebase as the backend for authentication, database, and storage. The app provides a space for communities to share resources such as tools, kitchen equipment, clothing etc with an aim to cutting down on waste, clutter and unnecessary spending. Users can create, join and run groups where members add items to a catalogue to be viewed by other members, who can see the availability and send a request to borrow the item for a specific date range.

**Technologies:** Flutter, Dart, Firebase



<https://ensemble2024.glitch.me/>



# XMDM

Not presenting

Academic Title

## XMDM - Web Application for Managing Parameters in Other Applications

Project Areas

- Work Based Project

Project Supervisor

Deirdre O’Halloran

by David Cotter



XMDM is a java web application that’s used to store data which provides business & development team an easier way to modify parameters in other applications. Teams set parameters to XMDM & the data platform applications, reads it, and adapts their behavior. The aim of my application is to create a REST API application using Scala with the play framework that can be used to eventually replace the java backend of the old application. Users can login to call the routes to retrieve data, input, update and delete data as necessary

**Technologies:** Scala, Play Framework, PostgreSQL, Docker, REST API



<http://bit.ly/49fyVjY>



# EVCarHireIreland.ie

#58 / TL238

Academic Title

## EV Car Hire Reservation Web Application

Project Areas

- Work Based Project
- Software Development: (Web)

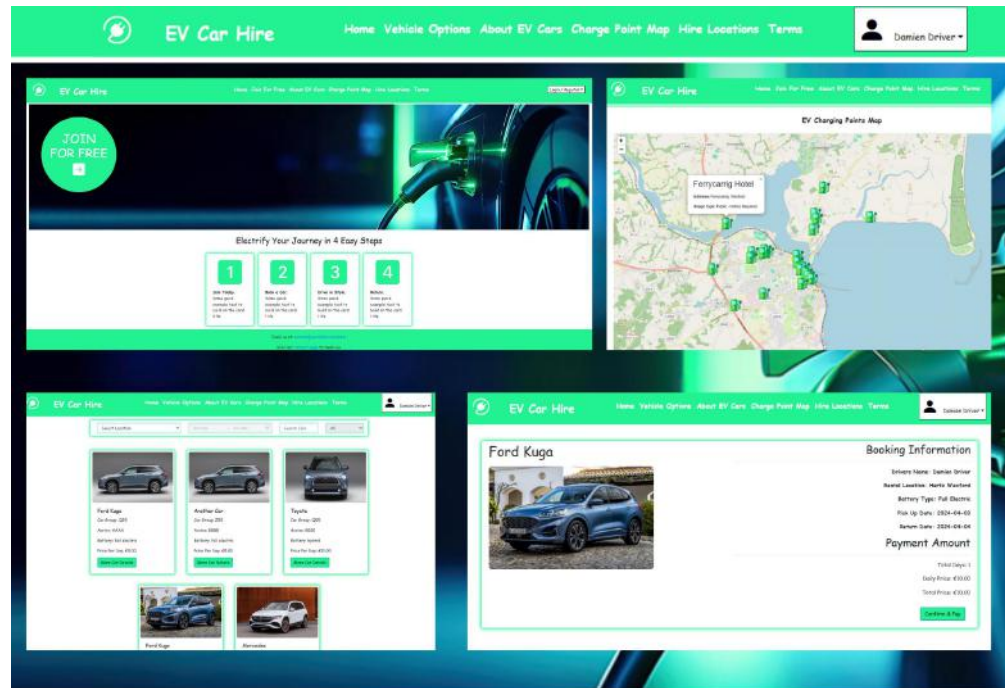
Project Supervisor

TJ McDonald

by Damien Driver

EV Car Hire is a user-friendly web application to allow users book electric vehicle rentals. The React frontend invites users to sign up, browse the available fleet and easily filter by dates and locations. The platform simplifies the process of booking an eco-friendly ride with an integrated stripe payment facility. The backend of the application is built using Node and Express with data stored in MongoDB. An API from openchargemap provides information on the nearest available charge points for user convenience.

**Technologies:** Node.js, React.js, Express.js, MongoDB, Vercel



<https://damiendriver.github.io/evcarhireireland/>



Academic Title

## Infrastructure as Code for Kubernetes

Project Areas

- CI/CD & Testing
- Cloud Computing
- DevOps
- Personal Independent Project

Project Supervisor  
John Rellis

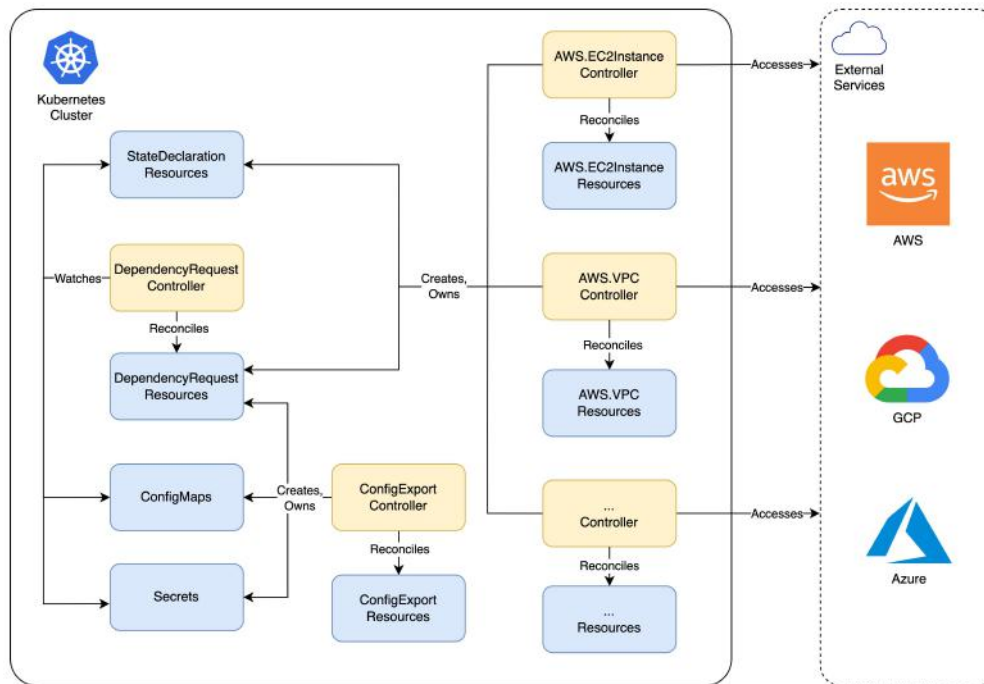
# Kraken

#59 / TL238

by Eoin Fennessy

An IaC tool for Kubernetes that provides declarative APIs for provisioning and managing cloud infrastructure from multiple cloud providers. Each infrastructure resource's state can be referenced by other dependent resources and used to dynamically generate/update their configurations. It offers K8s cluster integrations such as state export/import to/from ConfigMaps and Secrets. Infrastructure configs can be versioned and managed using existing GitOps systems for K8s such as ArgoCD. Kraken is modular and extensible, and additional providers can be developed by implementing a standard spec.

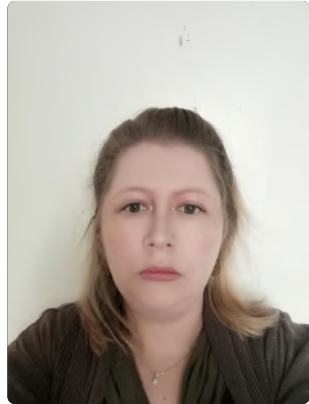
**Technologies:** Go, Kubernetes, AWS, Kubebuilder, Docker



<http://kraken-iac.eoinfennessy.com>

#60 / TL238

# All Weight is Beautiful



Academic Title

## Interactive Art Generator Using a Digital Weighing Scale API

Project Areas

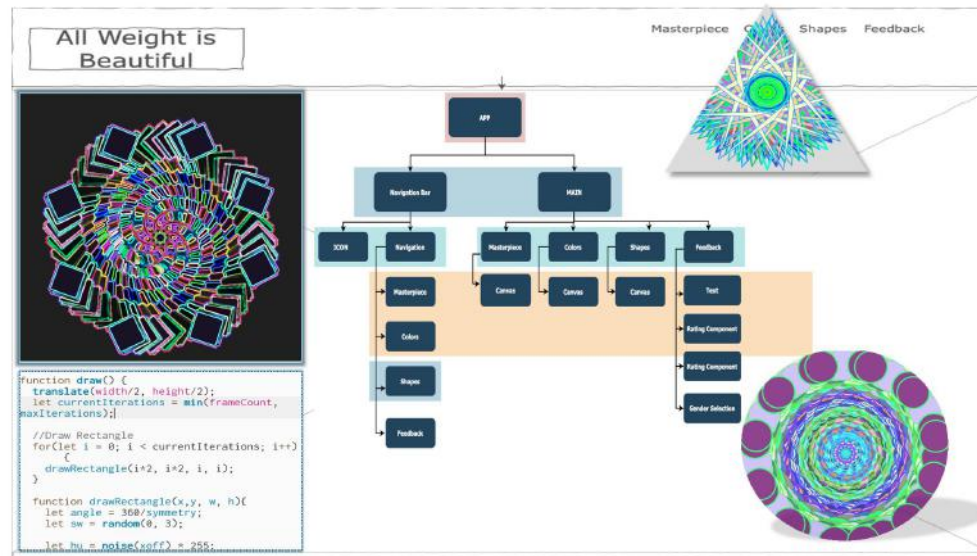
- Animation
- Digital Graphic Design
- Internet of Things
- Open Source
- Personal Independent Project
- Software Development: (Web)

Project Supervisor

Sinead O’Riordan

by Isadora Fitzgerald

“All weight is beautiful” illustrates the fusion of Art and Computer Science in a quirky and unique Art Gallery web app prototype of a larger interactive public art installation. An anonymous user simply steps on a weighing scale allowing the scales API to gather a dataset from the users interaction with the scales. Using this extracted dataset, P5.js is integrated into a React component of the web app gallery and outputs a visualisation via random numbers and patterns emulating Kaleidoscope type imagery - a multi-faceted, symmetrical, colourful image based on a shape.



**Technologies:** Weighing scale, Scales API, Dataset, Json, P5.js, React components, Shapes, Web app gallery, Random

[https://github.com/fitzdora/reactAwib\\_pa.git](https://github.com/fitzdora/reactAwib_pa.git)





# Markify

Not presenting

Academic Title

## A Web App for Managing Quality in Contact Centers

Project Areas

- Software Development: (Web)

Project Supervisor

Dave Hearne

by Adam Gibson

**Markify**  
Your Online Quality Management Tool

- > Create your own scorecards with custom marking for each question
- > View logs of every score entered on the system
- > Easily report on team and agent averages
- > Create teams to organise your employees
- > Invite members of your QA team to be able to assist in recording scores

Powered By

Technologies: Sveltekit, NodeJS, MongoDB, ChartsJS, JOI, Mongoose, BCrypt, Hapi, API, Bootstrap

Quality management is an important process for organizations to have as it provides a structured framework to ensure that an organization is continuously providing a product or service that is top-tier and meets its client's expectations.

Markify aims to resolve some common issues around quality management by providing an online tool which organisations can use to map out their team structure, as well as create custom scorecards to evaluate the interactions of their agents and provide reports at a glance so that organisations can understand the quality they are delivering.

**Technologies:** Sveltekit, NodeJS, MongoDB, ChartsJS, JOI, Mongoose, BCrypt, Hapi, API, Bootstrap



<https://sites.google.com/view/markify-project-page/home>





Academic Title

## Interactive Timeline-using 3D Elements to Create an Interactive Timeline

Project Areas

- Animation
- CI/CD & Testing
- Database and Analytics
- DevOps
- Work Based Project
- Software Development: (Front End / Web)

Project Supervisor

Mary Fitzgerald

This Project revolves around a dynamic Web application featuring a 3D timeline alongside the implementation and management of all infrastructure to host this application

The project was divided in front-end, back-end and infrastructure. For the front end Next.js was the framework with React 3D libraries. Strapi, and headless CMS, was used as back-end. As infrastructure, Docker was used for container images containing GitLAB CI/CD technologies and Traefik to manage all networking as a reverse-proxy. Terraform was employed to generate infrastructure as code.

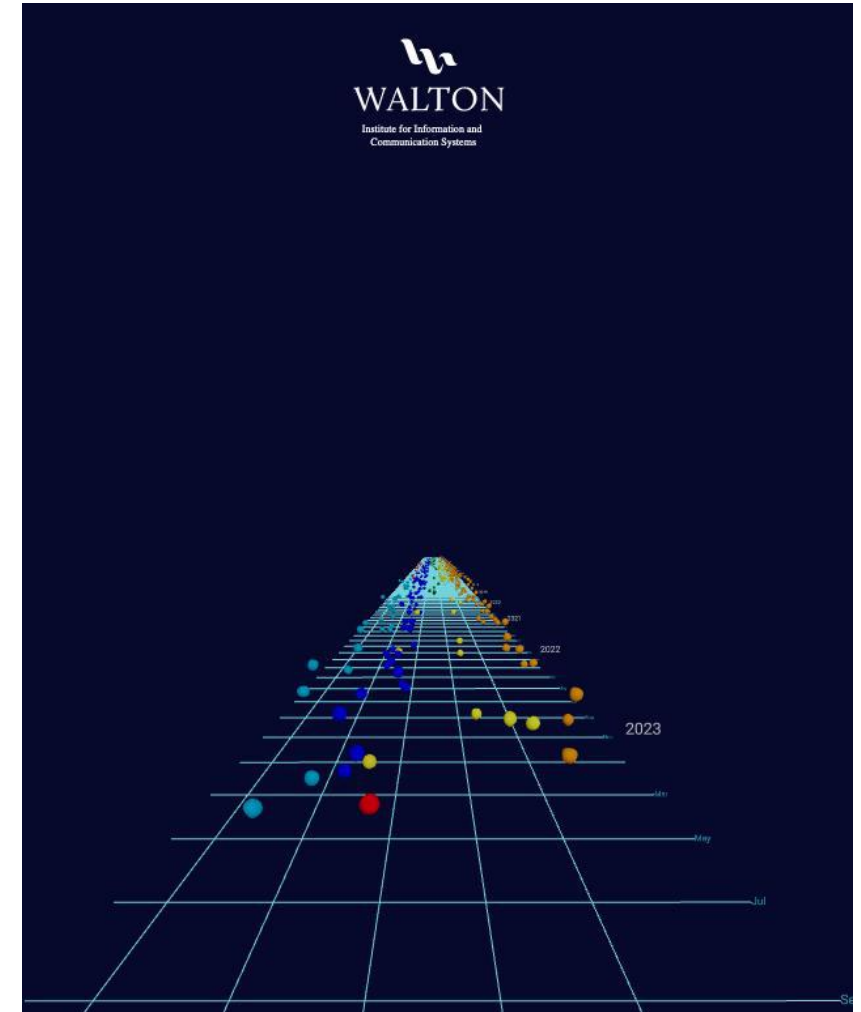


**Technologies:** React, 3D WebApp, Timeline, Full-Stack, Next.js, Typescript,

<https://fabulous-splashy-riddle.glitch.me/>

# 3D Interactive Timeline

#61 / TL238

**by Renato Goedert**



Academic Title

## 'SpareRoom' - A Student Accommodation Web Application

Project Areas

- Software Development: (Web)

Project Supervisor

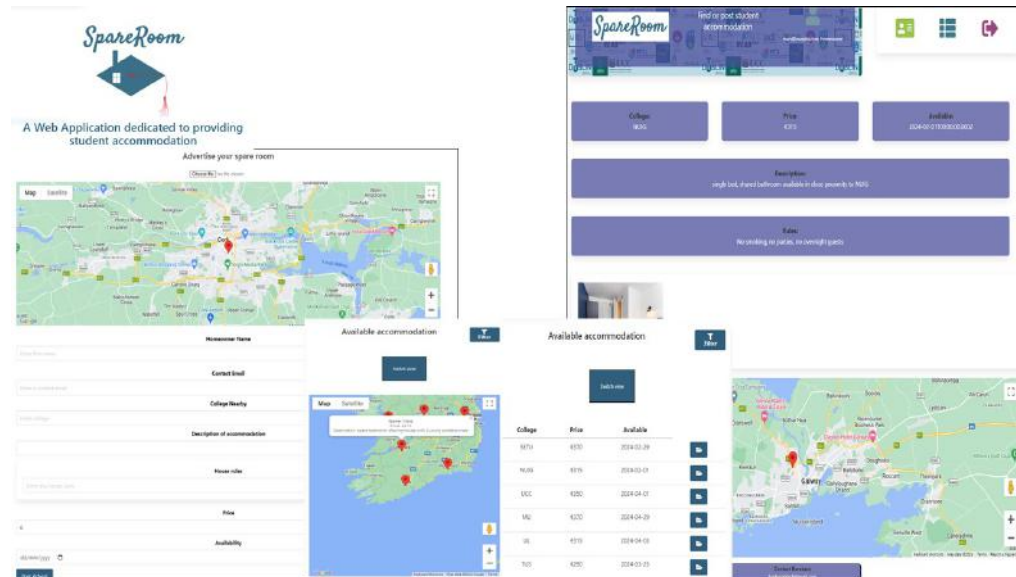
Mary Fitzgerald

# SpareRoom

Not presenting

by Mairéad Holton

I have developed a web application dedicated to student accommodation. Homeowners can post adverts for available accommodation and students can search through adverts to find accommodation that suits their needs. The web application employs a Hapi back-end to create a REST API which interacts with a svelte front-end component. User input is stored in a Mongo database and the web application is hosted on Netlify. The motivation for this project is due to the current housing crisis which is having a huge impact on students.



**Technologies:** Hapi, Svelte, MongoDB, Netlify, JWT, Javascript



<https://spareroomlandingpage.netlify.app>





## Dart

Not presenting

Academic Title

### Automated Document Regression Testing Tool

Project Areas

- CI/CD & Testing
- Work Based Project
- Software Development: (Back End / Mobile Hybrid)

Project Supervisor

Catherine Fitzpatrick

by **Matthew Hornby**

**DART** (Document Automated Regression Testing) is a work based project that provides for a web application that allows users to interact with a document service. The document service relies upon a proprietary low code tool for crafting documents and forms with variability rules. Users of the application can do things like: - Assemble documents - Compare assembled documents - Add unit tests to documents - See document generation statistics and reports - Link Jira tickets to document code changes



**Technologies:** React, Node, Python, Kotlin



<https://dart-landing-page.onrender.com>





Academic Title

## The Ultimate Mobile Festival Companion

Project Areas

- Personal Independent Project
- Software Development: (Mobile Native)

Project Supervisor

Mary Lyng

Festi-Friend is a native Android app that acts as an essential festival guide. It simplifies event planning and attendance for users. Key features include:

- Google Sign-in.
- Realtime updates.
- Three-day forecast for the festival location.
- Comprehensive event schedule that allows users to curate their own personal timetable.
- A brief bio of each artist performing at the festival.
- Community section where users can upload images, review the festival, and engage with posts.
- Festival Map showing the user's live location, plus venue markers that display venue info and performance times.



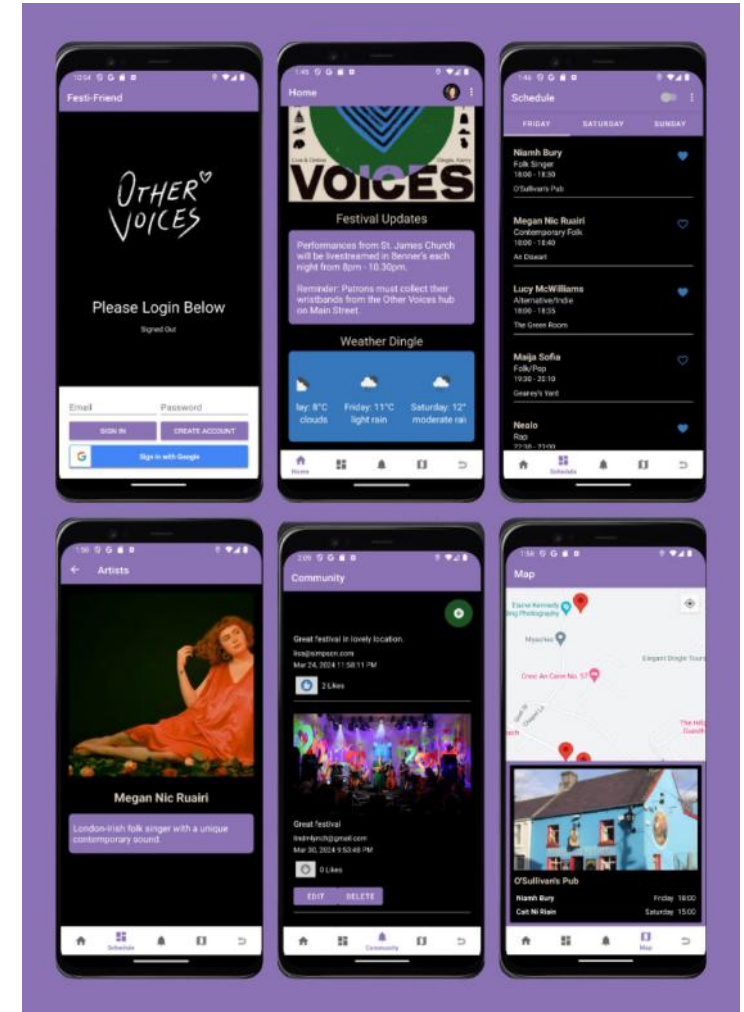
Technologies: Firebase, Kotlin

<https://bit.ly/30FLtsk>

## Festi-Friend

Not presenting

by Linda Lynch





Academic Title

## LearnLocal

Project Areas

- Software Development: (Back End / Front End)

Project Supervisor

Ruth Barry

# LearnLocal

Not presenting

by **Rodrigo Machado da Silva**

People are eager to learn, but finding local experts or accessing community-driven knowledge becomes extremely difficult. LearnLocal proposes a solution where community members can showcase and share their skills. This concept extends beyond traditional learning platforms, emphasizing a community-centric approach. By creating a space for local skill-sharing, LearnLocal aims to encourage a sense of togetherness and make the most of the abundant expertise within a community. Join LearnLocal and help making it a place where everyone feels connected, engaged, and excited to learn together and build stronger local communities.

**Technologies:** React, Chakra, Firebase, Zustand



<https://rodmacbr.github.io/learnlocalwebsite/>



# Neo ChatBot

Not presenting

Academic Title

## Neo ChatBot Creator Web App

Project Areas

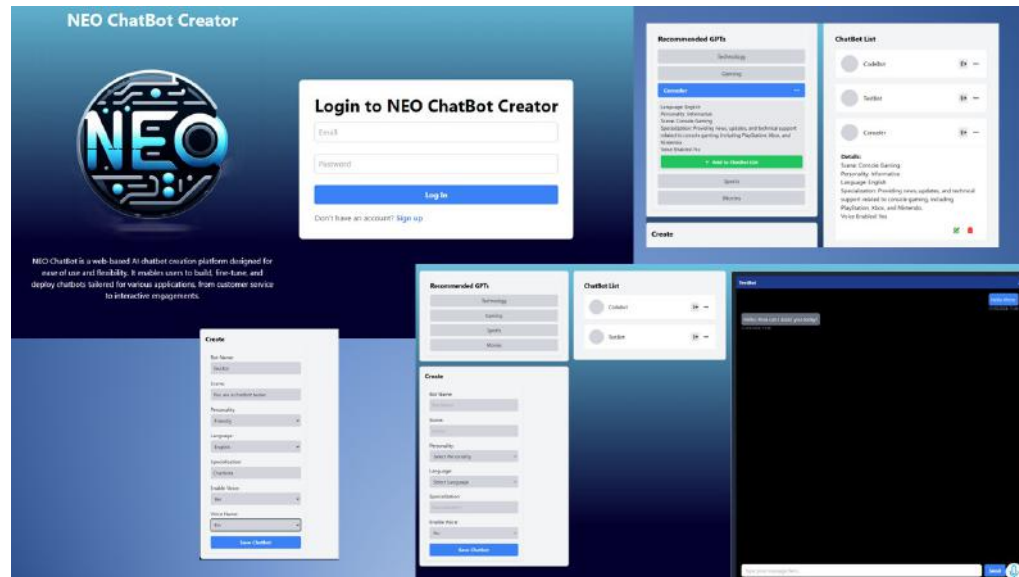
- Artificial Intelligence
- Software Development: (Back End / Front End / Web)

Project Supervisor

John Rellis

by Eugenio Manlapaz

Neo Chatbot is a web app designed for creating and customizing chatbots that can be used in different use cases. The app allows for multiple chatbots with different customization options such as speciality, language and personalities. The user can interact with the chatbot using text and voice inputs. The AI language model used in this web app is OpenAI's 3.5 Turbo which can be further upgraded in the future. The voice functionality of the web app is made possible by ElevenLabs which offers a massive range of voice options.



**Technologies:** React, Typescript, Javascript, Tailwind CSS, FastAPI Python, Firebase, OpenAi, Eleven-Labs



<https://emanlapaz.github.io/NeoLandingPage/>





# FocusSphere

Not presenting

Academic Title

## Android Native Application for the Management of Common ADHD Challenges

Project Areas

- Personal Independent Project
- Software Development: (Mobile Native)

Project Supervisor

Mary Lyng

by Carol Marjara



FocusSphere is an Android compose application developed in Kotlin programming language. It is designed to enhance the focus and productivity of users with ADHD based on INCU motivating factors (Dodson) and aims to mitigate adverse effects of challenges faced by individuals with this neurodivergent condition e.g. executive dysfunction, time management and distractibility.

The application features an easy-to-navigate UI, task and routine lists with CRUD functionality, and a task scheduler which tracks task completion times and generates useful user insights and reports.

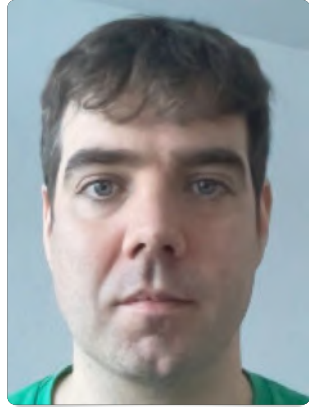
**Technologies:** Android, Kotlin, SQLite, Room, Jetpack Compose



<https://linktr.ee/carolmarjara>







Academic Title

## A Web App Used to Create and Deploy Online Surveys

Project Areas

Project Supervisor

Catherine Fitzpatrick

# My Feedback Form

Not presenting

by **Gregory Mc Carthy**

My project is called MyFeedbackForm. It's a web app used to create, deploy and analyse online surveys. These surveys are web forms used for collecting data for the purpose of market research, customer feedback or any data collection that can be done using a web form. Users of the app will be able to create online questionnaires and invite people to submit responses via a web form.

The backend will be built with Python and FastAPI and PostgreSQL. The frontend will be built with Typescript and React.

**Technologies:** Typestripe, React, Python FastAPI, PostgreSQL



<https://bit.ly/3SB5bXp>





Academic Title

## Mobile App Promoting Safe Swim Locations for Swimmers

Project Areas

- Personal Independent Project
- Software Development: (Mobile Native)

Project Supervisor

Catherine Fitzpatrick

# SeaSplash

Not presenting

by John Mc Donald

SeaSplash is a mobile application aimed towards sea swimmers, who are either new to an area looking for places to swim safely or people who would like to meet up with other swimmers and swim safely in a group. SeaSplash allows users to sign up and login using Firebase authentication. Users can view a list of swim spots which are created by uploading an image and location, which is stored using Firestore. A map of all swim locations is also viewable incorporating Google maps API. Swim meetup events can be created allowing groups of users to organise meeting at a particular beach on a given day.

**Technologies:** Flutter SDK, Dart, Android, Firebase Auth, Firebase FireStore, Google Maps API

## SeaSplash

Promoting safe swimming


<https://bit.ly/hdipseasplash>




# Server Life Cycle Manager

Not presenting

Academic Title

**A Web Application for Managing it Equipment Primarily in Data Center**

Project Areas

- Computer Networks
- Computer Security
- Database and Analytics
- Open Source
- Work Based Project
- Software Development: (Back End / Core / Front End / Web)

**by Tibor Molnar**

Project Supervisors

TJ McDonald, Jerry Horgan

LCManager is a web application designed specifically for system administrators to efficiently handle the management and execution of server and software lifecycles. By addressing usual challenges faced in on-premises server rooms, this application offers viable solution to enhance operational efficiency. A key benefit is its capacity to offer users a centralized perspective on the lifecycle phases and ages of all servers. Moreover, LCManager introduces a catalog that enables administrators to identify crucial factors pertaining to server updates, disposals, and other necessary actions.

**Technologies:** NodeJs, Hapi, Handlebars, Tailwind CSS, MongoDB, Openstack, Data Center



<https://csibman27.github.io/>





# WoofWatch

Not presenting

Academic Title

## Pet Welfare Through IoT: A Raspberry Pi and Mobile Based Pet Monitoring and Interaction System

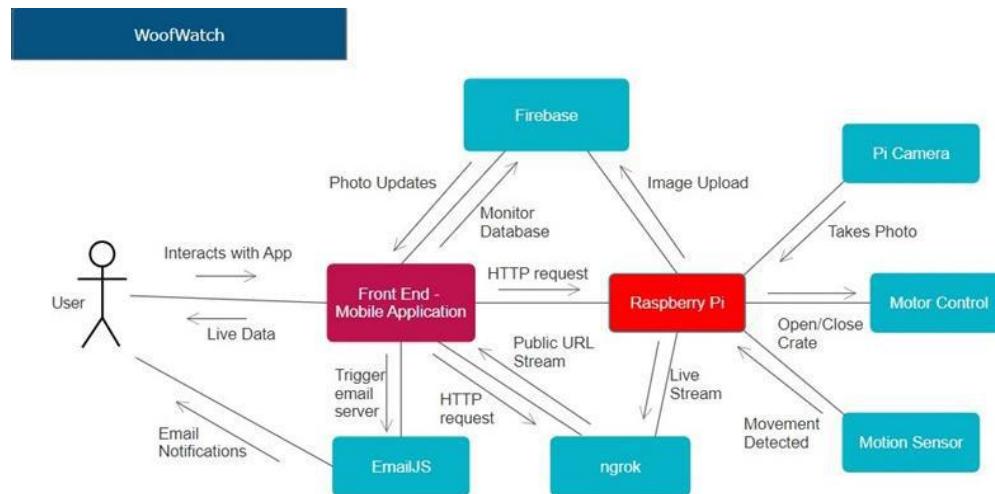
Project Areas

- Internet of Things
- Personal Independent Project

Project Supervisor  
John Rellis

by Donal Murphy

'WoofWatch' aims to cater to the needs of pet owners who seek convenient monitoring and interaction of their housed pets. Leveraging a Raspberry Pi, a connected camera, servo, and motion sensor, the system will integrate with a mobile phone. 'WoofWatch' detects pet movements and sends notifications. Live video streaming functionality offers real-time insights into their pets' activities, allowing owners to make informed decisions about letting their pets in or out of their designated living spaces.



**Technologies:** Networking, Scripting, IoT



<https://donaldo1991.github.io/woofWatch/>



Academic Title

## An Operator That Enables Dynamic Scaling of an Application on OpenShift/Kubernetes

Project Areas

- Cloud Computing
- DevOps
- Open Source
- Software Development: (Back End)

Project Supervisor

John Rellis

# AO-AutoScaler Operator

#62 / TL238

**by Conor O'Malley**

An operator for dynamic web application scaling on OpenShift/Kubernetes, leveraging technologies like OpenShift for containerised application management and Docker for container deployment. It will be developed in Golang, utilising the Operator SDK framework.

**Technologies:** Kubernetes, Openshift, Operators, Docker, Golang



<https://conorom1.github.io/AO-Autoscaler-Operator/>

#63 / TL238

# SiteVisor



Academic Title

## Digital Twin Application for Buildings Monitoring and Asset Management

Project Areas

- Cloud Computing
- Internet of Things
- Open Source
- Personal Independent Project
- Software Development: (Web)

Project Supervisor

Caroline Cahill

by Grzegorz Piotrowski

SiteVisor is a Digital Twin based web app for environmental monitoring of buildings, with elements of asset management. At the core of the user interface is an interactive 3D viewer, rendering a building and the IoT sensors. With only a few clicks we can set up our 3D environment from scratch, by simply sketching out rooms and creating virtual sensors and configuring the data connection from their physical counterparts. The application is deployed on Kubernetes and uses Strimzi operator to run Apache Kafka cluster, which is the heart and arteries of the whole system.

The screenshot displays the SiteVisor web application interface. On the left, a table lists various sensors with their names, IDs, types, levels, and positions. In the center, a 3D perspective view of a building model is shown with colored rooms and sensor locations. On the right, there are charts and status indicators for specific sensors. At the bottom, a banner features logos for the technologies used: Kubernetes, Strimzi, REST framework, three.js, TS, python, docker, PostgreSQL, kafka, django, and SVELTEKIT.

Name	Device ID	Type	Level	Position	Status
Temperature Sensor 0000	sensor001	Temperature	0	-4.45, 0.00, 4.11	OK
DHT11	ipk4-7-34	Temperature	0	0.21, -0.08, -3.23	OK
Humidity 0 meter	ipk4-5372	Humidity	0	0.84, 0.00, 1.04	OK
Main Hallway Humidity Sensor	ipk4-53724	Humidity	0	0.16, 0.00, 5.43	OK
Denro Sensor 02	sensor101	Temperature	0	-8.77, 0.00, 2.88	OK
Denro Sensor 03	sensor402	Temperature	0	6.42, 0.00, 5.35	OK
Therm02	temp0012123	Temperature	0	-1.34, 0.00, 4.04	OK

**Technologies:** Kubernetes, Kafka, Strimzi, Three.js, Django, SvelteKit, Websocket



<http://bit.ly/49A3foT>

#64 / TL238

# KCloud



Academic Title

## IIOT Customizable Solution for Data Transfer in Small to Medium Industrial Control

Project Areas

- Internet of Things
- Work Based Project

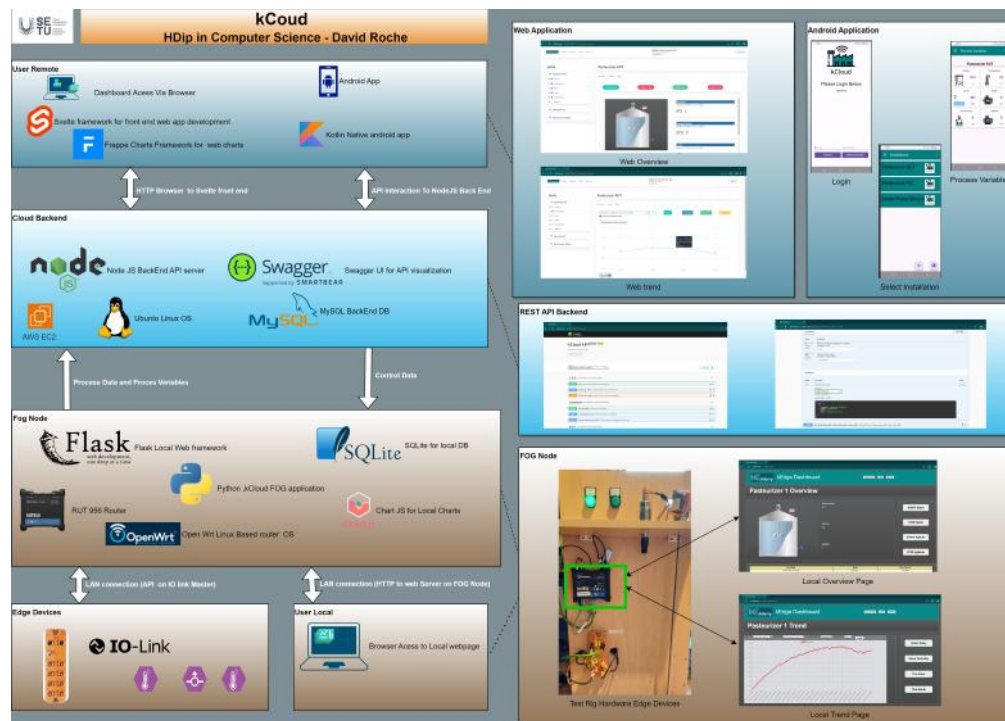
Project Supervisor

Caroline Cahill

by David Roche

This is work-based Industrial Internet of Things project developed for Kilderry Instruments Ltd. It uses the knowledge gained during this course to develop an adaptable IIOT solution that will allow us to offer a greater range of services to our existing and prospective customers in the area of Industry 4.0. Using a real-world sample application written in Python with local control and monitoring via browser, RESTful API cloud connectivity and, Svelte front end this project will be used as a foundation to update existing systems and as the basis for completely new developments.

**Technologies:** Python, SQLite, Flask, MySql, Node JS, Frappe Charts, Charts JS, Kotlin, Svelte, Swagger



<http://www.djroche.ie/#kcloud>



# SwapN

Not presenting

Academic Title

## Second Hand Shopping App: SwapN

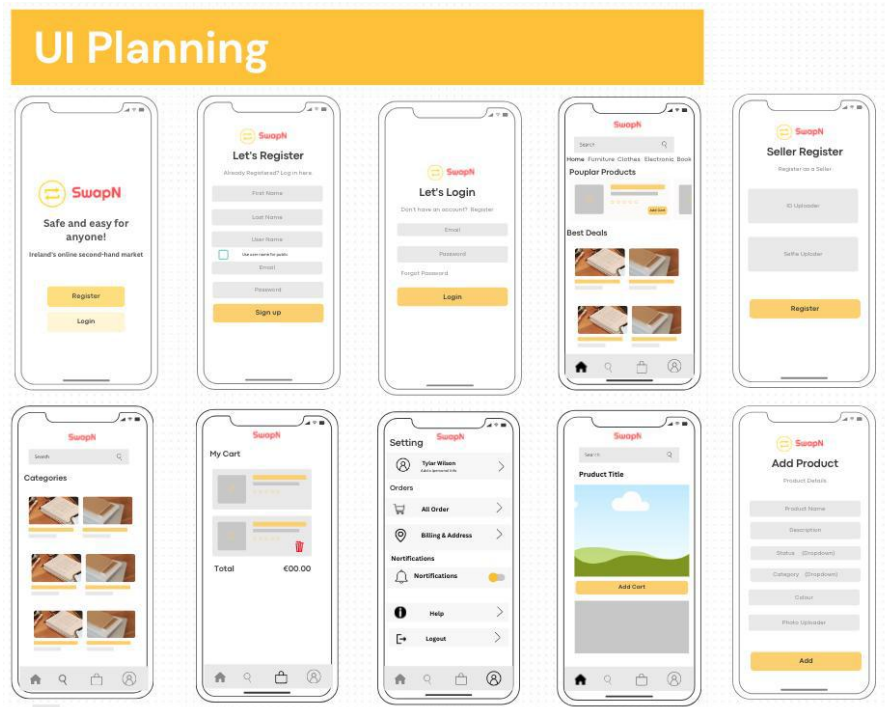
Project Areas

- Software Development: (Mobile Native)

Project Supervisor

Dave Hearne

by Natsumi Shimizu



Android application for a second-hand shopping platform. The aim is to build user interfaces that are easy to use and attractive and enable secure and efficient transactions. Furthermore, the platform aims to comprehensively provide functions related to used goods transactions, such as product search and filtering functions, review systems, and online payments. Safety and reliability are also key focuses. Personal information is protected through user registration and login, ensuring transparency and reliability of transactions.

**Technologies:** Kotlin, Firebase, Google Colud, Stripe



<https://nat1902.wixsite.com/final-project-showca>



# Snapsite.pro

Not presenting

Academic Title

## Computer Vision and Natural Language Processing for Website Creation, Deployment and Hosting Tools

by Wojciech Skrzynski

Project Areas

- Artificial Intelligence
- Automotive and Automation
- Software Development: (Back End / Core / Front End)

Project Supervisor

Eamonn de Leastar

This abstract introduces an innovative application that automates the creation of React websites based on shapes designed in Microsoft Paint, offering users the ability to manipulate CSS styles through intuitive input controls. Leveraging Python, Flask, and React, this solution revolutionizes the process of web development by seamlessly integrating design and customization. This project presents a novel approach to web development that combines automated website generation with dynamic CSS manipulation. By leveraging Python, Flask, and React, this solution offers a streamlined workflow for creating visually appealing and customizable websites from Paint designs

```

html>
lang "en"

charset "UTF-8"
name "viewport" content "width=device-width, initial-scale=1.0"
<title></title>
</head>
<body>
<header>
<h1>/h1>
<nav>
<ul>
<li><a href "#">
<li><a href "#">
<li><a href "#">
</ul>
</nav>
</header>
<main>
<section>
<h2></h2>
<p></p>
</section>
<section>
<h2>Artykul</h2>
<article>
<h3></h3>
<p></p>
</article>
</section>
</main>
<footer>
<p> &copy; 2024</p>
</footer>
</body>
</html>

```

SNAPSITE.PRO



**Technologies:** Python, Machine Learning, Javascript, React

<http://www.snapsite.pro>





# The Great Filter

Not presenting

Academic Title

## The Great Filter Ultimate Tech-talent Recruitment Tool

Project Areas

- Software Development: (Mobile Native)

Project Supervisor

Catherine Fitzpatrick

by Gavin Soady

The Great Filter  
The Ultimate Tech-Talent Recruitment Tool

Android Studio

Jetpack Compose

Firebase Authentication

GitHub Code Repo

The Great Filter is an innovative mobile app dedicated to optimizing the recruitment journey. This app is designed to efficiently connect job positions with the most fitting candidates by implementing advanced filtering mechanisms, reducing noise and expediting the employment process for both Job Seekers and Employers. Job Seeker will gain exclusive access to a curated list of employers and relevant job positions tailored to their skills and preferences. Employers will have a focused view of potential candidates that align with their specific job requirements.

**Technologies:** Android Studio, Kotlin, Jetpack Compose



<https://bit.ly/4a3jsDV>



Academic Title

## Cross-platform Mobile Application for Gaming Community

Project Areas

- Personal Independent Project
- Software Development: (Back End / Mobile Hybrid)

Project Supervisor

Catherine Fitzpatrick

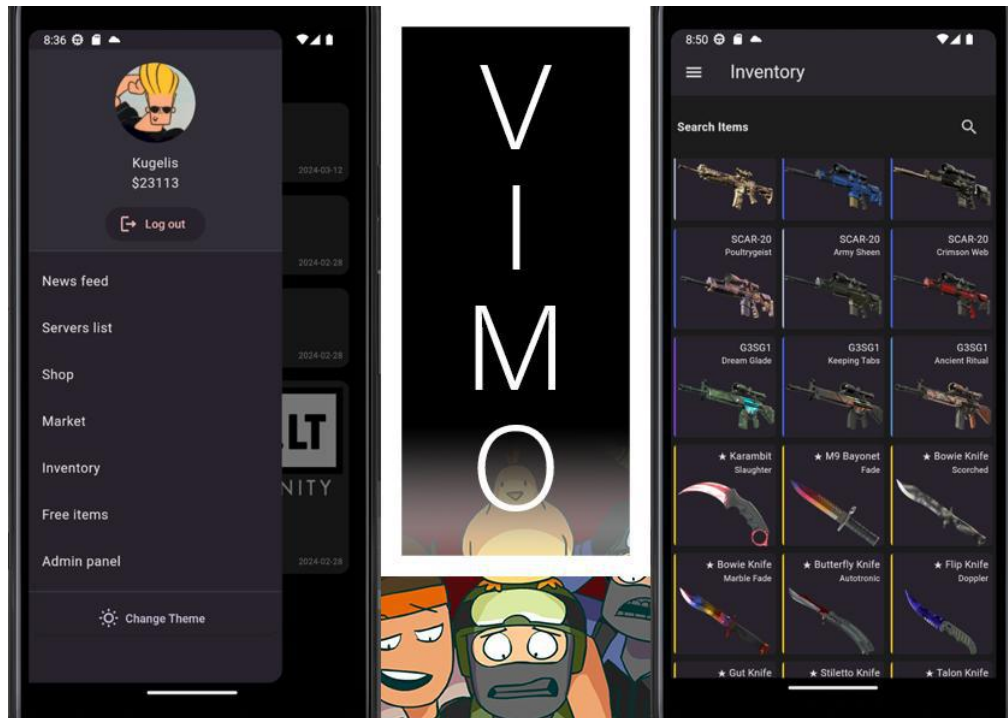
# Vimo.lt

Not presenting

by Vidmantas Valskis

For the past 12 years I've been hosting and developing unique game servers, mainly focused on competitive first-person shooter game called Counter-Strike. In doing so I created a community of roughly 7,000 people. The community has grown, my services evolved, becoming a hub & a platform of sorts for like-minded people oriented around gaming. This project aims to further enhance the user experience by introducing a cross-platform mobile application which would encapsulate many other platforms created along the way, bringing them all to one place. One app, to rule them all.

**Technologies:** Hapi, Node.js, MariaDB, Flutter, Dart



<https://vimo.lt/setu>



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Technological  
University

## **SECTION 3**

**MASTER IN SCIENCE PROGRAMMES —**

**MSC**

PROJECT BROCHURE

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## *MSc in Computing (Enterprise Software Systems)*

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### The aim of the MSc in Computing (Enterprise Software Systems) is

to produce graduates with the necessary knowledge, skills and expertise in the development and management of software systems. The course also confers on the graduates a set of personal and professional attributes that will allow them greater flexibility in the development of their own career options, over the span of their career. Specifically, the course aims to produce graduates who can:

- Reason and problem-solve to a high level in the context of enterprise software and its role in business, industry and research.
- Participate constructively in the strategic deployment of enterprise software in a mobile or cloud environment.
- Manage the development of high-quality enterprise software products and services.
- Undertake research-based projects, providing effective advice and leadership where required.



Academic Title

## Sentiment Analysis in E-learning: Understanding Student Engagement and Satisfaction

Project Areas

- Machine Learning
- Software Development: (Core)

Project Supervisor

Patrick Felicia

The emergence of e-learning has fundamentally changed conventional education models, demanding a sophisticated comprehension of students' encounters. As technology-driven platforms become essential, accurately assessing student mood becomes crucial for optimizing learning settings. This study aims to fill the gap in understanding student involvement and satisfaction in e-learning environments using sentiment analysis. The study aims to apply advanced computational methods to analyze and understand the emotional tone of students.



Technologies: Python

<https://github.com/20105650>

# Sentiment Analysis in E-learning

#65 / Poster Board

by Britty Abraham

### Sentiment Analysis in E-learning: Understanding Student Engagement and Satisfaction

Author : Britty Abraham(W20105650) Supervisor: Patrick Felicia



#### INTRODUCTION

E-learning is transforming education by emphasizing the importance of understanding student emotions to optimize learning environments. This study utilizes sentiment analysis, employing natural language processing to extract and classify students' emotions from their feedback as positive, negative, or neutral, providing essential insights for educators to tailor more empathetic and effective learning spaces. However, current e-learning platforms often fail to effectively capture and address these emotional states, impacting student engagement. Traditional feedback methods miss subtle emotional nuances, and cultural differences further complicate emotional analysis. This highlights a critical need for advanced sentiment analysis techniques to personalize and enhance e-learning experiences, accommodating the diverse needs of students.

#### OBJECTIVES

- Assess the correlation between facial expressions and both learning engagement and emotional experiences in online settings.
- Evaluate how different teaching strategies affect students' emotions and engagement, as reflected by their facial expressions in online learning.
- Create and test algorithms to identify students struggling in online learning through facial expression analysis during video sessions.
- Test the accuracy of Python-based algorithms in detecting emotions from still images of facial expressions in online learning contexts.

#### RESEARCH METHODOLOGY

The research methodology consist of following steps:-

- **DATA COLLECTION:** This process gathers diverse video data from online platforms like YouTube, ensuring ethical compliance and thorough preprocessing for emotion detection.
- **FRAME ANALYSIS:** Frame analysis standardizes video lengths, extracts and emotionally annotates specific frames using both automated and manual methods to create a precise e-learning dataset.
- **EMOTION DETECTION MODEL:** The model, utilizing the Deepface framework, is optimized for detecting emotions in real-time educational settings, focusing on ethical and computational efficiency.

#### LITERATURE REVIEW

- AI and ML enable personalized learning experiences on e-learning platforms, significantly enhancing student engagement and effectiveness.
- AI-driven applications, particularly in e-reading, enhance user interaction and immersion, making digital content consumption more personalized.
- Adaptive learning systems, coupled with sentiment and emotional analysis, tailor educational content and respond to learners' emotional states, improving educational outcomes.
- AI advancements address challenges in privacy and scalability and are crucial in the Fourth Industrial Revolution, making education more accessible and tailored to individual needs.

#### CONCLUSION

This methodology for enhancing e-learning through ML-based emotion detection leverages the Deepface model to bridge the gap between digital and human aspects of online learning. By utilizing diverse video data from YouTube and employing both automated and manual annotations, this research develops a system capable of real-time emotional analysis in educational settings. The methodology ensures consistent data quality and addresses ethical and privacy concerns rigorously, upholding high standards in research practices. This approach not only improves understanding of student engagement and learning challenges but also demonstrates the transformative potential of ML in education, emphasizing the importance of ethical considerations in technological advancements.

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Academic Title

## A Comparative Study on the Provisioning Time of Terraform and Ansible in Infrastructure as Code

Project Areas

- Artificial Intelligence
- DevOps

Project Supervisor

Jimmy McGibney

#66 / Poster Board

by Divya Maria Appachan

This research paper presents a comprehensive comparative study of two popular infrastructure as code solutions, Terraform and Ansible. Infrastructure as Code has become a fundamental practice in modern IT operations, enabling the automation and management of cloud infrastructure and resources. Terraform and Ansible are two leading infrastructure as Code tools that have gained prominence in the field. The research methodology involves evaluating the provisioning speed of Terraform and Ansible.

**Technologies:** Terraform, Ansible, AWS

**A Comparative Study on the Provisioning Time of Terraform and Ansible in Infrastructure as Code Deployment**

Author: Divya Maria Appachan    Supervisor: Jimmy McGibney    Course: MSc in Computing (Enterprise Software Systems)

Introduction

Infrastructure as code reduces time-to-production, improves consistency, and expedites software releases by automating the construction of virtual environments. Two important open-source technologies that facilitate this process are Terraform and Ansible, each of which have unique benefits for configuration management and orchestration. In order to guide the best tool selection, this study attempts to objectively evaluate their effectiveness in provisioning cloud infrastructure.

Methodology

The research methodology involves evaluating the provisioning speed of cloud infrastructure using Terraform and Ansible on AWS, with identical infrastructure configurations. The study aims to compare Terraform and Ansible execution times in various scenarios, assessing deployment efficiency and informing tool selection for infrastructure optimization. This study examines region-specific challenges, availability zone peculiarities, and the impact of cloud services like AWS Lambda and RDS on deployment efficiency, experimenting with different resource architectures.

Initial Experiment and Result

In our initial experiment, we utilized an EC2 instance within an AWS public subnet to serve a static webpage. The architecture comprised essential network elements like security groups, internet gateways, and route tables, alongside AWS services such as EC2 and VPC. The webpage's code was fetched from a public Git repository directly onto the EC2 instance.

Deployment Across Regions: us-east1a, us-east1b, us-west2a, and us-west2b

Varied Architecture: t2.nano, t2.micro, t2.medium Instances

Varied OS :Amazon Linux, Debian, and Ubuntu were created.

Research Objective and Questions

1: Which infrastructure as code tool is more efficient in terms of provisioning speed when creating a cloud infrastructure ?

Compare Terraform and Ansible to help choose the best tool for optimizing infrastructure deployment

2: Which tool is better suited to a particular task when compared to the alternative?

Evaluate how each tool performs across various software development lifecycle activities, including parallel and configuration tasks.

3: Does the provisioning speed for specific infrastructure as code tools depend on the unique features selected for specific cloud deployments, or are specific tools just more efficient than others?

Examine the impact of regions, availability zones, and cloud service requirements on deployment efficiency.



<https://bit.ly/4dKVBeg>



Academic Title

# User Centered Design in Software

## Incorporating User Centred Approach in Agile Software Development

Project Areas

- Software Development: (Web)

Project Supervisor

Lizy Abraham

Agile Software Development (ASD) has proven to solve the problems faced by traditional approaches. However, studies show that the depth of understanding a user's needs is limited when building a solution by only using ASD. This gap of empathising with a user can be solved by integrating Design Thinking (DT) into ASD. This study aims to test the approach most suggested by researchers and practitioners which is upfront design, followed by the development using Agile framework. I am using DT with ASD and test the resulting product for its usability using the usability parameters.



Technologies: ReactJs, Figma

<https://github.com/serenebabu2022/Rentara>

#67 / Poster Board

by Serene Babu



### Design Thinking in Software Engineering

#### Abstract

Design Thinking (DT) has found its way into software development practices across a spectrum of organizations, spanning from startups to major corporations. It serves as a catalyst for exploring problems and nurturing innovative solutions, seamlessly blending with agile methodologies to address the genuine needs of stakeholders.

There is a plethora of DT tools and techniques that form the toolkit to perform DT activities, however, there is a lack of studies mentioning strategies to support the decision process of which techniques to use and detailing which contextual factors.

This research uses the existing recommendation tools to select the Design Thinking techniques to be used in the requirement elicitation stage of software development and tests for the usability of the product. From the encountered usability issues, we can identify and measure the issues related to inefficient requirements elicitation.

#### Research Questions

RQ1: What are the factors to be considered when selecting DT techniques in the Requirements elicitation stage of Agile Software Development.

RQ2: What is the impact on usability of the product when a solution is developed using the DT techniques suggested by the existing recommendation tools?

#### Methodology

##### Solution to RQ1:

Problem Identification and Agile Adoption: Begin by identifying a problem that requires a software solution and adopting Agile methodology for its development.

Requirement Elicitation with DT Techniques: In the requirement elicitation phase, leverage Design Thinking (DT) techniques to identify user needs effectively. Utilize the DT Assistant for Requirements Elicitation (DTA4RE), a recommendation tool consisting of a techniques' repository and a recommendation questionnaire. Select the most suitable DT techniques for the given context.

User Needs Identification: Conduct studies using the selected techniques to identify user needs comprehensively. This process aligns with Agile methodology's focus on iterative development and customer collaboration.

##### Solution to RQ2:

Agile Development: Implement the software development process following Agile principles, including iterative development in small sprints.

Usability Testing: Conduct usability tests to evaluate the effectiveness of the designed software solution in meeting user needs. Use established usability parameters to assess the usability of the product.

Evaluation of DTA4RE: Assess the reliability and accuracy of DTA4RE in recommending DT techniques by comparing its suggestions with the outcomes of usability testing.

#### Initial Results

Problem Identification: In Ireland, there exists a significant demand among international students, short-term visitors, and local residents for everyday items available for rent, as opposed to purchasing them outright. Conversely, numerous local residents possess surplus belongings within their households that could be rented out to meet this demand, thereby providing an opportunity for additional income generation. However, the absence of a convenient and efficient platform for facilitating peer-to-peer rentals within localities poses a challenge in connecting renters with available items and optimizing the rental process.

Requirement Elicitation with DT Techniques: To identify the needs of this user group, used the DTA4RE tool to identify the best DT techniques which can be used in this scenario. After conducting the study based on the techniques' repository and recommendation questionnaire, identified that user personas and user scenarios could potentially reveal the user needs.

User Needs Identification: Conducted studies using the Personas and scenarios and found the requirements of user in terms of the two primary user groups: Renters (people who rent from others) and Providers (people who rent out their items)

#### What's Next

Agile Development: Proceed with the development phase using React, a versatile front-end JavaScript library, and Typescript for the backend. Utilize Agile methodologies to iteratively build and refine the software solution.

Usability Testing: Conduct comprehensive usability tests to evaluate the effectiveness of the developed software in meeting user needs. Employ established usability parameters to assess the user-friendliness and functionality of the product.

Evaluation of DTA4RE: Analyse the alignment between the tool's suggestions and the actual usability of the software solution to determine its effectiveness in guiding the development process.

#### Conclusion

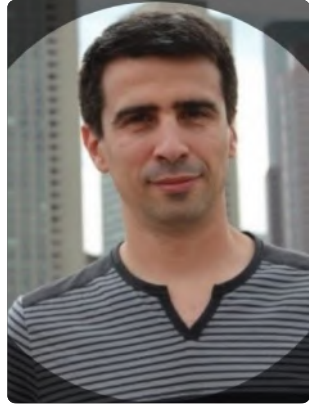
This research has demonstrated the value of integrating Design Thinking (DT) techniques into the software development process, particularly during the requirement elicitation stage. By bridging the gap between user requirements and software design, this research contributes to the advancement of Design Thinking practices in software engineering, ultimately enhancing the development process and delivering solutions that better align with user needs.



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Department: Msc in Computing (Enterprise Software Systems)  
Author: Serene Babu (20105064)  
Supervisor: Lizy Abraham





# Code Generation for RESTful API Services

#68 / Poster Board

Academic Title

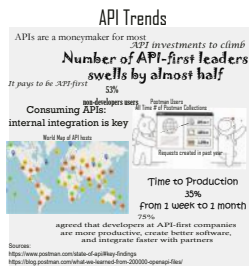
## Automation of Code Generation for RESTful Services

Project Areas

- Information Systems and Modelling
- Software Development: (Core / Web)

by Alexander Borskiy

**Automation of Code Generation for RESTful Services**  
 Aim: Define step by step process flow for using openapi-generator to generate Spring applications from OpenAPI Specification  
 By Alexander Borskiy  
 Supervisor: Dr Siobhan Drohan

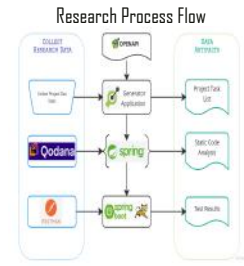


**Research Questions**

RQ1: What are the steps behind the process of adoption of openapi-generator for the needs of the development team?

RQ2: What are the challenges when adopting openapi-generator product for creation of shop specific code?

RQ3: How can the existing openapi-generator be enhanced to address customization needs and challenges identified in previous research questions?



**Findings Samples**

Category	Value
APIs are a money-maker for most	52%
Number of API-first leaders swells by almost half	52%
Time to Production	35%
From 1 week to 1 month	75%

- Process Steps**
1. Create new project in IDE
  2. Add OpenAPI specification to project folder
  3. Modify build.gradle to use openapi-generator plugin
  4. Add config.json
  5. Configure formatter for generated code
  6. Register Maven tasks to build, to copy and to clean
  7. Run configured tasks to generate code and copy to folder
  8. Create generated project in IntelliJ
  9. Setup and run code quality tool - Qodana
  10. Set generated application
  11. Verify with Postman
  12. Generate Controller
  13. Add logger for methods entry/exit
  14. Add service layer
  15. Add repository
  16. Generate JPA entities
  17. Enhance service layer template
  18. Handle test query parameter for nullable method

**Results Summary**

18 steps list for tool adoption is created  
 8 openapi-generator challenges with adoption identified  
 3 enhancements for openapi-generator are described

The RESTful API popularity has driven the demand for rapid development and deployment of such applications. The open-source project, openapi-generator, facilitates the creation of server stubs for REST application, offering generators for various programming languages with configurable options. This research explores the tool’s capabilities, examines the steps involved in synthesis of an OpenAPI specification for generating functional RESTful applications, and documents challenges in the generation process and openapi-gateway expansion. Finally, the research will recommend framework for generation process and will attempt to propose enhancements.

**Technologies:** openapi-generator, REST, API, Openapi specification, swagger

<https://github.com/aborskiy/spec-to-rest-generator>



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#69 / Poster Board

# Navigating Cloud: Challenges, Components



Academic Title

## Cloud Navigation: Challenges, Components, Strategies for Novices & Startups

Project Areas

- Cloud Computing
- Software Development: (Front End)

Project Supervisor

John Rellis

by Uchechukwu Henry Ezeigwe

This project proposal outlines a research endeavor aimed at understanding and addressing the challenges inexperienced cloud users face when launching products into the cloud. It seeks to identify key factors hindering their progress and explore methods to develop applications that can assist this group. The project will investigate the complexities of cloud services, the distributed nature of the cloud, observability and monitoring, and security concerns faced by novice users. Additionally, it will examine critical components and functionalities necessary for supporting these users in developing end-to-end applications. The proposed research also includes exploring strategies for developing applications tailored to help novices transition into the cloud environment.

**Technologies:** AWS, NodeJS, ReactJS, Javascript

<p><b>Title</b></p> <p>Navigating the Cloud: Challenges, Critical Components, and Development Strategies for New Developers</p> <p>Student: Uchechukwu Henry Ezeigwe   Supervisor: John Rellis   Course Title: MSc In Computing( Enterprise Software Systems)</p>		
<p><b>Introduction</b></p> <p>Cloud computing allows for the delivery of digital services over the Internet, eliminating the need for physical infrastructure while providing on-demand access to resources like storage and processing power. Originating from J.C.R. Licklider's idea in the 1960s, it gained traction with Amazon Web Services in 2006, which introduced pay-as-you-go computing. Cloud providers such as IBM Cloud, Microsoft Azure, and Google Cloud Platform offer services including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) to meet diverse business needs. Despite challenges in compliance, privacy, and data security, cloud computing's benefits—cost savings, scalability, and efficiency—continue to drive its adoption, significantly impacting IT and supporting digital transformation.</p> <p>This dissertation explores the challenges developers face when deploying to the cloud, identifying key components for application support and developing a tool for faster web app deployment on AWS using serverless architecture.</p>	<p><b>Objective</b></p> <ol style="list-style-type: none"> <li>1. Identify and analyze the main challenges faced by developers in deploying web applications on AWS, focusing on areas such as security, resource configuration, scalability, and cost management, to understand the pain points and the requirements.</li> <li>2. Develop an Application Programming Interfaces (APIs) tool that uses serverless architecture to speed up the deployment of web apps on AWS. Developers will find it easier to deploy their applications without having to manually configure resources like API Gateway, DynamoDB, and Lambda functions with the help of this tool, which will automate the establishment of these services.</li> </ol>	<p><b>Architecture</b></p>
	<p><b>Research Questions</b></p> <ol style="list-style-type: none"> <li>1. What are the challenges faced by developers when deploying cloud services?</li> <li>2. What are the critical components and functionalities required for an application to support the specific cohort in delivering an end-to-end application?</li> <li>3. How can an application be developed to assist the cohort launch into the cloud?</li> </ol>	<p><b>Methodology</b></p> <ol style="list-style-type: none"> <li>1. Complexity Analysis: Assess the steep learning curve of integrating diverse cloud services, identifying challenges developers face.</li> <li>2. Distribution Evaluation: Examine issues related to data consistency, latency, and synchronization across cloud servers and regions, highlighting difficulties in system design for developers.</li> <li>3. Security and Monitoring Review: Evaluate gaps in understanding security requirements and setting up effective monitoring tools, focusing on vulnerabilities developers may encounter.</li> </ol>



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<https://github.com/mezebu/CloudLaunchSupport>

#70 / Poster Board



Academic Title

## Monolithic in the Microservices Era: A Comprehensive Analysis of Architectural Choices

by Ashika Hussain

Project Areas

- CI/CD & Testing
- Cloud Computing
- Database and Analytics
- Information Systems and Modelling
- Software Development: (Core)

Project Supervisor

Richard Lacey

### Monolithic in the Microservices Era: A Comprehensive Analysis of Architectural Choices

Author: Ashika Hussain Supervised by: Richard Lacey



ABSTRACT	RESEARCH QUESTIONS	EVALUATION FACTORS												
<p>The debate around microservices and monolithic architecture has been going on for a significant period. With the ongoing research that explores various perspectives of people on qualitative and quantitative factors, the topic is conflicting on different fronts. This research seeks to address this issue by doing secondary research to formulate a checklist that can be used in the decision-making process. The methodology used will be the meta-analysis of existing literature and a case study of organizations like Amazon, Shopify and GitLab will be carried out.</p>	<p><b>RQ1:</b> What factors influence the choice between monolithic and microservice architectures in contemporary software development?</p> <p><b>RQ2:</b> How have successful companies, such as Shopify and Amazon Prime (during their transition), navigated the decision-making process between monolithic and microservice architectures?</p> <p><b>RQ3:</b> In companies employing combined/hybrid systems with monolithic and microservices architectures, what are the advantages and disadvantages to consider?</p>	<table border="1"> <thead> <tr> <th>Quantitative Factors</th> <th>Qualitative Factors</th> </tr> </thead> <tbody> <tr> <td>Time</td> <td>Human Factors</td> </tr> <tr> <td>Scaling</td> <td>Resource Constraints</td> </tr> <tr> <td>Cost</td> <td>External Factors</td> </tr> <tr> <td>Efficiency</td> <td></td> </tr> <tr> <td>Market Trends</td> <td></td> </tr> </tbody> </table>	Quantitative Factors	Qualitative Factors	Time	Human Factors	Scaling	Resource Constraints	Cost	External Factors	Efficiency		Market Trends	
Quantitative Factors	Qualitative Factors													
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<p><b>INTRODUCTION</b></p> <p>One of the most important aspects of any product development is deciding on what the architecture structure of the application will be like. This decides how the components will interact, how data will flow and how efficient will be the system to adapting to changing requirements. This proposal seeks to scrutinize these factors within which software developers make choices between monolithic or micro- service style systems showing when one should opt for them as organizational strategy.</p>	<p><b>METHODOLOGY</b></p> <p>This study combine both qualitative and quantitative methods.</p> <p><b>Meta Analysis :</b> There have been numerous prototype based researches done in regard to monolithic vs microservices and there are visible conflicts due to environment, framework used and the complexity of the application. By analysing various literatures in the topic, data on various aspects like time, cost, scaling, will be analysed.</p> <p><b>Case Study :</b> As a conclusion cannot be drawn from just quantitative factors we will be using Case Study of various organisation like Shopify, GitLab and Amazon to analyse the human factors, resource constraints and external factors associated with the selection.</p>	<p><b>ANALYSIS</b></p> <p>The data collected through meta analysis will be used to analyse the above mentioned quantitative factors like Time, Scaling, Efficiency and Cost. The Qualitative Factors will be mainly analysed using case study along with research papers based on the same.</p>												
		<p><b>LIMITATION</b></p> <p>The aim of this study is to fill the existing gap in a selection criteria for software architecture. However, it is important to acknowledge that qualitative human factors can limit from building a proper checklist for Qualitative Factors.</p>												

The debate around microservices and monolithic architecture has been going on for a significant period with ongoing research that explores various perspectives. Despite the research on this topic, determining the architecture remains challenging due to conflicting reasons cited. This research seeks to address this issue by doing secondary research and creating a checklist to aid their decision-making process. For this research, a meta-analysis involving a systematic review of the existing literature and case-study research of organizations like Amazon, Shopify, etc will be carried out.

**Technologies:** Qualitative analysis



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<https://github.com/ashika-hussain/dissertation>



# Securing Password Storage

#71 / Poster Board

Academic Title

## Securing Password Storage Using Hybrid Approach of Hashing and Encryption

Project Areas

- Computer Security
- Software Development: (Web)

by Farhaan Kaleem

When passwords are stored in databases, they are stored as hashed values. These hashed values have signatures attached to them, which when seen by the attackers gives them the idea about the algorithm used. These algorithms can be argon2, Bcrypt and so on.

This paper proposes that instead of just hashing and storing the passwords, they should also be encrypted after being hashed. The algorithm used for encryption is AES and the algorithm used for hashing is Argon2.

The motivation for this paper is that as we see many banks, hospitals store user sensitive data it becomes essential to protect these data. These sensitive data if is hacked or leaked by the hackers can cause issues both legally as well as trust of the customers can be lost. Hence this research paper.

**Title**

**Secured Data Transmission in Wireless Sensor Networks using Hybrid Encryption Algorithm**  
Student: Farhaan Kaleem | Supervisor: Dr. John Sheppard | Course Title: MSc in Computing (Enterprise Software Systems)

Orion  
Technologies  
an OracleNet  
South East  
Technological  
University

**Introduction**

Wireless Sensor Networks (WSNs) have become increasingly prevalent due to their wide range of applications in areas such as environmental monitoring, healthcare, and military. However, the open nature of these networks makes them vulnerable to various security threats. Therefore, ensuring secure data transmission in WSNs is of paramount importance.

This research focuses on enhancing the security of data transmission in WSNs using a hybrid encryption approach that combines the Advanced Encryption Standard (AES) and the Number Theory Research Lattice (NTRU) encryption algorithm. AES is known for its speed and efficiency, while NTRU is renowned for its security robustness. By integrating these two algorithms, this research aims to provide a robust and efficient security framework for data transmission in WSNs. This hybrid approach is expected to leverage the strengths of both algorithms, thereby ensuring the integrity and confidentiality of data while maintaining a reasonable level of performance.

**Architecture**

**Research Questions**

**RQ 1:** How can the hybridisation of NTRU and AES improve the security of data transmission in wireless sensor networks?

**RQ 2:** What is the impact of the hybrid encryption algorithm on the energy consumption of wireless sensor nodes?

**Methodology**

1. Implement the AES + NTRU algorithm.
2. Simulate WSN using NS3
3. Calculate the different parameters over the network during simulation. These parameters includes , the encryption time, the decryption time, the power consumed and the size of the cipher text.
4. Do a comparative analysis of different algorithms like RSA (Rivest-Shamir-Adleman), ECC (Elliptic Curve Cryptography) and their combination with AES, DES, based on the above parameters.
5. Use tools like Wireshark to get the data during transmission, also try to manipulate this data during transmission. This ensures the security and performance evaluation of AES + NTRU.

**Evaluation**

Comparative analysis of AES+NTRU, RSA, ECC, and their combination with AES, DES algorithms will be done based on the parameters like the encryption time, the decryption time, the power consumed and the size of the cipher text, which will give us the efficiency and security of different algorithms. Thus, we can get the best algorithm.

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**Technologies:** Database, AES Algorithm, Argon2 Algorithm, JavaScript

<https://sample.com>



# Tutors Analytics & Visualisation

#72 / Poster Board

Academic Title

## A Learning Analytics Information Model and Visualisation Framework for Tutors

by Michael Kelly

Project Areas

- Database and Analytics
- Information Systems and Modelling
- Open Source
- Software Development: (Back End / Core / Front End / Web)

Project Supervisor

Eamonn de Leastar

Tutors is an open source learning platform developed at SETU, hosting a diverse range of modules, programmes and students (<https://tutors.dev>). This work proposes a new learning analytics model for the platform, coupled with a visualisation framework. This model efficiently captures student activity, including detailed resource access patterns in a temporal context. The framework presents the student interactions visually with a view to offering educators enhanced insights on student/module usage, participation and engagement.



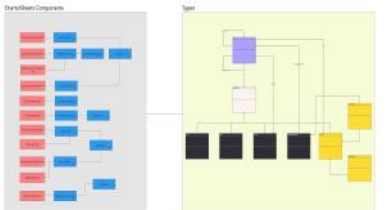
### A Learning Analytics Information Model and Visualization Framework for the Tutors Open-Source Project

**Course Title:** MSc in Computing (Enterprise Software Systems)





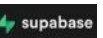


**Name:** Michael Kelly

**Supervisor:** Eamonn de Leastar

Tutors is an open-source learning platform developed at SETU, hosting a diverse range of modules, programmes and students (<https://tutors.dev>). This work proposes a new learning analytics model for the platform, coupled with a visualisation framework. This model efficiently captures student activity, including detailed resource access patterns in a temporal context. The framework presents the student interactions visually with a view to offering educators enhanced insights on student/module usage, participation and engagement.

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**Technologies:** Typescript, SvelteKit, Tailwind, Skeleton, SQL, Supabase, OAuth, RPC, E-Charts, PartyKit, WebSockets

<https://michael-kelly-20041540.netlify.app/>





Academic Title

## Optimized Three-pivot Quicksort Algorithm

Project Areas

- Software Development: (Core)

Project Supervisor

Bernard Butler

Three-pivot Quicksort algorithm is a variation of the regular Quicksort algorithm, where instead of the traditional single pointer, the three-pivot variation uses three pivots and partitions a list into four sub-problems. Three-pivot Quicksort algorithm was introduced in 2013 and observed that it is not significantly faster when compared to the regular version of Quicksort. This study aims to observe the difference in run-time of Three-pivot and regular sorting algorithms when executed on contemporary computing machines and discover possible optimization techniques that would enhance the run-time of the Three-pivot variation of the Quicksort algorithm.



**Technologies:** Cuda, C++

<https://github.com/JavidMoradi/msc-computing>

#73 / Poster Board

by Javid Moradi

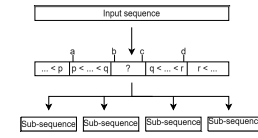


### Optimized Three-pivot Quicksort Algorithm

Student: Javid Moradi  
 Supervisor: Dr. Bernard Butler  
 Course title: MSc in Computing (Enterprise Software Systems)

#### Introduction

Three-pivot Quicksort algorithm is a variation of the regular Quicksort algorithm, where instead of the traditional single pointer, the three-pivot variation uses three pivots and partitions a list into four sub-problems. Three-pivot Quicksort algorithm was introduced in 2013 and observed that it is not significantly faster when compared to the regular version of Quicksort. This study aims to observe the difference in run-time of Three-pivot and regular sorting algorithms when executed on contemporary computing machines and discover possible optimization techniques that would enhance the run-time of the Three-pivot variation of the Quicksort algorithm.



#### Optimization Methods

1. **Insertion sort** is applied to **Three-pivot Quicksort** when size of a subproblem falls under a certain constant threshold; main motivation behind this technique is to eliminate the complexity of Three-pivot sorting when applied on a small set, and efficiency of insertion sort on small inputs.
2. **Naive multi-threading (Naive MT)** technique, where an input set is divided into some sub-problems, and each sub-problem is assigned to a thread that sort their respective set. The sorted sub-problems are merged in the last step. This way, the input is sorted in parallel.
3. Another **parallel multi-threaded sorting (Parallel TP)** technique similar to naive variation, but before assignment of a sub-problem to a sorting thread, a smart partitioning occurs, so that after each sub-problem is sorted with their thread, the final product is the sorted input.
4. **Three-pivot Quicksort with cache**, where pointers of the algorithms are cached for run-time enhancement.

#### Conclusion

Three-pivot variation of Quicksort algorithm is observed to be more efficient in terms of run-time execution; especially when observed on contemporary computation machines. Also, observed optimization techniques are proved to further improve the run-time efficiency, but they can be dependent on an input's properties.

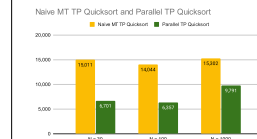
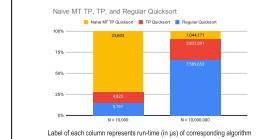
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#### Research Questions

1. Is there a dramatic difference between the three-pivot Quicksort algorithm and its regular counterpart since the publication of the study that covers Three-pivot Quicksort algorithm, assuming the enhancements done on computation machines' hardware.
2. What are possible optimization techniques to further improve the run-time of the three-pivot Quicksort algorithm, such as multi-threading, cache utilization, alternative pivot choice methods, etc.

#### Findings

Three-pivot Quicksort is faster than regular Quicksort **24%**



N=3000 Run-time (µs)	Naive MT Quicksort with Cache	Naive MT Quicksort	Parallel TP Quicksort	
54	74	55	56	71

#### What's Next?

Observe the remaining optimization techniques, such as alternative pivot choice methods, graphical processor integration, Object type based sorting, effect of caching in the algorithm, and in-depth testing and analysis of the algorithm.



Academic Title

## AI in Autonomous Vehicle

Project Areas

- Artificial Intelligence
- Automotive and Automation
- Database and Analytics
- Game Development
- Internet of Things
- Machine Learning

AI in conjunction with vehicular technology plays a vital role in the autonomous vehicle ecosystem that seeks to take safety, efficiency, and innovation to new heights. AI Technologies within autonomous vehicles are driven by the commercial front roles including “AI in Autonomous Vehicle Product Manager,” “Autonomous Vehicle AI Solutions Architect,” and “Director of AI Integration for Autonomous Systems”.



**Technologies:** Sensors, Machine Learning, GPS, GNSS, human machine interface

<https://github.com/prratiik/cdk-alb-ec2>

# Autonomous Vehicle AI Solutions Architec

#78 / Poster Board

## by Pratik Ealumalai Mudliyar

**Optimizing Latency in IoT Data Processing Through Edge Computing in Smart City Environments: A Study on Real-Time Traffic Management**



### INTRODUCTION

In the bustling landscape of smart cities, the effective management of data is pivotal for ensuring seamless operations and enhancing the quality of life for citizens. Among the myriad applications of Internet of Things (IoT) technology, real-time traffic management stands out as a critical component in optimizing urban mobility and reducing congestion. In this era of interconnected devices and vast data streams, the traditional centralized approach to data processing faces challenges such as latency, bandwidth constraints, and privacy concerns. Edge computing emerges as a promising paradigm to address these issues by decentralizing data processing and bringing computational power closer to the data source. This study delves into the realm of optimizing latency in IoT data processing through the implementation of edge computing infrastructure within smart city environments. Focusing specifically on real-time traffic management, the research aims to explore how edge computing can significantly reduce latency, enabling swift decision-making and proactive interventions to alleviate traffic congestion. By leveraging edge computing resources strategically positioned throughout the urban landscape, the study seeks to analyse the impact on data processing speed, responsiveness, and overall efficiency in managing traffic flow. Furthermore, it endeavours to examine the scalability, reliability, and cost-effectiveness of edge computing solutions in comparison to conventional centralized approaches.

### SCOPE

This research explores optimizing latency in IoT data processing using edge computing for real-time traffic control in smart city settings, focusing on scalability, impact on traffic management, interoperability standards, 5G integration, and edge AI.

### RESEARCH QUESTION(S)

How might edge computing architecture reduce processing latency for Internet of Things (IoT) data used in real-time traffic management?  
How can we best optimize latency in processing data from the Internet Of Things (IoT) at the network's edge for the purpose of traffic management?  
In order to control traffic in real-time, what are the main obstacles to adopting edge computing, and how might these be overcome?

### METHODOLOGY

This text explores edge computing's role in smart city traffic management, comparing its performance to traditional methods, and suggests future research with AI, 5G, and edge analytics.

### PRELIMINARY LITERATURE REVIEW

The literature review explores edge computing in smart cities for real-time traffic management, discussing architectures, latency optimization, AI, and challenges like data privacy, security, and limited resources.

### CONTRIBUTION TO RESEARCH KNOWLEDGE ANTICIPATED

The study explores edge computing architecture for real-time traffic management in smart cities, highlighting latency reduction, performance metrics, and future research integrating AI, 5G, and edge analytics.

### VALIDATION METHODOLOGY

Smart cities are improving traffic management by collecting real-world traffic data from IoT devices and implementing edge computing architectures, improving latency, and analyzing performance metrics.

### SPECIAL RESOURCES REQUIRED

The study necessitates the use of real-world traffic data, edge computing infrastructure, IoT devices, traffic simulation software, stakeholder feedback, a testing environment, and expertise in traffic management and edge computing.

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Department: Msc in Computing (Enterprise Software Systems)  
Author: Pratik Mudliyar (20105247)  
Supervisor: Frank Walsh



Academic Title

## To Investigate the Current State of Art of LLMs for the Purpose of Replacing Dashboards

Project Areas

- Artificial Intelligence
- Database and Analytics

Project Supervisor

Kieran Murphy

It is often said that data is the new gold. Many companies desire to use trends in their data to increase revenue. Therefore the need for swift self-service analytics to gain insights from data is growing. The complexity of current data visualisation tools is a barrier to many non-technical users and these tools often come with a high cost. This project will leverage AI, particularly, pre-trained Large Language Models, to bypass third-party software limitations and enable natural language data interaction. The project will assess the capabilities of pre-trained models from major tech firms, aiming to identify the best for self-service analytics. A comparison will give insight into which of the models is best for an organization to use for this use case.



**Technologies:** GPT4/OpenAI API/ Python (pandas)/ Langchain/ Various AWS Resources +Bedrock/ Google Gemini/Mistral

<https://github.com/LauraNorbury/DissertationSubmission>

# AI to Bi: LLMs for Data Visualisation

#74 / Poster Board

by Laura Norbury

### To investigate the current state of art of Large Language Models for the purpose of replacing dashboards for reporting

From AI to Bi: LLMs for Data Visualization

Laura Norbury MSc in Computing (Enterprise Software Systems)

Supervisor: Dr Kieran Murphy

#### Introduction

**Problem Statement**  
Modern businesses require data visualisation for analytics and insights. However, creating data visualisations is time-consuming, and users often express dissatisfaction with reports for several reasons:

- The end product doesn't meet the desired requirements.
- Miscommunication between users' requirements and developers' interpretation of requirements.
- Handling unfamiliar, niche data can lead to errors.
- New insights from reports often lead to more questions and additional work.

To address this, many companies desire 'self-service' analytics, allowing users to create their own insights. This approach has challenges:

- Technical complexity: Non-technical users struggle with complex visualisation tools.
- Technical users are reluctant to spend time on extra work that was previously done for them.
- Different users' interpretations lead to inconsistencies.

**Motivation**  
Despite improvements in self-service analytics tools, like Tableau and Power BI, non-technical users still find them inaccessible. Recent AI advancements may help alleviate this problem.

Large Language Models (LLMs) trained with user data could replace existing self-service analytics tools. Providers like Google, OpenAI, and AWS offer pre-trained models, making it easier to integrate AI without a full data science team. This in-house approach keeps data secure and compliant with regulations like GDPR.

#### Results and Key Findings

- The initial prototype answers user questions on an ad-hoc, one-shot basis. Future improvements include the use of an agent and enabling the model to seek clarification from users. This approach aims to address hallucinations as discussed in research question 2.
- LLMs are more effective if they are asked to generate code which is then used to interrogate the data rather than to interrogate the data directly.
- The models generally produce accurate outputs, aligning with expected results most of the time.
- Hallucinations have not posed a significant issue to date. In the majority of cases, the model provides the correct answer. The primary issue identified involves the model misinterpreting questions or words with multiple meanings. Implementing clarification mechanisms is planned to mitigate this issue.

#### Research Questions

**Research Question One**  
How effective are emerging large language model-based solutions in addressing user needs in comparison to modern reporting software?

**Research Question Two**  
Large Language Models suffer from hallucination. What impact does this have on report generation and what can be done to avoid this?

#### Technical Build Overview

Multiple approaches were explored, including the creation of custom code generation applications, fine-tuning models for insurance data, and using experimental assistant APIs. Final architecture selected is based on the Python library **PandasAI**.

**PandasAI** is a Python library leveraging its own generative AI model to interpret natural language queries and translate them into Python code and SQL queries. This code is then used to interact with the data and return results to the user in natural language or chart form. The system operates with two LLMs:

- The LLM within the Python library interprets the user's question, generating the necessary code.
- This code is then executed by the user's own LLM to produce the answer.

Importantly, no data is transferred to the Python library; it operates solely on the schema.

#### Progress To Date

**Research Question One**  
Four models were shortlisted: GPT-4, Claude 3 (Sonnet), PaLM 2 (Bison), and BambooLLM (an open-source model). Models were selected based on their capabilities and relevance.

A Natural Language Interface web application was successfully developed. This web app enables users to query their data effectively.

**Research Question Two**  
For the second research question, several methods to enhance model accuracy have been identified. These include implementing clarification techniques and developing the application based on code generation rather than relying solely on the model to generate answers.

The above diagram shows the process of generating answers using the built application in a natural format.

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Academic Title

## Integrating Artificial Intelligence for Optimising Hotel Productivity

Project Areas

- Artificial Intelligence

Project Supervisor

John Sheppard

The hospitality industry has seen significant advancements in technology, with AI being a key driver for efficiency and guest satisfaction. AI can improve operational processes, automate repetitive tasks, and offer unique guest experiences. However, the integration of AI into hotels presents challenges, including ensuring privacy and ensuring reliable cybersecurity measures. This study aims to identify potential opportunities and threats associated with AI in the hotel industry, while also addressing the need for intentional integration without disrupting workflow.



Technologies:

<https://github.com/renuppeterW20105518/AI.git>

# Artificial Intelligence for Hostels

#79 / Poster Board

by Renu Palappamannil Peter

## Integrating Artificial Intelligence for Optimising Hotel Productivity

Renu Palappamannil Peter  
20105518



### Introduction:

- Adding Artificial Intelligence (AI) has become a game-changer for improving hotel efficiency in today's fast-paced hospitality industry.
- AI-driven solutions can change the way guests experience a business and make operations run more smoothly in many ways.
- From personalised suggestions and predictive analytics to smart use of resources and automatic customer service, AI technologies have the potential to make things run more smoothly and make guests happier at the same time.
- New uses of AI are changing old ways of doing things and setting new standards for great service.
- This research tends to explore the world of AI-powered solutions that open up new ways for hotels to be more productive and give their guests the best experiences possible.



### Methodology:

- The present study employs a positivist research ethic in its approach, emphasising objective data analysis to examine the effects of AI-driven customisation services on hotel visitor happiness.
- Using a cross-sectional study methodology makes it possible to gather information from a variety of hotel visitors, facilitating the analysis of trends across time.
- Guests will get surveys with Likert scale and basic questions to collect quantitative data on their opinions.
- To find patterns and relationships in the data, data analysis will use statistical methods including descriptive and inferential analyses.
- To maintain the validity and reliability of the results and guarantee the preservation of participants' rights and privacy, ethical principles, such as informed consent and data privacy, will be closely adhered to throughout the research.



### Conclusion:

In conclusion, this study sheds light on the pivotal role of AI-driven customisation services in enhancing hotel productivity and guest satisfaction. Through a comprehensive analysis of guest perceptions and the impact of AI technologies, valuable insights will be gleaned. The findings will underscore the importance of personalised AI solutions in meeting the evolving needs of guests, thereby improving their overall experience. Moreover, ethical considerations and data privacy emerged as crucial factors in the successful implementation of AI in the hospitality sector.



### Aim and Objectives:

- The aim of the study is to examine the effects of incorporating artificial intelligence (AI) on hotel productivity.
- The research intends to pinpoint the precise areas within hotel operations where AI technologies may maximise productivity and improve visitor happiness via a thorough review of AI-driven solutions.
- The research aims to shed light on the possible advantages and difficulties of implementing AI in the hotel sector by looking at the use of AI-powered systems for activities including automated customer service, tailored suggestions, and predictive analytics.
- In the end, the goal is to provide hotels with practical advice on how to use AI to increase efficiency and provide better guest experiences.



### Results:

- Using metrics like means, rates, and percentages, descriptive analysis will be performed to compile the data, including participant replies and demographic features. This can offer a comprehensive picture of the use of AI-powered services and trends in visitor satisfaction.
- Furthermore, to investigate correlations between variables, inferential analytic methods such as regression analysis and correlation analysis used.
- The sorts of AI technologies deployed and demographic characteristics are only two examples of the major elements that regression analysis will find to determine visitor satisfaction.
- Through comprehensive research, the study seeks to provide significant insights that help guide strategic decision-making, enhance the hotel industry's guest experience, and eventually raise overall productivity and satisfaction.



Academic Title

# Generative AI Code Migration Pipeline

#75 / Poster Board

## Building a Generative AI-powered Code Migration Pipeline for Application Modernisation

Project Areas

- Artificial Intelligence
- CI/CD & Testing
- Machine Learning
- Software Development: (Core)

by Emma Roche

Focusing on leveraging generative AI, the goal of this research is to build an efficient code migration pipeline. This involves incorporating prompt engineering techniques to guide the AI models and developing a robust quality assessment framework using custom unit tests and static analysis tools. The research delves into existing generative AI models, evaluating their benefits and limitations for code migration. The experimental design emphasises automation and quality assurance throughout the pipeline, including data preparation, code migration using generative AI, and an experimental testing framework. The ultimate objective is to streamline the code migration process while ensuring the accuracy, reliability, and efficiency of the generated code.

### Building a Generative AI-Powered Code Migration Pipeline for Application Modernisation



#### Introduction

The aim of this dissertation is to explore the capabilities of generative artificial intelligence (AI) in streamlining and enhancing code migration, by building a **generative AI-powered code migration pipeline for application modernisation**. The scope of this research is focused on looking into pre-trained generative AI-Models from platforms such as **OpenAI, VertexAI and Ollama**. The selected models will be used to migrate code from **Java to Kotlin, JavaScript to Python, JavaScript to TypeScript and Objective-C to Swift**. This dissertation will also explore the efficiency of using **prompt engineering** for this process. Furthermore, the migrated code will be quantitatively and qualitatively analysed by means of **static analysis tools and unit testing**.

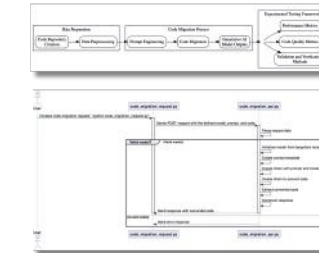
#### Research Questions

- RQ1:** How does the contemporary landscape of generative AI contribute to the facilitation of code migration?
- RQ2:** How can the quality of code migration using generative AI be assessed?
- RQ3:** How can the dissertation's insights provide practical recommendations and decision-making criteria for code migration using generative AI?

#### Current Work

- Commenced the **"Code Migration Process"** stage of the pipeline.
- Currently migrating from **JavaScript to Python** using code from <https://github.com/-johnrellis/johnrellis-users-api>.
- At a high level, the code migration process involves integrating the generative AI models into the pipeline using Langchain, and incorporating prompt engineering techniques to optimise the model outputs.

#### Pipeline Outline & Architecture



#### Selected Models & Framework

- |   |  |
|---|--|
| <b>Models</b> <ul style="list-style-type: none"> <li>• GPT 3.5 Turbo</li> <li>• Gemini Pro</li> <li>• PaLM2</li> <li>• Codey for code generation</li> <li>• Llama 3</li> <li>• Llama 2</li> <li>• CodeLlama</li> <li>• CodeGemma</li> </ul> | <b>Framework</b> <ul style="list-style-type: none"> <li>• Langchain</li> </ul> <p>LangChain is a framework for creating large language model (LLM)-driven applications. LangChain was selected to make it easier to incorporate multiple different generative AI models into the pipeline.</p> |
|---|--|

#### What's Next?

- **Data Preparation:** The data preparation step will involve creating a code repository that contains diverse, open source code artefacts. The selected code artefacts will be representative of the selected programming languages to be migrated. This repository will act as the dataset for the models in the pipeline.
- **Experimental Testing Framework:** During experimental testing, the migrated code will be validated and verified for correctness and functionality using custom unit tests. Code quality metrics, including readability and maintainability, will be assessed using static analysis tools and linters to ensure adherence to coding standards.
- Use the dissertation's insights to **establish practical recommendations and decision-making criteria** for code migration using generative AI.



**Technologies:** Generative AI Models (e.g., OpenAI's GPT-3.5, GPT-4 Turbo, etc.)

<https://github.com/emmaroche/generative-AI-powered-code-migration-pipeline>

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Course: MSc in Computing (Enterprise Software Systems)  
 Author: Emma Roche Email: 20088680@mail.wit.ie  
 Supervisor: John Reilly

#76 / Poster Board



# Analysis of Cross-platform Development

Academic Title

## Analysis of the Use of Cross-platform Development

Project Areas

- Software Development: (Mobile Native)

by Ilya Tokarev

The purpose of this study is to analyze cross-platform development and compare it with native development. Also determine the advantages and disadvantages of this approach in contrast to native development. Each approach in mobile application development depends on the specific goals of the application. Since the development of a mobile application is a long and complex process, the initial selection of a development framework is an important task, because it will make it easier and better to obtain the desired result. For this purpose, it is important to find out in detail in which cases it is more important to use native or cross-platform mobile development.

**Technologies:** Android, Flutter, Firebase, Kotlin, Dart

**Analysis of the use of cross-platform development**  
MSc in Computing (Enterprise Software Systems)  
Student: Ilya Tokarev  
Supervisor: Patrick Felcia

**Scope**  
The purpose of this study is to analyze cross-platform development and compare it with native development. Also determine the advantages and disadvantages of this approach in contrast to native development. Each approach in mobile application development depends on the specific goals of the application. Since the development of a mobile application is a long and complex process, the initial selection of a development framework is an important task, because it will make it easier and better to obtain the desired result. For this purpose, it is important to find out in detail in which cases it is more important to use native or cross-platform development. Since many problems and issues in cross-platform development have already been found and solved, for the beginning it is necessary to find existing studies about native and cross-platform mobile development and analyse these articles to find out new and unsolved the problems of these approaches.

**Methodology**  
The criteria used to answer first research question will be:  
• CPU usage as a percentage (line, average)  
• GPU usage as a percentage (line, average)  
To answer the second research question, it is needed to define criteria for evaluating performance of the apps. For these purposes, it will be used criteria that are used in other similar studies. These articles use the following criteria to evaluate size of app:  
• Total Line of Code  
• Size of the apps in Megabyte

**Results**  
The results obtained after the experiment show the maximum load of the GPU and CPU while running applications on a remote Samsung S22 Ultra device using AWS Device Farm. The results obtained reflect this load when testing application functions. This graph displays these values for all application actions.  
The data shows the CPU and GPU load based on the maximum load bring 100%. Initial data shows that the Android app uses less CPU in all scenarios than the Flutter app. The GPU load is almost the same for Android and Flutter; however, some scenarios show that the Android application uses less GPU than Flutter.  
It was not possible to create Bluetooth functionality for the Flutter application because it was not possible to successfully use external libraries for working with Bluetooth. I managed to create the same functionality in all other functions.  
The number of lines of code and memory consumed by the applications are almost the same. Each functionality has about 150 lines of code and the weight of the APK application is 22 megabytes for Android and 23 megabytes for Flutter.

**Next step**  
The next step is to get more data. To do this, I will conduct more tests using other mobile devices in AWS Device Farm. A larger amount of data will help to better evaluate the difference in the performance of a native Android and Flutter application.

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Flutter Dart android Kotlin





Academic Title

## Comparative Study: Location API Influence on Web App Performance - Mapbox vs. Google Maps

Project Areas

- Software Development: (Back End / Front End / Web)

# Web Performance: Mapbox vs. Google Maps

#77 / Poster Board

by Madhan Kumar Venugopal



Comparative Study: Location API Influence on Web App Performance – Mapbox vs. Google

### 01

#### Introduction

The integration of location-based services has become indispensable for modern web applications. In this study, we delve into the critical aspect of web performance when integrating location-based services through Mapbox and Google Maps APIs. Through analysis, we aim to provide insights into the comparative performance of these two leading APIs, shedding light on their impact on performance and aiding businesses in making informed decisions.

### 02

#### Objective

Our objective is to compare the performance of Mapbox and Google Maps APIs and explore the impact of caching mechanisms on web performance within the context of integrated location services. Through this investigation, we aim to provide valuable insights into API selection for delivering enhanced user experiences in location-aware applications.

### 03

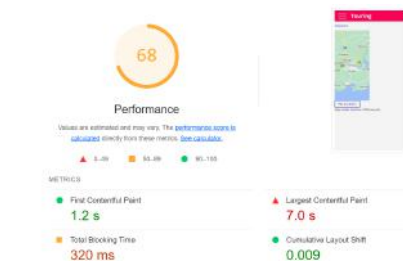
#### Methodology

We will undertake a comparative assessment of two React applications, each integrated with Google Maps API and Mapbox. These applications go beyond basic map display to include various testing scenarios, such as user interactions like panning and zooming, as well as automated evaluations of search and directions APIs for both platforms. Hosted locally, the applications' URLs will be employed in conjunction with the User Flow API[1]. This API, utilizing Puppeteer[2] and Google Lighthouse[3], will conduct evaluations of web vitals[4]. We aim to provide a nuanced understanding of the comparative performance and user experience between the two map integration solutions.

Author : Madhan Kumar (20195255)  
 Supervisor : Richard Frisby  
 Dept : Computing & Maths  
 Course : MSc in Computer Science (ES)

#### References

- [1] Lighthouse user flows – Articles – https://web.dev/articles/lighthouse-user-flows.
- [2] Puppeteer, 2024-https://github.com/puppeteer/puppeteer.
- [3] Overview – Lighthouse – https://web.dev/lighthouse/.
- [4] Web Vitals – Articles – web.dev – https://web.dev/articles/vitals.



### 04

#### Analysis

This section delves into a comparative assessment of key web vitals, including First Contentful Paint (FCP), Largest Contentful Paint (LCP), Total Blocking Time (TBT), Speed Index (SI), and Cumulative Layout Shift (CLS), derived from the Lighthouse reports of React applications integrated with Google Maps API and Mapbox. Also, the rendering time of the Map content and the interactions which is displayed in the UI. With these metrics and values, we aim to discern notable disparities in loading speed, content rendering, and visual stability between the two mapping solutions. This analysis provides valuable insights into the performance characteristics of Google Maps and Mapbox integrations.

### 05

#### Initial Results

The preliminary analysis of key web metrics highlights significant differences between Google Maps and Mapbox integrations within React applications. Google Maps showcases efficient performance metrics, including a brief initial rendering time of 0.038 s, a First Contentful Paint (FCP) of 1.2 s, a Largest Contentful Paint (LCP) of 7.0 s, a Total Blocking Time (TBT) of 320 ms, and a Speed Index (SI) of 2.8 s. Additionally, Google Maps demonstrates swift response times for location manipulation, with panning and zooming recorded at 0.025 s. In contrast, Mapbox integration presents comparatively slower performance across all metrics, with an initial rendering time of 0.83 s, an FCP of 4.1 s, an LCP of 8.2 s, a TBT of 3900 ms, and an SI of 7.2 s. Furthermore, Mapbox exhibits longer response times for location manipulation, with panning and zooming taking 0.078 s. These initial findings illuminate the divergent performance characteristics of Google Maps and Mapbox integrations, providing valuable insights for further analysis and optimization endeavors.

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Web applications increasingly rely on location-based services, ranging from personalized content to real-time geospatial interactions. The integration of location APIs introduces dynamic elements to web pages, potentially influencing the web performance. Therefore, it becomes imperative to measure web performance when incorporating these APIs to ensure optimal user experiences. Moreover, the choice of a location API can significantly influence the overall performance of a web application. Mapbox and Google Maps API are prominent providers of location-based services. Comparing the performance of these APIs in the context of web vitals in a social web application with Google Lighthouse, a performance auditing tool, offers valuable insights for developers and businesses.



**Technologies:** MongoDB, Express.js, React, Node.js, Google Lighthouse, Mapbox and Google Maps API

<https://github.com/JohnMadhan07/dissertation.git>

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## *MSc in Computing (Information Systems Processes)*

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### **The aim of the MSc in Computing (Information Systems Processes) is**

to provide graduates, from any discipline, with a broad sociotechnical perspective of modern information systems and their development. The socio–technical focus renders the MSc in Computing (Information Systems Process) philosophy and objectives as distinct from information technology-oriented programmes.

Whereas information technology oriented programmes focus primarily on the development of technical artefact and data, the MSc in Computing (Information Systems Process) takes a much broader and multidisciplinary perspective to encompass human-centred and organisational processes, knowledge, and values that also comprise an information system and its environment.



Academic Title

## Hybrid Cloud Computing: Infrastructure as a Service (IaaS) Alongside on Premises Technologies

Project Areas

- Cloud Computing

Project Supervisor

Liam Doyle

# CloudBlend: The Future is Here

#80 / Poster Board

by Saad Ullah Anjum

In the landscape of cloud computing, organizations are increasingly adopting hybrid cloud architectures to blend on-premises infrastructure with cloud services. Among the available options like AWS and GCP, Microsoft Azure stands out for its comprehensive features and seamless integration with Microsoft’s ecosystem. Azure offers global access, flexible scalability, robust security, and developer-friendly tools. Microsoft Azure offers organizations a powerful solution for their cloud computing needs. Strategic planning ensures a smooth migration and maximizes Azure’s benefits.



**Abstract**

In the landscape of cloud computing, organizations are increasingly adopting hybrid cloud architectures to blend on-premises infrastructure with cloud services. Among the available options like AWS and GCP, Microsoft Azure stands out for its comprehensive features and seamless integration with Microsoft’s ecosystem. Azure offers global access, flexible scalability, robust security, and developer-friendly tools. Microsoft Azure offers organizations a powerful solution for their cloud computing needs. Strategic planning ensures a smooth migration and maximizes Azure’s benefits.

**Introduction**

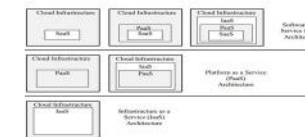
Cloud computing has drastically transformed data processing, making it more affordable and flexible for organizations worldwide. Instead of costly physical data centers, many now rely on cloud services like Microsoft Azure, Amazon EC2, and Google Compute Engine. These services, categorized into Infrastructure as a Service (IaaS), allow organizations to outsource IT needs while retaining some on-premises infrastructure—a model known as hybrid cloud computing. This research delves into how organizations leverage IaaS in hybrid cloud setups for their daily operations.

**Research Objectives**

This study investigates organizations’ adoption of a hybrid cloud model, exploring motivations, transition processes, and load-balancing strategies. It offers insights into modern cloud computing practices in organizational IT management.

**Research Questions**

1. What factors motivate organizations to transition from on-premises IT infrastructure to a hybrid cloud model?
2. What challenges do organizations encounter during the transition phase from on-premises systems to a hybrid cloud environment?
3. How does organization effectively balance workload distribution between on-premises servers and cloud-based resources in their hybrid cloud setup?
4. What strategies does organizations employ to ensure data security and regulatory compliance within their hybrid cloud environment?

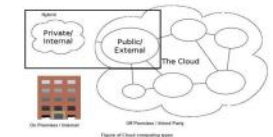


**Literature Review**

Cloud computing revolutionizes resource provision by leveraging the internet, offering cost-effective and modern computing solutions. It encompasses service models, including Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). Among these, IaaS stands out by providing essential resources like processing, network, and storage, enabling users to deploy applications without the hassle of managing underlying infrastructure. Deployment models play a crucial role in cloud computing’s versatility and accessibility. These models include private clouds, exclusively operated for an organization’s use, whether on-premises or off-premises. Community clouds serve specific communities, sharing infrastructure and addressing common concerns like security and compliance. Public clouds, owned by service providers, cater to the broader public or industry groups. Finally, hybrid clouds combine two or more cloud types, offering flexibility and interoperability while retaining individual identities. Understanding both service and deployment models allows organizations to tailor their cloud computing strategies to meet their specific needs, whether it’s cost efficiency, scalability, or data security.

**Methodology**

The research methodology combines qualitative data from semi-structured interviews with IT professionals and a comprehensive literature review, alongside quantitative data collected through a structured survey distributed to various companies. Thematic analysis and statistical techniques will respectively analyze qualitative and quantitative data. The integrated findings aim to offer insights into hybrid cloud adoption, accompanied by practical recommendations and suggestions for future research.



**References**

Mouria Deb, A. C. (2021). Hybrid Cloud: A New Paradigm in Cloud Computing. In A. C. Mouria Deb, Machine Learning Techniques and Analytics for Cloud Security and Data Privacy. Springer, 1-18.

Reddy, V. B. (2015). Cloud Computing: A Survey on Cloud Computing. International Journal of Computer Applications, 107(1), 1-10.

Savitri, S. (2015). Cloud Computing: History, Architecture, Security. International Journal of Advanced Research in Computer and Electronics (IJARCE), 4(1), 1-10.

Strawinski, S. (2017). Cloud Computing: A Review of the Concepts and Deployment Models. In Information Technology and Computer Science, 50-56.

Zeman, K. E. (2015). Cloud Computing: From Scarcity to Abundance. Journal of Industry, Competition and Trade, 19(1), 1-10.



**Technologies:** cloud computing, Infrastructure as a Service (IaaS)

<https://bit.ly/3K5n5xM>



Academic Title

## Sustainability in Car Manufacturing Industry Using Edge Computing

Project Areas

- Automotive and Automation
- Computer Networks
- Information Systems and Modelling
- Internet of Things

Project Supervisor

Sinead O'Neill

#81 / Poster Board

by Chandan Bannihatti Gururaja

The integration of edge computing into the car manufacturing industry represents a paradigm shift towards sustainability-driven innovation. By harnessing the power of real-time data processing, predictive analytics, and IoT technologies, manufacturers can optimize resource utilization, minimize waste, and reduce environmental impact across the entire production cycle. Embracing sustainability through edge computing not only aligns with consumer expectations and regulatory requirements but also fosters a more resilient and environmentally responsible future for the automotive industry.



**Technologies:** Edge Computing supported devices

<https://bit.ly/3UZwAou>





Academic Title

## Implementing Edge Computing in IoT-based Smart Cities

Project Areas

- Cloud Computing
- Computer Networks
- Internet of Things

Project Supervisor  
Liam Doyle

# Edge Computing Solution for Smart City

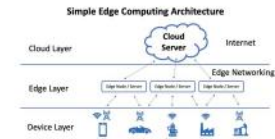
#82 / Poster Board

by Anus Farid

**Enhancing Smart Traffic Management Systems  
Through Edge Computing Integration**  
Student: Anus Farid Supervisor: Liam Doyle

**Abstract**  
Rapid urbanization and increasing vehicular traffic have exacerbated congestion, prompting the development of smart traffic management systems. However, centralized cloud-based systems face challenges in real-time data processing. Edge computing, offering decentralized processing at the network's edge, presents a solution. This research investigates edge computing's role in enhancing smart traffic management, focusing on its impact on urban traffic optimization. Employing a mixed-methods approach, it integrates qualitative interviews and quantitative data analysis from urban sensors. Anticipated outcomes include improved traffic optimization, congestion reduction, and enhanced decision-making processes. This thesis contributes to advancing smart traffic management and urban optimization through edge computing integration.

**Data and Findings**  
Data and findings. Include tables and diagrams as required.



**Introduction**  
Edge computing, a distributed computing paradigm, offers a promising solution to these challenges by enabling real-time data processing and decision-making at the edge of the network, closer to the source of data generation. This approach can significantly reduce latency and improve data privacy by minimizing data transmission over the network. This research aims to investigate the role of edge computing in enhancing smart traffic management systems, assess its impact on urban traffic optimization, and analyze the effectiveness of edge computing in improving real-time data processing for traffic management. The research will be conducted through a case study in urban traffic optimization, focusing on a city with a well-established smart traffic management system.

**Conclusions**  
The proposed dissertation will investigate the revolutionary potential of edge computing in the context of Internet of Things-based smart cities. This study endeavor aspires to deliver substantial contributions and insights valuable to a wide range of stakeholders, including researchers, policymakers, and industry experts, by investigating its implementation, benefits, and problems. The investigation into the integration of edge computing technologies within smart cities operating on IoT frameworks is crucial for several reasons. For starters, it enables real-time data processing, which promotes quick decision-making and action. This factor is critical for improving the efficiency and responsiveness of municipal systems such as traffic management, environmental monitoring, and public services. The findings of this study are expected to offer valuable insights, guiding further advancements in IoT technologies within the realm of smart cities, and contributing to the optimization of urban living experiences.

**Research Objectives and Questions**  
To investigate the role of edge computing in enhancing smart traffic management systems.  
To assess the impact of edge computing integration on urban traffic optimization.  
To analyze the effectiveness of edge computing in improving real-time data processing for traffic management.

RQ: How can the integration of edge computing into smart traffic management systems enhance real-time data processing and decision-making for urban traffic optimization?

**Literature Review / State of the Art**  
Brief overview of literature, state of the art, etc.

**Hypotheses**  
Implementing edge computing in IoT-based smart cities can significantly improve the efficiency of traffic management.

**References**  
For references used in the paper. Adjust text size and/or box height as required. Remove if not necessary.



Edge computing technologies within smart cities operating on IoT frameworks is crucial for several reasons. For starters, it enables real-time data processing, which promotes quick decision-making and action. This factor is critical for improving the efficiency and responsiveness of municipal systems such as traffic management, environmental monitoring, and public services. The findings of this study are expected to offer valuable insights, guiding further advancements in IoT technologies within the realm of smart cities.



**Technologies:** Edge Computing, Cloud Computing, IOT, Internet

<https://online.fliphtml5.com/ppcnb/blct/index.html>





# How Scrum Product Owners Drive Success

#83 / Poster Board

Academic Title

## Studying the Role of the Scrum Product Owner in Different Development Companies

Project Areas

- Work Based Project

Project Supervisor

Anita Kealy

by **Bryan Joseph Dias**

Student: Bryan Dias  
Student ID – W20104593  
Supervisor: Anita Kealy

"Navigating Agility: Unveiling the Role of Scrum Product Owner in Scrum"

**Research Aim**

My research will examine Scrum Product Owners in IT development businesses. Will explore Scrum-using software development businesses and in-house software development teams. This will explain how PO jobs work in organizations with diverse business goals and mindsets

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**Research Methodology**

The study will use interviews and surveys to gather data and draw findings. To study RQ1, a literature research will be done along with interview data and PO comments from different organizations. Combine the above data with project outcomes, team dynamics, and individual capabilities to find connections and patterns

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**Research Questions ?**

1. What are the primary responsibilities associated with the Product Owner role in Scrum?
2. Are there any common challenges emerging from successful Product Owner implementations, and how do they differ from less successful ones?
3. How can organizations effectively support and empower Scrum Product Owners in their roles?

**Research Goal**

The ultimate goal of the research is to contribute to the understanding of the Product Owner role in Scrum projects in a development organization. This research could provide valuable insights for organizations looking to optimize their Agile practices by tailoring the Product Owner role to their specific needs and context

The aim of my research will be to study the role of the Scrum Product Owner across different IT development companies. Will be researching for Software development companies who use Scrum for product development and also for companies who have Development teams for their inhouse Software development. This will help to understand how the PO roles functions in organizations having different business goals and mindsets. There is a potential diversity in the role of a Product Owner in how it is interpreted and implemented in Scrum across different organizations, industries, and contexts.

**Technologies:** Agile Scrum



<https://github.com/bryan1511/Product-Owner-Bryan-Dias>



Academic Title

## A Survey: Acceptance of Spanning Tree Protocol and ERPS in IT Infrastructure

Project Areas

- Computer Networks
- Computer Security

Project Supervisor

Anita Kealy

This research survey guides the critical mechanisms of Spanning Tree Protocol (STP) and Ethernet Ring Protection Switching (ERPS), understanding their roles in maintaining network stability, reliability, and efficiency. This research also will help to choose the right metrics to compare the spanning tree protocol technique with ethernet ring protection switching with the help of a survey. The result will then help us understand if these guidelines were able to bring in a significant change in the adoption of ethernet ring protection switching across organisations.

# A Survey to Find the Acceptance

#84 / Poster Board

by Sushind Mandakathinkal Suresh

### A review of the Spanning tree protocol and Ethernet ring protection switching, along with network engineer's view of Technology adoption in Kerala

Student: Mr Sushind Mandakathinkal Suresh

Supervisor: Dr Anita Kealy

#### Abstract

This research survey guides the critical mechanisms of Spanning Tree Protocol (STP) and Ethernet Ring Protection Switching (ERPS), understanding their roles in maintaining network stability, reliability, and efficiency. It provides an understanding of these loop prevention protocols, their comparative merits, and their essential role in interconnected networks. This survey offers insights into how loop avoidance methods are deployed in various industries, providing an understanding with the help of engineers working in IT infrastructure. The research helps network administrators and engineers choose the most appropriate protocol for their network environment by providing comparative analysis and guidance. The survey respects the principles of Spanning tree protocol (STP), Rapid spanning tree protocol (RSTP), Multiple spanning tree protocol (MSTP) and Ethernet ring protection switching (ERPS) loop avoidance methods.

#### Methodology

Surveys using questionnaires are a crucial tool for gathering knowledge and feedback. Considering that conventional interaction may significantly reduce the gap in understanding between people and computers. The target group will receive the questionnaire and answers will be collected. Qualitative approaches will be used to analyze the responses received.

#### Data and Findings

IT infrastructure follows a complex structure to improve the IT infrastructure and advanced technology creates complexity. High-performance products, security architecture, and network logic create difficulty in the IT infrastructure. Hence, the appropriate knowledge and skills of the network engineer are involved in reducing the security incidents in network resilience. switching loops are instances in which network data becomes caught in an endless cycle, leading to network issues.

#### Introduction

The stability of a Network infrastructure depends on factors like redundancy, and low outages of the network. Data collisions from this can result in network outages and slowdowns, like never-ending paths. Technology adoption is necessary for IT infrastructure to reduce costs, and errors, and contribute to internet connectivity without failure.

#### Research Objectives

- To identify the barriers to using the Spanning tree protocol and Ethernet Ring Protection Switching in IT infrastructure.
- To find the acceptance of Spanning tree Protocol over Ethernet Ring Protection Switching in case of network redundancy in Large IT infrastructure companies.
- To identify the difficulties while selecting between the Spanning tree protocol and Ethernet ring protection switching in IT infrastructure.

#### Research Objectives

- What are the barriers to using the Spanning tree protocol and ethernet ring protection switching in IT infrastructure?
- Can the Ethernet Ring Protection Switching replace the Spanning tree protocol in IT infrastructure networks, while considering the network redundancy?
- While selecting between Spanning tree protocol and Ethernet Ring Protection Switching for network installations, what are the outcomes of compatibility and how do these aspects affect decision-making?

#### Literature Review / State of the Art

The literature review section focused on the IT infrastructure based on technological adoption. Technological adoption in the IT infrastructure minimizes errors, network connectivity. STP is used for maintaining the effective connection between switches and bridges that improves the network infrastructure.

#### Propositions / Hypotheses / Theory

To avoid loops in Ethernet links, the Spanning tree Protocol (STP) creates a logical topology that is free of loops. Network administrators must keep into consideration all the limitations and downsides of STP when setting up and managing networks, considering its key function in maintaining network stability and preventing broadcast storms. Network reliability, scalability, and productivity could be improved by combining with Ethernet Ring Protection Switching (ERPS), Spanning tree Protocol (STP) with technology innovations.

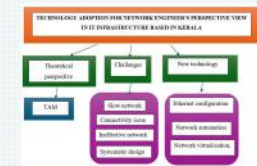


Figure 1: Conceptual Framework (Sushind et al. 2022)

#### Conclusions

This research will help to choose the right metrics to compare spanning tree protocol technique with ethernet ring protection switching with the help of survey. Further doing survey to the customer with respect to the technological and organizational factors affecting the adoption of ethernet ring protection switching technology as well the spanning tree protocol.

#### References

Asabeel, A., Anwar, M., Samy, E., Othman, I., and Ibrahim, E. (2020). A survey on security applications of SDN-based network switches and SDN-based network assessment. *Computer Networks*, 207, 109588.



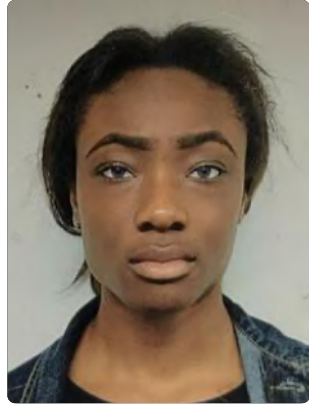
**Technologies:** Survey, Spanning Tree Protocol, Ethernet Ring Protection Switching

<https://github.com/sushindms/student.git>



# Scaling Agile Methods

#85 / Poster Board



Academic Title

## Scaling Agile Methods: Strategies and Challenges in Large Software Development Organisations

Project Areas

- Information Systems and Modelling

Project Supervisor

Sonya Hogan

by Karen Ogiugo

Big companies like Sony, Lego, Yahoo!, and Mitsubishi have found Agile useful. But it's not easy to introduce Agile in big organizations. Agile helps companies work together better, be more flexible, and make better products. Using Agile in big organizations can be hard because teams and departments might not communicate well. But there are different methods to help with this. Some popular ones are Scaled Agile Framework (SAFe), Disciplined Agile (DA), Large-Scale Scrum (LeSS), and Scrum@Scale. Choosing the right one depends on what the company needs.

### Scaled Agile Framework – Agile at Large Scale

Student: Karen Ogiugo      Supervisor: Ms. Sonya Hogan

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**Abstract**

This dissertation explores the challenges of scaling Agile methodologies in large IT projects, focusing on the benefits of adopting the Scaled Agile Framework (SAFe). It examines the success factors, experiences, and challenges of adopting Agile methods, and provides suggestions for further scaling to ensure efficient agile adoption. This study emphasises the need for all levels of the project to adapt to the new approach.

**Introduction**

Agile methodologies are beneficial for large companies like Sony, Lego, Yahoo!, and Mitsubishi. They improve collaboration, increase flexibility, and deliver high-quality software growth. Scaling agile methods can be challenging due to communication issues between teams and departments. SAFe, Disciplined Agile (DA), Large-Scale Scrum (LeSS), and Scrum@Scale are common frameworks for implementing agile at large scale. The best approach depends on the company's needs, background, personality of teams, departments, and business.

**Research Objectives and Questions**

1. What are the challenges of implementing SAFe in large-scale projects?
2. What are the effects of adopting SAFe in terms of quality, time-to-market, and customer satisfaction?

- Review the existing traditional methods and agile methods, comparing their characteristics.
- Discover the prevailing challenges and success factors of implementing SAFe.
- Analyse SAFe usage in real-life situations.
- Determine future other structural improvement strategies for SAFe adoption.

**Literature Review**

The adoption of agile development approaches is challenging for organizations, often taking years. SAFe's proposed approach involves training, certifying, and coaching, but this is complex and requires a structured approach. A gradual approach is recommended, allowing for gradual changes and testing for effectiveness. Agile adoption requires effective guiding principles, which should be narrowly focused and repeatable. Existing literature offers various strategies, but wholesale adoption is less successful due to lack of preparation and team consensus. This research aims to develop a new structural implementation strategy for SAFe adoption.

**Propositions / Hypotheses / Theory**

Due to limited existing studies on this framework, the scope of this research is exploratory rather than hypothesis testing. This exploratory research aims to develop theoretical models and potential hypotheses for future research on a framework with limited existing studies.

**Methodology**

This exploratory research includes case analysis, literature review, and qualitative methods like in-depth interviews and focus groups. It incorporates literature research, case studies, and the Delphi method to gain a comprehensive understanding of real-world processes and the benefits and challenges of SAFe in large projects. The Delphi method, which gathers expert opinions, will be used to develop and validate the proposed implementation strategy and maturity model for SAFe.

**Data and Findings**

This dissertation aims to propose an implementation strategy and maturity model for SAFe, using the Delphi method. A questionnaire will be used to collect data on the benefits and challenges, such as quality, time-to-market, and customer satisfaction.

**Dissertation Structure**

**Comparison of Traditional and Agile Methods**

For instance, the waterfall approach and other agile methodologies aim to deliver quality products efficiently and predictably. They share fundamental building blocks: scope, cost, schedule, and performance. However, waterfall assumes software requirements can be fully specified, while agile acknowledges changes throughout the development process. The choice between these methodologies depends on specific project settings, with agile being preferred in today's dynamic environment.

Methodology	Requirements	Flexibility	Communication	Customer Satisfaction	Time-to-Market	Quality
Waterfall	Highly structured and detailed	Low	Formal, sequential	Low	Long	High
Agile	Iterative and evolving	High	Collaborative, frequent	High	Short	High

**Conclusions**

Agile methodologies benefit large companies and projects by improving flexibility and software growth. However, scaling can present communication challenges. Companies must evaluate their needs and choose the most suitable approach.

**References**

Agile@Scale: How to Scale Agile Project Management in Your Organization. [https://www.projectmanager.com/blog/agile-at-scale](#)  
 Disciplined Agile: A Practical Approach to Agile Project Management. [https://dai-project.com/](#)  
 SAFe: Scaled Agile Framework. [https://www.safeframework.com/](#)  
 LeSS: Large-Scale Scrum. [https://www.less-project.com/](#)  
 Scrum@Scale: Scaling Scrum for Large Enterprises. [https://www.scrum@scale.com/](#)

Technologies: Survey tool

<https://github.com/velvetkaren/KarenOgiugo>

Page 140



Academic Title

## To Investigate How Indian IT Companies Incorporate Quality Processes into their SDLC

Project Areas

- CI/CD & Testing
- Work Based Project

Project Supervisor

Fiona Lynch

The focus of this research will be on incorporating quality into an IT development process to produce quality IT products. Identify and compile a comprehensive list of locally recognized quality standards. Investigate and document the essential steps and best practices involved in ensuring software quality throughout the IT development life cycle. Explore the diverse strategies employed by IT development companies in India for integrating quality processes into their Software Development Life Cycle (SDLC). Focus on Agile and Waterfall SDLC process.

# Quality Processes into their SDLC

#86 / Poster Board

by Nancy Raju



**Abstract**

Using a quantitative survey technique, this study will look into how quality processes are integrated into the Software Development Life Cycle (SDLC) in Indian IT companies. A structured questionnaire was created based on research questions and assertions from the literature. The questionnaire was distributed to stakeholders involved in software development projects, such as project managers, quality assurance engineers, developers, and executives from a varied range of Indian IT organizations. Data analysis included descriptive and inferential statistics to investigate correlations between variables and evaluate hypotheses based on study propositions. The study's findings shed light on the extent to which Indian IT organizations integrate quality processes, adhere to quality standards, and practice SDLC.

**Introduction**

- In the global software development market, quality has become a significant differentiator.
- Indian IT companies, being major players in this industry, need to continuously improve their quality processes to maintain a competitive edge over their counterparts from other countries.
- Quality software products lead to higher levels of customer satisfaction. Understanding how Indian IT companies integrate quality processes into their SDLC can provide insights into how they meet customer requirements, leading to increased customer retention and loyalty.

**Research Objectives and Questions**

- The primary objective of this research is to delve into the integration of quality processes within the SDLC in the IT industry in India, with a specific focus on software quality.
  - This study aims to bridge the gap between theoretical quality standards and their practical application in IT product and service development.
1. What steps are included in the quality process for software development?
  2. What quality standards are included in the IT development process?
  3. How are IT development companies integrating a quality process into their SDLC?

**Literature Review / State of the Art**

- Quality process is important for software development in IT companies (Kjiso, 2022). Likewise, quality standard also play a pivotal role in ensuring the reliability, security, and compliance of IT development projects.
- In order to understand the integration of quality processes within the SDLC, this study delves into existing literature to explore the role of quality processes in software development.
- For example, the quality process ensures the quality of software products throughout development (Chiarini, 2020), involving systematic methods to control and maintain quality.
- The quality process includes quality planning, control, assurance, and improvement (Al & Uddin, 2021). Quality assurance designs and executes testing processes to identify bugs and quality issues (Kang et al., 2022).
- Some other studies highlight that integrating quality processes within the SDLC is essential for delivering quality software products. Requirements analysis ensures software meets user expectations (Gurung et al., 2020).
- Quality teams are crucial for implementing, monitoring, and improving quality processes throughout SDLC (Dhamini et al., 2022).

**Propositions / Hypotheses / Theory**

Proposition 1: Comprehensive Quality Process Implementation

Proposition 2: Adherence to Quality Standards

Proposition 3: Effective Integration of Quality Processes into SDLC

**Methodology**

- Develop a structured questionnaire based on the research questions and propositions derived.
- Include closed-ended questions to quantify responses regarding the integration of quality processes, quality standards adoption, and SDLC practices.
- Utilize Likert scales to measure the level of agreement.
- Administer the questionnaire to relevant stakeholders in Indian IT companies.

**Conclusions**

This research aims to address the critical need for understanding the integration of quality processes within the Software Development Life Cycle (SDLC) in Indian IT companies. By delving into the practical application of quality standards, the study seeks to bridge the gap between theory and implementation, offering valuable insights for improving software quality and customer satisfaction. Through qualitative methods and thematic analysis of interviews with key stakeholders, the research endeavors to shed light on the steps, standards, and strategies employed by Indian IT companies to ensure quality throughout the SDLC. The findings of this study hold significance for enhancing competitiveness and fostering innovation in the global software development market, ultimately benefiting both IT companies and their customers.

**References**

Al Almaini, M.A. and Uddin, G., 2021. August. Quality assurance challenges for machine learning software applications during software development life cycle phases. In *2021 IEEE International Conference on Autonomous Systems (ICAS)* (pp. 1-5). IEEE.

Chiarini, A., 2020. Industry 4.0, quality management and TQM world. A systematic literature review and a proposed agenda for further research. *The TQM Journal*, 33(4), pp.603-616.

Dhamini, G., Ergashova, S., Kholmatova, Z., Kuptsov, A., Sadovykh, A., Succi, G., Turchenko, A., Vasquez, X. and Zouas, E., 2022. July. Metrics for software process quality assessment in the late phases of SDLC. In *Science and Informatics Conference* (pp. 639-655). Cham: Springer International Publishing.

Gurung, G., Shah, R. and Jaiswal, D.P., 2020. Software Development Life Cycle Model Comparative Study. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, March, pp.30-37.

Kang, S. and Kim, S., 2022. CIA-level driven secure SDLC framework for integrating security into SDLC process. *Journal of Ambient Intelligence and Humanized Computing*, 13(10), pp.4601-4624.

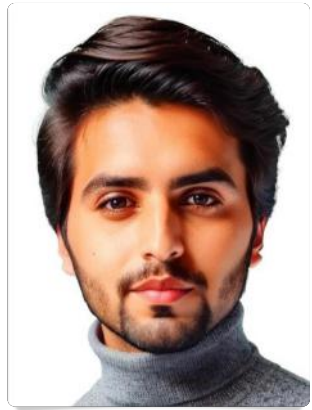
Kjiso, K. (2022). *Why is quality assurance important in software development?* [Blog Future Processing]. (online) www.future-processing.com. Available at: https://www.future-processing.com/blog/why-is-quality-assurance-important-in-software-development/.



Technologies: Google Forms, Survey

<https://bit.ly/4dLGC43>





Academic Title

## The Impact of AI on Digital Banking

Project Areas

- Automotive and Automation

Project Supervisor

Brenda O'Neill

# Beyond Robo-bankers: AI Takes Over

#87 / Poster Board

by Malik Hashim Raza

AI is rapidly transforming the banking landscape, impacting everything from strategy and processes to the customer experience. Machine learning, a key AI technology, empowers banks to analyze vast data sets, predict consumer behavior, personalize services, and refine credit scoring. This unlocks tremendous opportunities for growth, improved risk management, and enhanced customer satisfaction. Alongside these benefits lie concerns about the potential impact on human roles, ethical considerations around transparency and fairness, and the need for robust data privacy and security measures.

The Impact of Artificial Intelligence on Digital Banking.

Student Name: Malik Hashim Raza Supervisor Name: Brenda O'Neill

**Abstract**  
This research investigates the profound influence of artificial intelligence (AI) on digital banking, focusing on enhancing operational efficiency, elevating customer service standards, and facilitating strategic decision-making processes. Through a structured approach, the study delves into the implications of AI adoption in the banking sector, exploring its effects on customer service quality, operational workflows, and overall customer satisfaction levels. By evaluating the impact of AI on digital transformation, this research aims to provide insights into the opportunities and challenges presented by AI in banking, emphasizing the need to balance technological advancements with human-centric considerations. The study employs a mixed research approach, combining qualitative and quantitative methods, to offer a comprehensive understanding of the evolving landscape of digital banking in the era of artificial intelligence.

**Introduction**  
The banking industry is undergoing a transformative shift propelled by the integration of artificial intelligence (AI) into digital banking services. This evolution has revolutionized operational processes, customer interactions, and strategic decision-making within financial institutions. As AI technologies like machine learning continue to reshape the banking landscape, it is crucial to understand both the opportunities and challenges that accompany this digital revolution. This research delves into the impact of AI on digital banking, exploring how it enhances efficiency, elevates customer service standards, and shapes the future of banking operations. By examining the symbiotic relationship between humans and AI in banking, this study aims to uncover the intricate dynamics that define the modern banking experience.

**Research Objectives and Questions**  
The primary objectives of this research are as follows:  
1. Evaluate the influence of artificial intelligence on the digital transformation of the banking sector, focusing on enhancing operational efficiency, elevating customer service standards, and facilitating strategic decision-making processes.  
2. Conduct a comprehensive review of the various applications of artificial intelligence within the banking industry to comprehend its effects on customer service quality, operational workflows, and overall customer satisfaction levels.  
3. Explore the determinants impacting customer acceptance of artificial intelligence in digital banking and examine the implications of AI on enhancing user satisfaction within digital banking platforms.  
4. Perform a critical analysis of the current landscape of artificial intelligence adoption in banking, outlining its potential advantages, risks, and challenges, particularly concerning operational costs, operational efficiency improvements, and customer satisfaction levels.

**Question:** "What is the impact of artificial intelligence on digital banking?"

**Literature Review / State of the Art**  
The literature review on the impact of artificial intelligence (AI) in digital banking highlights the significant advancements and challenges associated with AI adoption in the banking sector. AI technologies, particularly machine learning, have revolutionized operational processes, customer service standards, and strategic decision-making within banks. The utilization of AI enables banks to personalize services, forecast consumer behaviour, and enhance operational efficiency. However, while AI offers opportunities for revenue growth and cost reduction, it also raises concerns about job displacement, cybersecurity risks, and the potential loss of human touch in customer interactions. The literature emphasizes the need to strike a balance between leveraging AI for efficiency gains and preserving human-centric elements in banking operations to maintain customer trust and satisfaction. Overall, the literature underscores the dual nature of AI in digital banking, presenting both opportunities and challenges that financial institutions must navigate to optimize the benefits of AI technology.

**Propositions / Hypotheses / Theory**  
Artificial Intelligence technology in banks improves time efficiency and can lead to digital transformations.

**Methodology**  
The methodology chosen for the research is a mixed research approach. This approach integrates the strengths of both qualitative and quantitative data to enhance the credibility of findings and offer a more holistic perspective on the phenomenon under study. Mixed methods research allows researchers to triangulate data, validate results, and gain deeper insights by combining different types of data collection and analysis techniques.  
In terms of data collection, following methods are used in research:  
1. Questionnaire 2. Interviews  
Tools that are used for sending questionnaire include:  
1. SurveyMonkey 2. QuestionPro

For data analysis, the research will use both NVivo and SPSS package. NVivo is a software package that is used for qualitative data analysis, i.e., interviews. SPSS is a popular tool for quantitative data analysis, i.e., Questionnaire.

**Data Collection and Findings**  
The data collection process involves the distribution of questionnaires to individuals and organizations. The questionnaire includes a mix of open-ended and Likert scale questions to gather both qualitative insights and quantitative data. The target audience comprises financial institutions, banking professionals, researchers, and individuals keen on the future of banking and financial technology. Approximately 50 questionnaires are planned to be distributed, with a turnaround time of 10 days for respondents to reply.  
The findings from the data collection and analysis process are expected to shed light on the influence of artificial intelligence on digital banking, highlighting its effects on operational efficiency, customer service quality, and overall customer satisfaction levels.

By exploring the determinants impacting customer acceptance of AI in digital banking, the research aims to provide insights into how AI can enhance user satisfaction within digital banking platforms.

**Framework Development**  
The proposed framework is composed of three levels of application of artificial intelligence in digital banking. Three levels are mentioned below:  
1. Operational Efficiency and Automation  
2. Customer Experience and Personalization  
3. Strategic Decision Making and Innovation

**Ethical Considerations**  
In conducting research on the impact of artificial intelligence on digital banking, several ethical considerations must be taken into account to ensure the integrity and fairness of the study. Some key ethical considerations include: Confidentiality, Informed consent, Data security, Avoiding bias, Transparency, Respect for participants.

**Conclusions**  
The research on the impact of artificial intelligence on digital banking delves into the transformative role of AI in reshaping operational processes, customer interactions, and strategic decision-making within the banking sector. Through a mixed research approach combining qualitative and quantitative methods, the study aims to evaluate how AI enhances efficiency, elevates customer service standards, and influences user satisfaction levels. Ultimately, the study provides valuable insights into navigating the evolving landscape of digital banking with the integration of artificial intelligence technologies.

**References**  
Badrinarayan, S. D., Bank, H. A., Jagtap, M. Applying artificial intelligence in the digital transformation of banking sector. *Philosophy*, 2023, 92(36), 31.  
Abbas, F. M., eds., *Legislation on AI*, pp. 31, 2023. *Dual-artificial intelligence (AI) based digital banking user satisfaction: Integration of appraisals, confirmatory model and antecedents of artificial intelligence mediated digital banking*. *Indonesian Journal of Information Systems*, 2023, 1(1), 1-10.  
Alkhatib, L., Sargade, S. M. & Sargade, J. 2023. Artificial intelligence in the banking sector: a critical analysis. *Indian International Journal of Management*, 5(2), 20-26.  
Feng, J. & Jia, C. Artificial intelligence technology in banking: from a traditional business model



Technologies: Artificial Intelligence

<https://malikhashimraza.blogspot.com/2024/02/the-impact-of-ai-on-digital-banking.html>





Academic Title

## IoT Streamline: Orchestrating Efficiency for Scalable IoT Systems

Project Areas

- Internet of Things

Project Supervisor

Liam Doyle

# Process Orchestration in IoT Ecosystem

#88 / Poster Board

by Aleena Santhosh

### Enhancing Efficiency and Scalability in IoT Ecosystems: Tailored Strategies for Process Orchestration

Student: Aleena Santhosh      Supervisor: Liam Doyle

#### Abstract

This highlights the significance of process orchestration in addressing these challenges, emphasizing the need for tailored strategies to optimize data flow and resource allocation.

- Various communication protocols and standards critical for enhancing interoperability and scalability in large-scale IoT deployments are explored.
- The review discusses the potential of advanced technologies like edge computing and machine learning to improve IoT system performance, reducing latency and extracting actionable insights from IoT data.
- Implications of enhanced efficiency and scalability for different industries and applications utilizing IoT technology are discussed, indicating transformative potential in sectors such as engineering, agriculture, healthcare, and business process management.
- The rapid growth and investment in IoT technologies underscore the increasing importance and relevance of this field in shaping future technological developments.
- Overall, the review contributes to a deeper understanding of IoT ecosystem challenges and opportunities, providing insights into strategies for addressing them and leveraging advanced technologies for innovation and improved productivity.

#### Introduction

- Modern industries rely on linear value chains but IoT devices are transforming industries through connectivity and data sharing.
- IoT platforms destroy linear value chains and generate new value pools, but they also put non-involved companies at risk of becoming generic suppliers.
- IoT systems are useful in smart homes, manufacturing, healthcare, and agriculture, but there are difficulties when they grow quickly.
- The development of the IoT ecosystem is driven by data aggregation, network effects, and supply and demand dynamics.
- It might be difficult for enterprise customers to integrate IoT solutions; they need tailored or integrated solutions that involve several duties and participants.
- Increasing data volume, velocity, and variety cause traditional IoT systems to struggle, which results in inefficient processing and constrained scalability.
- It is more effective when implementing IoT solutions at scale using an ecosystem-based approach that guarantees security, makes solutions easily accessible, and provides solutions.

#### Research Objectives and Questions

- Issues with the IoT ecosystem are caused by the present architecture's inefficiency and restricted scalability. Inefficient resource allocation and data processing result in delays and increased costs.
  - Inadequate protocols restrict interoperability and make device administration difficult.
  - The aim of the project is to improve IoT flexibility and effectiveness through custom process orchestration.
  - Goal: Develop methodologies and technologies for flexible, smooth integration between sectors.
1. What are the key challenges associated with the efficiency and scalability of existing IoT architectures?
  2. How can process orchestration strategies be tailored to optimize data flow and resource allocation in IoT ecosystems?
  3. What are the most effective communication protocols and standards for enhancing interoperability and scalability in large-scale IoT deployments?
  4. How can advanced technologies such as edge computing and machine learning be leveraged to improve the performance of IoT systems?
  5. What are the implications of enhanced efficiency and scalability for different industries and applications utilizing IoT technology?

#### Literature Review

- IoT ecosystems combine hardware, software, and sensors to streamline operations and open up new possibilities in a variety of industries.
- Data management, security, scalability, and interoperability are among the challenges in managing IoT ecosystems.
- IoT process orchestration makes ensuring that tasks are efficiently coordinated and automated amongst dispersed devices.
- To properly handle the particular difficulties presented by IoT ecosystems, customized approaches are required.
- IoT systems has focused on energy efficiency, sustainability, and resource scheduling.

#### Methodology

- Investigates IoT ecosystem efficiency and scalability through case studies.
- Utilizes qualitative case studies for in-depth exploration.
- Qualitative case studies on IoT complexities.
- Conducting multiple case studies for IoT orchestration investigation.
- Selecting cases based on industry diversity and collecting the data.
- Performing thematic analysis focusing on IoT orchestration.
- Ensuring consent and confidentiality in research conduct.

#### Conclusions

- Investigates efficiency and scalability of IoT ecosystems.
- Focuses on process orchestration strategies.
- Provides detailed examination of real-world instances.
- Allows deeper understanding of IoT deployment challenges and solutions.
- Addressed to maintain integrity and trustworthiness of research findings.



#### References

- Anagnostis, S. and Jorak, B. (2010). Classification of Research Design, Research Methods, and Research Methodology. *Teaching Public Administration*, [online] 46(3), pp.237-255. doi:10.1080/00141801.2010.5177797.
- Chu, H. and Liu, Q. (2017). Research methods: What's in the name? *Library & Information Science Research*, 39(5), pp.254-261. doi:10.1016/j.lisr.2017.03.001.
- Tobi, H. and Kasper, J.E. (2015). Research design: the methodology for interdisciplinary research. *Biostatistics*, 16(4) (445-455). [online] 16(4), pp.1209-1221. doi:10.1093/biostat/16.4.1209.
- Pothoskok, H. (2021). *Data Collection Methods and Tools for Research: A Step-by-Step Guide to Choose Data Collection Technique for Academic and Student Research Project*. *International Journal of Student Research in Management* [online] 10(1), p.10. Available at: <https://doi.org/10.21913/ijrm.v10i1.1115-017-07124>.



Technologies: Survey

<https://github.com/Aleenasanthosh998/IoT.git>





Academic Title

# Blockchain in SCM of E-Waste

## Blockchain in E-waste Supply Chain Management-considering European Union WEEE Regulations

#89 / Poster Board

Project Areas

- Database and Analytics
- Information Systems and Modelling

Project Supervisor  
Sonya Hogan

by Sowmith Simmasetty

**Blockchain in E-waste Supply Chain Management Considering European Union WEEE Regulations**  
 Student: Name: Sowmith Simmasetty Supervisor: Sonya Hogan

The environmental consequences of e-waste are a global concern. Developed countries export to get rid of things, but there are rules. Blockchain ensures sustainability by revolutionizing e-waste management. Incentives for appropriate disposal, automatic EU compliance, lifecycle tracking, cross-border cooperation, and consumer empowerment are all made possible by unique identifiers. The EU’s commitment to sustainability aligns with integrating blockchain into e-waste management, promoting ethical practices and regulatory compliance

**Abstract:**  
 The environmental consequences of e-waste are a global concern. Developed countries export to get rid of e-waste, but there are rules. Blockchain ensures sustainability by revolutionizing e-waste management. Incentives for appropriate disposal, automatic EU compliance, lifecycle tracking, cross-border cooperation, and consumer empowerment are all made possible by unique identifiers. The EU’s commitment to sustainability aligns with integrating blockchain into e-waste management, promoting ethical practices and regulatory compliance.

The Waste Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU) is the main legislative framework that the European Union has created for the management of electronic waste, or e-waste. (audfom, 2021) This regulation describes the obligations of manufacturers, who are usually obligated to use Extended Producer Responsibility (EPR) to fund the ecologically responsible recycling and disposal of the e-waste produced by their goods. To lessen the impact of e-waste on the environment, the WEEE Directive establishes precise goals for its collection and recycling. The use of specific hazardous compounds in electronic equipment is restricted by the Restriction of Hazardous Compounds (RoHS) Directive (2011/65/EU), in addition to WEEE. The Circular Economy Action Plan encourages eco-design and sustainable consumption habits to facilitate the transition to a circular economy.

**Introduction**  
 Electronic equipment and devices that are discarded are referred to as e-waste or electronic debris. Items like computers, cell phones, tablets, televisions, refrigerators, and other electronic equipment that reached their end of life are all included in this broad category. Effective management of e-waste supply chains is necessary to minimize adverse environmental effects, protect resources, uphold legal compliance, and promote positive social and economic benefits. Blockchain technology has several advantages for the management of the electronic waste (e-waste) supply chain, leveraging blockchain technology for handling e-waste in compliance with EU rules has the potential to completely transform the sector by guaranteeing sustainability, traceability, and transparency. Stakeholders will benefit from increased transparency, security, and efficiency by integrating blockchain into the e-waste supply chain, ultimately leading to more sustainable and ethical electronic waste management.

**Propositions / Hypotheses / Theory**  
 Hypothesis 1: Integrating blockchain technology can greatly improve adherence to EU rules and legislation in the e-waste supply chain management system, promoting a transparent, traceable, and responsible framework for managing electronic waste.  
 Hypothesis 2: Adopting blockchain technology in e-waste supply chain management is the implementation of circular economy principles aligning with EU WEEE directives.  
**Methodology**  
 A qualitative approach that focuses on exploring and understanding the depth and complexity of e-waste management by adhering to all the laws and regulations of the European Union and how can blockchain be integrated into the supply chain management of e-waste.

**Research Objectives and Questions**  
 Summarize and analyze the regulatory considerations that need to be incorporated into a blockchain-based e-waste supply chain management solution for all stakeholders involved while complying with EU regulations and laws on WEEE.  
 RQ1) How can blockchain technology be effectively integrated into the e-waste supply chain to enhance traceability and transparency in compliance with EU WEEE directives?  
 RQ2) To what extent can blockchain facilitate the implementation of circular economy principles in e-waste management, aligning with the goals outlined in the EU WEEE directives?



**Literature Review / State of the Art**  
 Blockchain technology eliminates the need for any kind of trusted middleman by enabling safe, transparent, and unchangeable recordkeeping in distributed networks. Smart contracts, which are blockchain-based executable codes written in high-level, full language, are an additional benefit of blockchain technology (Block, 2018). Smart contracts are computer programs that run on their own and perform predetermined actions when certain real-world circumstances are satisfied. Smart contract-based e-waste management enables the parties involved to improve cooperation between EEE producers, importers, retailers, and recyclers. (Ghosh, 2020) will give the government the ability to control the recycling and collection of e-waste. Additionally, it will lessen the dispute between the organized and unorganized sectors, increasing process transparency.

**Conclusions**  
 Blockchain can be a revolutionary answer, providing transparency, effectiveness, and compliance in the handling of electronic waste by adhering to the EU WEEE directives, and can be a promising path toward a more ecologically conscious and sustainable future.

**References**  
 1. Bedi, N. G. a. R. 2018. E-waste Management Using Blockchain-based Smart Contracts. *IEEE*.  
 2. Bulikowska, Katarzyna & Bulkowski, Maciej. (2023). Implementation of Blockchain Technology in Waste Management. *Energies*. 16. 7742-10.3390/en16237742.



Technologies: Blockchain Technology

<https://sowmith7700.github.io/sowmithsimmasettydissertation/>





Academic Title

# 3D Printing & CNC: The Future of

## Quality Improvement of Customized Vehicle Fabrication Using 3D Printers and CNC Machines

Project Areas

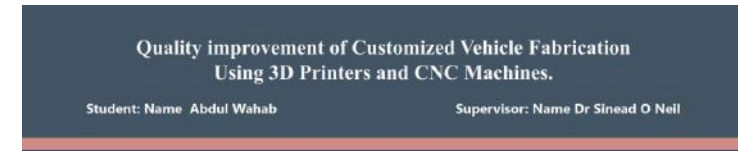
- Artificial Intelligence
- Automotive and Automation

Project Supervisor

Sinead O’Neill

#90 / Poster Board

by Abdul Wahab



Abstract

This paper explores how 3D printing and CNC machining can transform customized vehicle fabrication. By targeting limitations in traditional methods, like complex geometries or demanding tolerances, these technologies can be strategically applied. 3D printing excels at intricate, bespoke interior parts, while CNC machining delivers unparalleled precision for structural components, optimizing fit and performance. This targeted approach unlocks new design possibilities and streamlines fabrication for unique, high-performance vehicles.

Introduction

Custom vehicle fabrication often pushes the boundaries of traditional manufacturing methods. 3D printing and CNC machining offer solutions to overcome these limitations. 3D printing excels at creating intricate, custom interior components with complex geometries that are difficult to achieve manually. CNC machining delivers unmatched precision for structural parts, guaranteeing optimal fit and performance. This targeted use of technology streamlines the fabrication process and opens doors to innovative designs within the realm of high-performance, customized vehicles.

Research Objectives and Questions

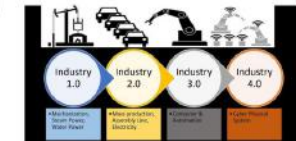
This research aims to identify key areas in custom vehicle fabrication where 3D printing and CNC machining offer the greatest advantages over traditional methods. By analyzing limitations in accuracy, consistency, and complexity, we'll target areas like intricate interior components (3D printing) and precision structural parts (CNC machining) to streamline processes and enhance design possibilities.

Literature Review / State of the Art

This research aims to pinpoint specific areas within customized vehicle fabrication where 3D printing and CNC machining offer the greatest advantages over traditional methods. The literature highlights the potential for these technologies to address limitations in accuracy, consistency, and the creation of complex parts. 3D printing excels in intricate interior components and rapid prototyping, while CNC machining provides precision for structural parts. Integrating these technologies promises superior customization, quality, and streamlined processes. This study will explore the challenges and transformative impact of their implementation within Pakistan's customized vehicle fabrication industry.

Propositions / Hypotheses / Theory

- H1: Limited access to financing prevents Pakistani custom fabricators from investing in 3D printing and CNC technologies.
- H2: CNC machining provides superior accuracy and consistency in custom body panel fabrication compared to traditional methods.
- H3: 3D printing significantly enhances interior customization possibilities through intricate designs and unique elements.



Methodology

research methodology is primarily qualitative. It focuses on collecting descriptive data through interviews to gain insights into perceptions, experiences, and challenges.

Conclusions

In conclusion, this study illuminates the transformative potential of 3D printing and CNC machining in customized vehicle fabrication. By addressing the identified challenges and promoting innovation, Pakistan's industry can embrace these technologies to deliver superior quality, bespoke solutions, and enhanced competitiveness on a broader scale.

References

Loredo-Morales Molina, Titi, R. and Maria, E. (2023). Quality, efficiency and sustainability improvement in machining processes using Artificial Intelligence. *Procedia CIRP*, [online] 118, pp.561–569. doi:https://doi.org/10.1016/j.procir.2022.06.016.  
 Almadani, M. (2019). *Advanced Manufacturing*. [online] Available at: https://www.elsevier.com/locate/bsfrp  
 Gauran, P., Hameed, S., and Usman, H. (2022). Additive manufacturing: expanding 3D printing horizon in industry 4.0. *International Journal on Innovative Design and Manufacturing (IJIDM)*, [online] 1(5), pp.2214–2215. doi:https://doi.org/10.1007/s41002-022-01055-4.

This dissertation examines how the integration of 3D printing and CNC machining technologies drives advancements in custom vehicle fabrication like luxurious vehicle, ambulance, fire truck, rescue vehicle, It explores increased precision, design flexibility, and potential for improved production efficiency compared to traditional methods. The research offers insights valuable to automotive customization businesses and manufacturing professionals also we can implement same for many other manufacturing and fabrication industry to achieve high quality.



Technologies: 3d Printer, Quality Management, CNC

<https://github.com/wahab137966/Dissertation>







Academic Title

## Assessing the Determinants of Cloud Storage Adoption for Data Management in Chinese Small Clinics

Project Areas

- Cloud Computing
- Software Development: (Front End)

Project Supervisor

Richie Lyng

#91 / Poster Board

by Zijian Wang

This project delves into the pivotal role of cloud storage in enhancing data management within small healthcare clinics in China. It scrutinizes the key factors influencing the adoption of cloud storage technologies, focusing on the unique challenges and prospects encountered by these entities. Through a comprehensive analysis, the study aims to offer valuable insights into optimizing healthcare data management practices, thereby improving the quality and accessibility of care in a rapidly evolving digital landscape.



**Abstract**

This study aims to investigate the barriers and challenges faced by small healthcare clinics in China when adopting cloud storage technology for data management. It explores factors such as financial constraints, technical expertise, and data security issues that may hinder adoption. The study utilizes secondary data analysis to provide insights and develop strategies to facilitate the successful implementation of cloud storage and ultimately improve the data management capabilities of these clinics.

**Methodology**

- Secondary data analysis approach.
- Data sources: academic journals, industry reports, government pubs.
- Analysis techniques: content analysis, comparative analysis.
- Ethical considerations: citation, objective interpretation.

**Expected Outcome**

- Comprehensive understanding of barriers and challenges.
- Strategies to facilitate cloud storage adoption.
- Improved data management capabilities in small clinics.

**Introduction**

Cloud storage technology offers significant advantages for healthcare data management, including cost savings, scalability and enhanced data security. However, small healthcare clinics in China often face unique challenges in adopting this technology due to resource constraints, technical expertise gaps, and data privacy concerns. This study investigates these barriers and develops strategies to facilitate the successful adoption of cloud storage in these clinics.

**Research Objectives and Questions**

**Objective:** Investigate barriers and develop strategies for cloud storage adoption in small Chinese healthcare clinics.

**RQ1:**

What are main barriers and challenges small healthcare clinics facing to adopt cloud storage technology to manage their customers' health records data?

**RQ2:**

How to help small healthcare clinics to address these existing challenges?

**Hypotheses and Theory**

**H1:** The main barriers and challenges to obstruct Chinese small healthcare clinics in adopting cloud storage technology to manage their health records data include limited financial resources, lack of technical expertise, concerns about data security and privacy.

**H2:** Providing targeted financial support, offering specialized training programs in cloud technology, and implementing strong security measures can effectively help small medical practices overcome the challenges related to adopting cloud storage technology for managing health records data.

**Conclusions**

This research provides valuable insights into the challenges small healthcare clinics face when adopting cloud storage technology for data management. By identifying key barriers and developing a tailored strategy designed to facilitate a successful implementation, these clinics are able to take advantage of the benefits of cloud storage and enhance their overall data management capabilities.

**References**

1. Zhang, Y., & Li, H. (2023). Barriers to cloud storage adoption in small Chinese healthcare clinics: A case study. *Journal of Health Information Systems and Informatics*, 18(2), 123-135.

2. Wang, L., & Chen, X. (2022). The impact of financial constraints on cloud storage adoption in small businesses. *International Journal of Entrepreneurial Research*, 10(1), 45-58.

3. Liu, J., & Zhang, M. (2021). Technical barriers to cloud storage adoption in small enterprises. *Journal of Management Information Systems*, 38(3), 210-225.

4. Smith, A., & Jones, B. (2020). Data security concerns and cloud storage adoption in small businesses. *Journal of Business Strategy*, 42(4), 180-195.

5. Kim, S., & Park, J. (2019). The role of technical expertise in cloud storage adoption in small businesses. *Journal of Small Business Management*, 57(2), 150-165.

6. Brown, C., & Green, D. (2018). Financial constraints and cloud storage adoption in small businesses. *Journal of Business Finance & Accounting*, 45(3), 320-335.

7. White, E., & Black, F. (2017). Technical barriers to cloud storage adoption in small businesses. *Journal of Management Information Systems*, 34(1), 100-115.

8. Taylor, G., & Francis, H. (2016). Data security concerns and cloud storage adoption in small businesses. *Journal of Business Strategy*, 38(5), 250-265.

9. Lee, I., & Kim, K. (2015). The role of technical expertise in cloud storage adoption in small businesses. *Journal of Small Business Management*, 53(1), 80-95.

10. Johnson, R., & Adams, S. (2014). Financial constraints and cloud storage adoption in small businesses. *Journal of Business Finance & Accounting*, 41(2), 180-195.



**Technologies:** Secondary Data Analysis approach

<https://github.com/Ash10198/cloud-storage-adoption-small-healthcare-clinics>



# Safeguarding Supply Chains Cybersecurity

#92 / Poster Board



Academic Title

## Cyber-security in Smart Logistics Network

Project Areas

- Artificial Intelligence
- Database and Analytics
- Internet of Things
- Work Based Project

Project Supervisor  
Liam Doyle

by Tamunoiboroma Abiye Whyte

Smart logistics uses advanced tech to optimize operations like transportation and warehousing. The Fourth Industrial Revolution brings IoT and real-time analytics to logistics but also increases cybersecurity risks. This research proposes a cybersecurity framework for smart logistics networks. It reviews current cybersecurity knowledge, identifies vulnerabilities, and suggests strategies for threat mitigation. Ethical considerations ensure confidentiality and data integrity, contributing to enhancing logistics security and resilience.



**Abstract**  
Smart logistics utilize the utilization of advanced technologies and innovative solutions to optimize and streamline various aspects of logistics operations, such as transportation, warehousing, inventory management, and supply chain processes. With the advent of the Fourth Industrial Revolution, the use of smart logistics has increased, leading to an unprecedented integration of Internet of Things (IoT) devices, real-time data analytics, and interconnected systems. However, these technological advancements also pose an increased susceptibility to cyber threats. This literature review aims to address the pressing need for a comprehensive cybersecurity framework tailored uniquely to smart logistics networks. The literature review examines current knowledge on cybersecurity landscapes in smart logistics networks, highlighting vulnerabilities introduced by digital technologies, while recognizing relevant frameworks and models for threat mitigation and resilience enhancement. By drawing insights from professionals in both domains, logistics and cybersecurity, potential threats or attack vectors can be identified so organizations can develop proactive strategies or countermeasures mitigating risks against cyber threats. This may involve implementing robust access control mechanisms, the encryption of sensitive data, intrusion detection systems, and security awareness training programs aimed at enhancing overall cybersecurity resilience. Through systematic analysis coupled with thematic integration techniques adopted within this study, it develops a comprehensive framework integrating best practices from established cybersecurity frameworks for threat mitigation and resilience enhancement. Various threats, scenarios, and real-world case studies demonstrating effectiveness, including, responding and recovering from cyber threats.

**Propositions / Hypotheses / Theory**  
Smart logistics networks face cybersecurity challenges due to IoT integration. Developing a tailored cybersecurity framework can mitigate threats. Proactive measures and collaboration enhance security. Increased IoT reliance correlates with higher threat frequency. Effective framework implementation reduces disruptions.

**Methodology**  
The research will adopt a single-method approach, using qualitative and methods to provide a comprehensive understanding of the cybersecurity landscape in smart logistics networks and to develop an effective framework for threat mitigation and resilience enhancement.

**Data Collection and Findings**  
Surveys will be distributed to professionals working in the logistics and cybersecurity domains to gather quantitative data on current practices, challenges, and perceptions regarding cybersecurity in smart logistics networks.

Survey questions will be designed to capture information on existing cybersecurity measures, perceived threats, and the level of preparedness within the logistics industry.

**Framework Development**  
Threat Identification and Mitigation Strategies to be applied.

**Ethical Considerations**  
The research will adhere to ethical standards, ensuring the confidentiality of participants and obtaining informed consent for interviews and surveys. Data will be anonymized and securely stored.

**Conclusions**  
This project is crucial for addressing the evolving cybersecurity challenges in smart logistics networks. By developing a robust framework, this research aims to contribute to the resilience and security of critical logistics operations in the face of cyber threats. The mixed-methods research design aims to provide a holistic understanding of the cybersecurity landscape in smart logistics networks and develop an ideal framework for threat mitigation and resilience enhancement.

**References**  
ISO 27001 standards for improving organizational cybersecurity. National Institute of Standards and Technology.

Shahid, A., Akar, S., & Al-Mutairi, A. (2020). Shaping next-generation access control models based on artificial intelligence in IoT. In 2020 IEEE Access: International Conference on Computer Systems and Applications (ICCSA) (pp. 1-10).

Ponnam, S. V., & Holcomb, M. C. (2011). Understanding the conceptual supply chain resilience. The International Journal of Logistics Management, 22(1), 1-24.

**Introduction**  
The advent of the Fourth Industrial Revolution has brought forth the era of smart logistics, characterized by the pervasive use of Internet of Things (IoT) devices, real-time data analytics, and interconnected systems. The escalating frequency and sophistication of cyber threats in smart logistics networks have given rise to a pressing need for a comprehensive cybersecurity framework. The potential consequences of a cyber attack on logistics operations are multifaceted, ranging from disruptions in supply chain continuity to the compromise of sensitive data.

**Research Objectives and Questions**  
The primary objectives of this research are as follows:  
1. To identify and analyse the current cybersecurity challenges faced by smart logistics networks.  
2. To develop a comprehensive framework for threat mitigation that addresses vulnerabilities in logistics systems.  
3. To enhance the resilience of smart logistics networks against cyber threats through the incorporation of proactive measures.  
4. To validate the effectiveness of the proposed framework through simulations and real-world case studies.

**Questions** How can a comprehensive cybersecurity framework be developed to mitigate threats and enhance the resilience of smart logistics networks in the context of the Fourth Industrial Revolution and the pervasive integration of Internet of Things (IoT) devices?

**Literature Review / State of the Art**  
The integration of smart technologies in logistics networks has indisputably ushered in a new era of modern supply chain management, profoundly elevating efficiency and capabilities. However, this rapid transformation has also exposed these networks to unprecedented cybersecurity risks, necessitating a comprehensive understanding and effective mitigation strategies. This literature review critically examines the current state of the cybersecurity landscape in smart logistics networks, endeavoring to delve deeper into the multifaceted challenges posed and identify robust frameworks and models for threat mitigation and resilience enhancement.



**Technologies:** Electrical Technology, Computer, The Internet of Things (IoT), Web design

<https://tamunoiboromawhyte.blogspot.com/2024/02/project-showcase-part-1.html?m=1>

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**Máté Domonics**

IoT-based Entry Control System Hosted on AWS ..... **#8 / TL252** ..... 11

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