DCU
Ollscoil Chathair
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Dublin City University

Expo 2022

Faculty of Engineering and Computing

DÁMH NA hINNEALTÓIREACHTA AGUS NA RÍOMHAIREACHTA
FACULTY OF ENGINEERING AND COMPUTING

Final Year Projects Class of 2022

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Message from the Dean

On behalf of the Faculty of Engineering and Computing, I would like to welcome you to the annual Final Year Project booklet by the Class of 2022. This publication celebrates the impressive talent and innovation of our soon-to-be graduates, and is an opportunity for them to showcase the cutting-edge skills and expertise they have acquired during their time at DCU. It serves as a symbol of DCU's guiding philosophy as it celebrates people – our students and staff – and their focus on meaningful learning, and successful project completion during very challenging times, and it highlights the potential economic, industrial and societal impacts that the knowledge and skills underpinning these projects will have.

This booklet serves to capture these fantastic achievements for the students and their families, for present and future employers, for industry partners, and for the many others who will view its pages in perpetuity. Moreover, the diversity of projects on display is a testament to the characteristic creativity, adaptability and breadth of knowledge evident across our Faculty and supported by our valued external partners. It reflects the commitment, effort and persistence of all of the people involved – our students, their lecturers, the technical and professional support teams who support their academic journey, and our industry partners who help, through real-world exposure via INTRA, to translate their learning into action.

Although the term 'unprecedented' has lost, through repetition, much of its currency, it would be remiss of me not to acknowledge the magnitude of the achievement of our students in making it to the milestone that is Expo 2022. At the outset of their studies they could never have imagined the obstacles they would face, as they pursued their degrees against the backdrop of a once-in-a-lifetime, global health emergency. However, despite the challenges presented by remote and hybrid-learning, and significant periods of physical separation from peers and the campus, the ability to maintain focus and to thrive within these unique circumstances is itself a significant accolade that each student takes away from today's celebration. It is the aim of DCU to work to develop the 'whole person' and to produce 'graduates

that are resilient and accomplished, open and self-aware, innovative and adaptable'[1]. Given what the students featured in this booklet have produced, and the environment within which these accomplishments have been achieved, it may be said that they are themselves the very manifestation of this mission.

We know that the education that our students have received, particularly during the exigencies of COVID-19, will stand them in good stead to respond, as leaders in the Computing and Engineering sectors must, to the manifold other challenges facing our planet. We know, also, that as the next generation of STEM innovators they will be pivotal in translating individual knowledge into collective, societal benefit and will be consistently using their disposition towards progress and creativity to shape a better world for the many rather than the few. Their impact will be felt beyond the pages of this booklet into the individual lives of citizenry and the broader society, will reverberate throughout industry and will enhance national and global economies of the future.

Today, however, is a time to be fully present in the moment, to take a breath after a long period of work and separation and absorb the opportunity to finally experience our Expo in person, once more, on our beautiful DCU Glasnevin campus.

To our students, we are so proud of everything you have achieved and we hope that, when you look back at your time here in DCU, it is with great affection and filled with fond memories. Remember, as valued alumni, to stay in touch with us and come back often to visit our new students. You will always be so very welcome in the Faculty of Engineering and Computing

To our industry partners and employers, we value the relationship our faculty has built over the years and aim to strengthen these links going forward. We hope that you enjoy your on-site visit today, along with the depth and breadth of the work that our students demonstrate at our Expo. We also hope that you grasp the opportunity to get to know the personalities behind the projects!

In closing, sincere congratulations to all our students on successfully completing your Final Year Project, you should be very proud of your achievement!

Jennifer Bruton
Executive Dean, Faculty of Engineering and Computing, DCU

1 DCU Strategic Plan 2017-2022: Talent, Discovery and Innovation, President's Introduction, p.5.

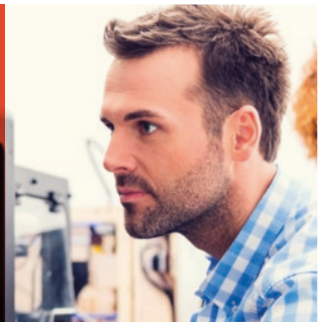
Message from Our Lead Sponsor

AIB is one of Ireland's pillar banks, offering a full range of personal, business and corporate banking and insurance services. At AIB, our purpose is to back our customers to achieve their dreams and ambitions. We understand that the future of banking is digital and technology underpins all of our customer and employee interactions, providing the capability to realise our ambition. Technology@AIB is the team that delivers the Digital, Technology and Data solutions to enable this.

Working in a flexible, hybrid environment, we design and deliver world class technology solutions that transform the customer experience. Using advanced analytics, cutting edge technology, automation and innovative agile delivery methods, we can meet our customers' needs faster, enable sustainable business growth, enhance our relationship with our regulators and deliver operational efficiencies. We are innovative and creative, engaging with partners, fintechs and the broader technology sector to build the future of financial services.

In Technology@AIB, we embrace a diverse workforce, working across different technologies and business domains in dynamic teams to deliver world class solutions for our colleagues and customers. We are looking for creative technology enthusiasts who have the skills and capabilities to enable our strategy and the increased digitalisation of our channels, while transforming our technology, security and service capabilities.

If you would like a career which is challenging and rewarding, please contact us at **jobs.aib.ie**



Projects Listed by Class

(Project Numbers/Project Areas/Project Technologies)

Biomedical Engineering

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
2	The Viability of Rapid Prototyped Implants for Orthopaedic use	3-D Modelling, Biomedical Engineering, Mechanical Design and Manufacture	Solidworks
11	Computational Biomechanics of Cerebral Aneurysms	Biomedical Engineering	3D Slicer and FEBio
15	Sustainable use of plastics in the healthcare industry for a circular economy	Energy Conservation, Life Cycle Assessment	ANSYS Workbench
22	Centrifugal Microfluidics Test for Concussion	3-D Modelling, Biomedical Engineering, Device Design, Fluid Mechanics	Solidworks, Autocad, Graphtec
28	Upcycling Cars – A Challenge to Convert Transport to Zero Emissions	Automotive Technology, Circuit Modeling	Excel/VB
33	Research and Design a bench scale model of a Multi-Stage Distillation Unit	Water Treatment	ANSYS Workbench, Solidworks
42	Examining pressure differentials across aspiration catheters used for clot retrieval under varied hydrodynamic and hydrostatic conditions	Biomedical Engineering	LabVIEW
51	OC53: Development of an in vitro protocol for the representative analysis of resorption rate of coral	Biomedical Engineering	imageJ
64	Finite Element Analysis of Stent Deployment	Biomedical Engineering, Device Design, Finite Element Analysis	ANSYS Workbench
68	Biomechanics of traumatic brain injury: 3D finite element model of the human brain.	3-D Modelling, Advanced Material Engineering, Biomedical Engineering, Finite Element Analysis, Tissue Engineering, rehabilitation engineering	Solidworks, 3D Slicer. org and FeBio
72	Analysis of Ireland's Natural Gas in a carbon free Energy System	Energy Conservation, Renewable Energy, Sustainability	Excel/VB

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
77	An Examination of the Mechanical Properties, Porosity and Morphology of Bone Void Fillers Produced from Coral Species Grown in Different Conditions	Biomedical Engineering, Statistical Analysis	SPSS
85	Biomechanics of Traumatic Brain Injury: 2D Finite Element mouse brain model	Biomedical Engineering, Finite Element Analysis, Simulation	ANSYS Workbench, Solidworks
92	How cycling aids in the knee rehabilitation of sports injuries	Biomedical Engineering, rehabilitation engineering	Solidworks
95	Materials Recovery	Advanced Material Engineering, Biomedical Engineering, Environmental Mapping, rehabilitation engineering	Microsoft Office
109	test system for the compressive buckling and delamination of adhesive skin patches	Biomedical Engineering, Data Analytics *PROJECT NOT ON DISPLAY AT EXPO*	Excel/VB, Solidworks
112	Assessment of mechanical and wear properties of polymer-coated fine gold wires for cardiovascular devices.	Biomedical Engineering	Solidworks
135	Rehabilitation Robotics: The design and development of a hand rehabilitation device	Biomedical Engineering	C/C++, Solidworks
137	Inflation based test system for characterisation of equibiaxial deformations of low-cost hernia meshes based on mosquito nets	Biomedical Engineering	Excel/VB, Solidworks
140	The Effect of Process Parameters on the Corrosion of 3-D Printed Stainless Steel	Additive Manufacturing, Biomedical Engineering, Data Analytics, Mechanical Design and Manufacture	Excel/VB, Gamry Framework
144	Peel test attachment for the study of perspiration effects in adhesive wound care dressing or ostomy applications	Biomedical Engineering	Excel/VB, R
148	Development of a centrifugal convective PCR DNA Amplifier	Biomedical Engineering, Fluid Mechanics	C/C++, Solidworks, microfluidics
154	Development of an experimental simulator for evaluation of Intra-Cardiac Echo (ICE) catheters and receive user feedback	3-D Modelling, Biomedical Engineering, Device Design, Mechanical Design and Manufacture, Sensor Technology, Simulation	Solidworks

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
159	Biomechanics of spinal cord injury	3-D Modelling, Finite Element Analysis	Solidworks, FEBio
168	'Examining the effects of varied manufacturing parameters on the mechanical performance and function of embolic particulates'	Biomedical Engineering	Excel/VB, Solidworks, CellScale
183	Investigation of braided fibre structures for applications as ligaments or tendons	Biomedical Engineering	3D-Printing

Biomedical Engineering Year 5

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
7	An Analysis of 3D-Printed Prosthetics	Biomedical Engineering	ANSYS Workbench, Excel/VB, Solidworks
30	A Study into the Impact of Regulations in the Pharmaceutical Industry	Information Retrieval, Statistical Analysis	IDEF0
46	An Investigation into the Effectiveness of the Alkaline Wash of a Clean-in-Place Cycle on Damaged Polymers Contaminated with Micrococcus luteus	Biomedical Engineering	Excel/VB, R, Bioprocessing
48	Development and Testing of PVA-C to be used as Brain Matter inside a 3D Head Phantom for Neurosurgical Training	Biomedical Engineering	Bioprocessing
54	Additively Manufactured Wrist Splint	3-D Modelling, Additive Manufacturing, Biomedical Engineering, Finite Element Analysis, Mechanical Design and Manufacture, rehabilitation engineering	ANSYS Workbench, Solidworks

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
66	Cyclic potentiodynamic polarization study of 3D printed Nitinol in simulated body fluids	Additive Manufacturing, Advanced Material Engineering, Biomedical Engineering	Solidworks, Scanning electron microscope and EDS
76	Investigating the Effect of Scaffold Architecture on the Mechanical Properties of 3D Printed Bone Scaffolds Using Computational Modelling	Tissue Engineering	ANSYS Workbench
83	Algorithm modelling: configuration of a PID controller block for insulin regulation of type 1 diabetic patients	Biomedical Engineering, Control Systems	Matlab, Simulink
114	Automated Plant Pathogen Detection Using Cell Lysis and qPCR Using Lab-on-a-Disc (LoaD) and 2 Degrees of Freedom Technology	Additive Manufacturing, Automation, Biomedical Engineering, Device Design, Mechanical Design and Manufacture	LabVIEW, Solidworks, microfluidics
119	"A comprehensive computational analysis on the biofidelityof aortic phantom materials'	Biomedical Engineering, Tissue Engineering	ANSYS Workbench, Excel/VB, Solidworks
121	An investigation into the effectiveness of ultrasonic cleaning as an intermediate cleaning stage in the additive manufacture of orthopaedic implants.	Additive Manufacturing, Biomedical Engineering	Excel/VB, Solidworks, Ultrasonic Cleaning, Scanning Electron Microscope and Additive Manufacturing
131	Design, Create and Test a 3D Printed, Low-Cost Prosthetic Knee Joint.	3-D Modelling, Additive Manufacturing, Advanced Material Engineering, Biomedical Engineering, Device Design, Finite Element Analysis	ANSYS Workbench, Solidworks

Mechanical and Manufacturing Engineering

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
4	Finite Element Analysis of Deep Drawing	Finite Element Analysis	ANSYS Workbench
19	An Investigation into the Effects of the Irish Sea Offshore Environment on Materials Commonly Used in the Construction of Offshore Wind Turbines	Advanced Material Engineering, Mechanical Design and Manufacture	Solidworks
37	Designing a model optimising solar to heat domestic heating system conversions	Renewable Energy Technology	Excel/VB
57	Design and build of a fluid structure interaction experimental system: Impact Analyses	3-D Modelling, Additive Manufacturing, Arduino, Circuit Modeling, Control Systems, Device Design, Fluid Mechanics, Mechanical Design and Manufacture	ANSYS Workbench, Solidworks
61	Safety and Sustainability of the Bicycle	3-D Modelling	Solidworks
80	Internal Skiving Gear Demonstration Rig	3-D Modelling, Additive Manufacturing, Device Design, Educational, Mechanical Design and Manufacture	Solidworks
100	Development of Virtual Laboratories for Engineering Students	Educational, Web Application	Excel/VB, HTML5, Solidworks
111	Design and Prototype development of Wave Energy Harvesting system with focus on increasing efficiency	Electric Generation, Energy Conservation, Fluid Mechanics, Mechanical Design and Manufacture, Renewable Energy Technology	C/C++, Solidworks
113	Modelling Contracts for Service and Maintenance	Automation, Lean Manufacturing, Simulation	Excel/VB, ExtendSIM
133	3-D Printing of Flexible Parts for Electronic Drums	3-D Modelling, Additive Manufacturing	Solidworks, 3D Printing Slicer software
150	Liquid Mixing in Airlift-(photo) Bioreactors	Arduino, Biomedical Engineering, Mechanical Design and Manufacture	Python, Solidworks

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
161	Electronic Drum Trigger Development	3-D Modelling, Additive Manufacturing, Data Analytics, Device Design, Digital Signal Processing, Mechanical Design and Manufacture, Sensor Data	Excel/VB, Solidworks
173	Carbon Efficiency of Data Centres	Energy Conservation	Excel/VB
178	Electronic Drum Pad Design	3-D Modelling, Intelligence Pattern Matching, Mechanical Design and Manufacture, Sensor Data, Sensor Technology	Excel/VB, Solidworks
185	Finite Element Analysis of Functionally Graded Bone Scaffolds	Finite Element Analysis	ANSYS Workbench, Solidworks
187	Improve the manufacturing efficiency of a catheter packaging machine	Sensor Technology	IV2 Series Software
191	Gravity Battery	3-D Modelling, Electric Generation, Mechanical Design and Manufacture, Renewable Energy Technology	Solidworks

Mechanical and Manufacturing Engineering Year 5

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
18	Investigation of Loading on Buried Natural Gas Pipes	Finite Element Analysis	ANSYS Workbench
35	Investigate Optimal Heating Element Design for Most Efficient Airflow in Home Use Electric Radiators	Fluid Mechanics, Mechanical Design and Manufacture, Thermodynamics	ANSYS Workbench
45	Estates Building Decarbonisation	3-D Modelling, Energy Conservation	Design Builder

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
60	An Investigation into the Environmental and Economic Impact of the Installation of Solar Panels in an Irish Household by means of a Life Cycle Analysis (LCA) and a Life Cycle Cost Analysis (LCCA)	Life Cycle Assessment	Excel/VB
70	Development of a battery powered commercial zero turn lawnmower	3-D Modelling, Energy Conservation, Lean Manufacturing, Mechanical Design and Manufacture, Vehicle Control	Solidworks
90	Finite Element Analysis of the Structural Performance of an Axial Flow Compressor Blade and Disk.	3-D Modelling, Finite Element Analysis	ANSYS Workbench, Excel/VB, Solidworks
91	Design and analysis of a transport and lifting machine for the installation of steel beams	3-D Modelling, Device Design, Simulation	Solidworks
97	An investigation into the benefits of incorporating heat pumps into DCU ventilation systems to recover heat from waste air	Energy Conservation, Thermodynamics	Excel/VB
105	Non Centrifugal Event-Triggered Valves	Device Design	microfluidics
125	Finite Element Analysis of Raymond Mill Driveshaft to Determine the Cause of Failure	3-D Modelling, Finite Element Analysis, Mechanical Design and Manufacture	ANSYS Workbench, Solidworks
130	Assessing the feasibility of achieving accurate predictions of the flow characteristics induced by a submersible axial flow mixer using CFD	Fluid Mechanics, Simulation	ANSYS Workbench, Excel/VB
138	Calculating improved efficiency of boiler upgrade in a food processing plant	Energy Conservation, Thermodynamics	Excel/VB
155	An Investigation on the Influence of Stylus Length and Trigger Force on CMM Touch-Trigger Probe Lobing and Pre-Travel Error	Engineering Metrology and Measurement	PC-DMIS: Metrology Measurement Software

Mechatronic Engineering

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
3	DNA LAMP Amplification Instrument	3-D Modelling, Arduino, Control Systems, Device Design, Mechanical Design and Manufacture, Mechatronic Systems, Power Electronics, Software Development	C/C++, LabVIEW, Solidworks, microfluidics
9	Design and prototype development of a portable vertical axis wind turbine.	3-D Modelling, Arduino, Circuit Modeling, Fluid Mechanics, Graphics, Mechanical Design and Manufacture, Mechatronic Systems, Motion Analysis, Renewable Energy Technology, Simulation	C/C++, Excel/VB, Matlab, Solidworks, QBlade
10	Simulation of Network Frequency Controller Under Varying Supply Conditions for Electricity Distribution Networks	Mechatronic Systems, Power Electronics, Renewable Energy Technology, Simulation	Matlab, Simulink
14	Power Electronics in Matlab/DC-DC Converter Matlab Simulation	Power Electronics	Matlab
25	Optimal Location of Windfarms	Data Analytics	R/Rstudio
40	Analyse and Investigate methods of Improving Hydroelectric Energy storage Systems	Arduino, Electric Generation, Mechanical Design and Manufacture	C/C++, Solidworks
55	Design of a cold gas thruster valve and test rig	3-D Modelling, Additive Manufacturing, Arduino, Automotive Technology, Electric Generation, Embedded Systems, Energy Conservation, Fluid Mechanics, Mechatronic Systems, Power Electronics, Renewable Energy Technology, Robotics, Sensor Technology, Software Development	Excel/VB, LabVIEW
56	Robotic vision controlled automated packing	Automation, Computer Vision, Image/Video Processing, Mechatronic Systems, RaspberryPi, Robotics, Software Development	Python

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
59	Updating an existing phosphate sensing system.	3-D Modelling, Arduino, Circuit Modeling, Mechanical Design and Manufacture, Mechatronic Systems, Sensor Data, Sensor Technology, Software Development	C/C++, Excel/VB, Solidworks, Fusion 360 Electronics
65	Design and assembly of a test rig to manage pipe alignment and valve assembly in the Pharmaceutical Industry	Mechanical Design and Manufacture	Solidworks
73	Colisense – Rapid on-site detection of E.coli	3-D Modelling, Arduino, Circuit Modeling, Control Systems, Sensor Data, Sensor Technology	C/C++, Matlab, Simulink, Solidworks
79	Micro Turbine Array	3-D Modelling, Additive Manufacturing, Energy Conservation	Solidworks, 3D Slicing Software (Cura)
89	Visualisation of Metal 3D-Print Process Data	Additive Manufacturing, Data Analytics, Software Development	Python
94	Membrane Distillation Project	Fluid Mechanics, Mechatronic Systems, Sensor Data, Water Treatment	Excel/VB, Water treatment
102	Low-Cost Real-Time Camera Motion Stabilization	3-D Modelling, Arduino, Circuit Modeling, Control Systems, Device Design, Embedded Systems, Image/Video Processing, Mechanical Design and Manufacture, Mechatronic Systems, Sensor Data, Sensor Technology, Software Development	C/C++, Matlab, Python, Simulink, Solidworks
104	Image processing for remote monitoring of industrial processes	Cloud Computing, Computer Vision, Databases, Image/Video Processing, Mechanical Design and Manufacture, RaspberryPi	Python
108	Creating a launch monitor that tracks the speed and launch angle of a golf ball	Computer Vision, Image/Video Processing, RaspberryPi	Python
117	INDUSTRY 4.0	Arduino, Automation, Cloud Computing, Mechatronic Systems, Sensor Data	Python
123	Development of Database to Monitor Performance of FMS Rig under I4.0	Automation, Data Analytics, Databases	PLC Programming, Ignition SCADA

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
128	Hit the Ground Running	Sensor Technology	C/C++, Capacitance meter
132	Negative Film Scanning with a DSLR	3-D Modelling, Circuit Modeling, Device Design, Image/Video Processing	Python, Solidworks
134	Design and build an XY motorised stage for a mechanical indentation system	3-D Modelling, Arduino, Mechanical Design and Manufacture, Software Development	C/C++, Matlab, Solidworks
141	Automated Guided Vehicle Routing & Scheduling Algorithms	Automation, Vehicle Control	Python
145	The design of a sensorised wearable utilising the fabrication capability of 3-D printing	3-D Modelling, Additive Manufacturing, Arduino, Biometrics, Data Analytics, Educational, Graphics, Internet of Things, Sensor Data, Sensor Technology, Software Development	C#, Python
147	Design and build of remotly opperated sensor deployment unit	3-D Modelling, Additive Manufacturing, Arduino, Mechanical Design and Manufacture, Mechatronic Systems, Robotics	C/C++, Solidworks
153	Investigation of Cleaning In Place Valves in Pharmaceutical Facilities	Biomedical Engineering, Sensor Data, Thermodynamics, Virtual Reality	Excel/VB, LabVIEW, PLC Programming, Solidworks
163	Subterranean Energy Storage Systems for Domestic Applications	Arduino, Energy Conservation, Mechanical Design and Manufacture, Mechatronic Systems	Python
167	The Design and Realisation of a Stirling Engine	3-D Modelling, Energy Conservation, Mechanical Design and Manufacture, Renewable Energy Technology	Solidworks
169	Ultrasonic Thermometry	Arduino, Digital Signal Processing, Sensor Data, Sensor Technology	Digital Signal Processing, Arduino
171	Modelling and Simulation of a Robot Arm	Control Systems, Robotics, Vehicle Control, Virtual Reality	Scilab

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
174	PMN46: Design and development of a Software Defined Radio-Based System for 21cm Wavelength Radio Astronomy	Software Development	Digital Signal Processing
179	Truing Bicycle Wheel Automation	Arduino, Sensor Data, Sensor Technology	Python, arduino
181	BREH17 Whiteboard to PDF Capture System	Computer Vision, Image/Video Processing, RaspberryPi	Python, Solidworks
185	Electronic Drum Module Development	Arduino, Software Development	C/C++
190	Self-Balancing Robot	Arduino, Control Systems, Robotics	C#, C/C++, Matlab
192	DB85: Evaluation of the physical properties of NiTi wires for use in various applications	Advanced Material Engineering, Data Analytics, Mechanical Design and manufacture, sensor data	Excel, solidworks, LabVIEW

Electronic and Computer Engineering

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
12	Edge Analytics Over Smart Doorbell for Object Detection	Artificial Intelligence, Data Analytics, Embedded Systems, Image/Video Processing, Internet of Things, Security	C/C++
16	Secure IoT Sensor Application connected via untrusted on-chip platform	Internet of Things, Security	C/C++
20	Real-Time Smartphone Based Volume Rendering Using Texture Mapping	3-D Modelling, Android, Graphics	Java, OpenGL
23	Improving text-to-image search with contrastive losses and advanced sentence embeddings	Computer Vision, Image/Video Processing, Information Retrieval, Natural Language Processing, Software Development, Web Application	HTML5, Python

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
29	Universal Design of an Internet Radio Appliance	Mobile App, Multimedia, RaspberryPi, Software Development, Web Application	Python
36	Performance Evaluation of AI Models as Microservices in a Cloud Environment	Artificial Intelligence, Cloud Computing	Docker, Python, Kubernetes
38	Sports Energy Monitoring Using Low Power Wearable Sensors	BeagleBone, Internet of Things, Sensor Data, Wearable_Technology	C/C++
41	Cloud-Connected CO2 sensor	Arduino, Cloud Computing, Data Analytics, Embedded Systems, GPS/GIS, Internet of Things, Robotics, Sensor Data, Sensor Technology, Web Application	C/C++, Eclipse, HTML5, JavaScript
49	Development of an Augmented Reality System for use in IoT applications	Augmented Reality, Internet of Things	C/C++, HTML5, JavaScript
63	Testing and validation of BendLabs flex sensors for use in smart glove based applications in medical patient management	Sensor Data, Sensor Technology, Wearable_Technology, Wireless Technology, Human-computer Interaction, rehabilitation engineering	Excel/VB, Blender
67	The design and construction of a temperature and humidity sensor.	Arduino, Sensor Technology	C/C++
69	Efficient Implementation and Performance Evaluation of the Simon96/96 lightweight cipher	Circuit Modeling, Cryptography, Device Design, Internet of Things, Software Development	C/C++, Eclipse, FPGA, Verilog::VHDL
75	Visualising the Protein Structure Universe	3-D Modelling, Biomedical Engineering, Graphics	Eclipse, HTML5, Java, X3DOM
87	Computer Vision (Deep Learning) based Object Avoidance System for Remotely Guided Vehicles	Artificial Intelligence, Computer Vision, Image/Video Processing, RaspberryPi	Python
99	Peatland Drain Segmentation from Aerial Imagery	Artificial Intelligence, Computer Vision, GPS/GIS, Image/Video Processing, Intelligence Pattern Matching, Software Development	Python, Machine Learning
115	Exploration of neural networks for fast time domain simulation of modern and complex systems	Simulation	Matlab

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
118	GNN for Anomaly detection of Traffic Flow in a SUMO network	Artificial Intelligence, Simulation, Traffic Simulators	Python, Machine Learning
124	Innovative Algorithm for 5G Network Access Traffic Steering, Switching and Splitting	Network Applications, Simulation, Software Development, Wireless Technology	C/C++, NS-3, XML
126	Creating a Solar-Powered Web Server	Blogging, Internet of Things, RaspberryPi, Renewable Energy Technology	CSS
158	Cloud based distributed iot dataspaces and transactions management using blockchain	Cloud Computing, Embedded Systems, Internet of Things, RaspberryPi, Sensor Data, Software Development, Web Application, Blockchain technology	CSS, HTML5, JavaScript, Nodejs, React.js, Solidity
160	Passive Radar	Embedded Systems, Internet of Things, Motion Analysis, Security	C/C++, Matlab
164	GMM41: Open source DASH based adaptive audio-visual media streaming on sabre	Data Analytics, Information Retrieval, Simulation, Software Development, Telecommunications	JavaScript, Python
172	The design, building and testing of a remote climate change monitor using very low radio frequency emissions	Information Retrieval, Sensor Data, Wireless Technology	Python
176	GPGPU	Data Analytics, Software Development	C/C++, NVIDIA CUDA C/C++

Enterprise Computing

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
5	Daltaí – Student Discount service	Web Application	CSS, HTML5, JavaScript, Nodejs, Python, SQLite, Django
8	FuelFinder Web Application	Data Analytics, Databases, GPS/GIS, Statistical Analysis, Web Application	CSS, HTML5, JQuery, JavaScript, Nodejs, PHP, Python, REST, SQL
24	Track & Review Game Data for Amateur Sports Teams	Web Application	JavaScript, Nodejs, Python, SOAP
31	SwapIT	Databases, E-Commerce, Web Application	CSS, HTML5, JavaScript, Nodejs, Python, Django
34	CleverClix	Educational, Information Retrieval, Natural Language Processing, Software Development, Web Application, Human-computer Interaction	CSS, Docker, HTML5, JavaScript, MongoDB, MySQL, Python, REST, SQLite, Scrapy, PDF Miner
44	Choreganise Mobile App	Mobile App	HTML5, Python, REST, SQL, React.js
50	AutoArray	E-Commerce, Information Retrieval, Model View Controller, Software Development, Web Application	CSS, Docker, HTML5, JavaScript, Nodejs, Python, REST, SQL, SQLite, Django
53	Car Park Space Availability Application	Mobile App, RaspberryPi, Sensor Technology, Software Development, Traffic Simulators	CSS, HTML5, JavaScript, Python
74	StockCompete	Artificial Intelligence, Data Analytics, Databases, Natural Language Processing, Software Development, Web Application	CSS, HTML5, JavaScript, Nodejs, Python, Machine Learning
98	Backstage	E-Commerce, Software Development, Web Application	HTML5, JavaScript, Python, REST, SQLite
103	WeCare	Natural Language Processing, Software Development, Speech Recognition	Nodejs

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
106	Safework Wallet	Web Application	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQLite
116	Equimeet	Web Application	CSS, Docker, HTML5, JavaScript, REST
127	DriveMate	Databases, E-Commerce, Mobile App, Software Development	CSS, JavaScript, NoSQL, React.js, Firebase, React Native
129	Budget Buddy	Android, Mobile App, Optical Character Recognition	Java, MySQL, PHP, XML
143	SCAN-N-GO	E-Commerce, Web Application	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQLite, DJANGO,
151	Equip	E-Commerce, Web Application	CSS, HTML5, JavaScript, Python, django
156	Garçon	Web Application	CSS, HTML5, JavaScript, Python
157	Utile	Model View Controller, Web Application	CSS, HTML5, JavaScript, Python, REST, SQL
166	SmartPark	Image/Video Processing, Internet of Things, Web Application	JavaScript, Nodejs, Python, Machine Learning
170	An Irish Grammar Tool – for Beginners	Educational	CSS, HTML5, JavaScript
177	Tis The Season	Mobile App, Web Application	CSS, HTML5, JavaScript
186	Wobly: A New App For Hiring	Web Application	CSS, Docker, HTML5, JavaScript, Python, REST, Django
189	MyBarista	Web Application	CSS, HTML5, JavaScript, Python
194	MyTutor.ie	Educational, Social Networking	Docker, HTML5, JavaScript, Nodejs, Python, REST

Computer Applications

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
1	Library Athena	Content Management System, Educational, Filesystems, Model View Controller	CSS, HTML5, JavaScript
6	FacePass	Security	Nodejs, Python, React.js
13	CryptoCruise: A decentralized carpooling application	Web Application, Blockchain technology	CSS, Docker, HTML5, JavaScript, React.js, Solidity, Ganache, truffle, express, webpack
17	Oraculi	Cloud Computing, Educational, Filesystems, Network Applications, Software Development, Web Application	Docker, HTML5, JavaScript, Nodejs, React.js, express.js, GoTTY, tmux, zsh, firebase, Google APIs
21	Anonymous DNS	Network Applications, Security, Software Development	CSS, Docker, HTML5, Python
26	Cyrpto Price Predictor	Web Application	HTML5, JavaScript, Python
27	Job Posting and Resume Analyzer	Artificial Intelligence, Data Analytics, Data Mining, Databases, Natural Language Processing, Software Development	CSS, HTML5, JavaScript, Python, REST, SQL, React.js
32	Interactive Interior Design	3-D Modelling, Graphics	CSS, HTML5, JavaScript, Python, Three.js
39	Pygame Platformer with Networking Functionality	Gaming, Graphics, Software Development	Python, Pygame, Client-Server Model, Networking
43	MyTrip	Artificial Intelligence, Natural Language Processing, Software Development, Web Application	CSS, HTML5, JavaScript, Python, SQLite, Machine Learning
47	NextGame	Databases, Gaming, Image/ Video Processing, Web Application	CSS, HTML5, Python, Machine Learning, PostgreSQL

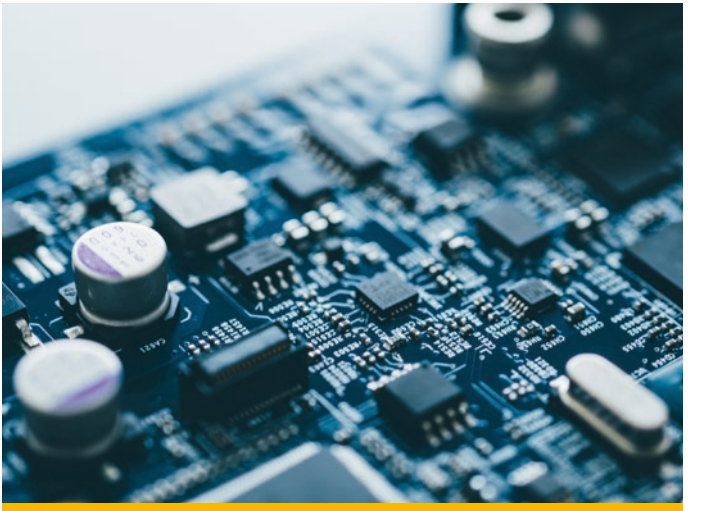
PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
52	Contractify	Android, Biometrics, Databases, E-Commerce, Mobile App, Blockchain technology	Python, REST, SQL, XML, Android Kotlin, Solidity, Flask, SQLAlchemy
58	Entrapta – sound mapping public spaces for neurodivergent people	Arduino, Cloud Computing, Data Analytics, Databases, Device Design, Digital Signal Processing, Embedded Systems, Internet of Things, Sensor Data, Sensor Technology, Software Development, Web Application, Wireless Technology	C/C++, CSS, Digital Signal Processing, Docker, HTML5, JavaScript, Nodejs, Python, REST, React.js, Graphite, MQTT
62	VirtualOffice	Software Development, Web Application	CSS, Docker, HTML5, JavaScript, MySQL, Nodejs, Python, SQLite, React.js
71	Vocal Co	Data Analytics, Statistical Analysis, Web Application	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQLite, React.js
78	SAGE	E-Commerce, Social Networking, Web Application	JavaScript, Python, Material UI, Firebase, Next.js
84	DRiVE – Driving Aid Android Application	Android, Image/Video Processing, Mobile App	Java, MLKit
86	Early Education Math Games	Content Management System, Databases, Educational, Gaming, Web Application	JavaScript, MySQL, SQL, React.js
88	Race23	Artificial Intelligence	Python, Machine Learning
93	Recipify: Recipe Recommendation Service	Databases, Information Retrieval, Software Development, Web Application	CSS, HTML5, JavaScript, MySQL, Nodejs, SQL, React.js, Prisma, Next.js
96	PixelPerfect	Image/Video Processing	CSS, Python, React.js, Machine Learning
101	Student Assistant Chatbot	Natural Language Processing, Human-computer Interaction	.NET, JavaScript, MySQL, Python, Machine Learning

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
107	SentiBot	Artificial Intelligence, Automation, Data Analytics, Databases, Information Retrieval, Natural Language Processing, Software Development, Statistical Analysis, Web Application	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQL, React.js, Machine Learning, Django, PostGres Database
110	Fluency	Android, Computer Vision, Educational, Image/Video Processing, Mobile App, Multimedia	JavaScript, Flutter, Dart, GIT CI
120	HODL – A cryptocurrency portfolio and price prediction app	Android	Java, Python, Firebase Database, Firebase Auth
122	Phaze	Android, Artificial Intelligence, Computer Vision, Databases, Educational, Image/Video Processing, Information Retrieval, Intelligence Pattern Matching, Mobile App, Software Development, Web Application	Java, MySQL, NoSQL, Objective-C, Python, Swift, XML, Machine Learning, Xcode
136	Core voting	Data Analytics, Databases, Distributed Systems	AngularJS, HTML5, Java, JavaScript, MySQL, SQL
139	Sign Language Teaching Aid	Artificial Intelligence, Data Analytics, Educational, Image/Video Processing, Intelligence Pattern Matching, Web Application, Human-computer Interaction	CSS, HTML5, JavaScript, Python, Machine Learning, Shell
142	NostraMarket (Stock/Cryptocurrency Analysis Application)	Artificial Intelligence, Cloud Computing, Data Analytics, Databases, Information Retrieval, Software Development, Statistical Analysis, Web Application	CSS, HTML5, JavaScript, NoSQL, Python, REST, Machine Learning, Firebase/GCP, Heroku, Flask
146	Thieft – Bluetooth Enabled Anti-Theft Device	Automotive Technology, GPS/GIS, Mobile App, RaspberryPi, SMS, Security, Sensor Data, Web Application	CSS, Java, JavaScript, Python, React.js
149	Hermes	Android, Automotive Technology, Image/Video Processing, Mobile App	JavaScript, Python, SQL, Machine Learning, React Native

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
152	Sentiscape Messaging Application	Android, Artificial Intelligence, Instant Messaging, Mobile App, Natural Language Processing, Software Development	Java, Python, Machine Learning
162	Allert – Allergen Scanning App	Android, Computer Vision, Image/Video Processing, Mobile App	CSS, HTML5, JavaScript, MySQL, Python, React.js, Terraform
165	Energy Conservation in Software	Energy Conservation, Software Development	Haskell
175	VotingBlock	Cryptography, Software Development, Web Application, Blockchain technology	CSS, HTML5, JavaScript, React.js, Hyperledger Fabric, Express JS, Jest, Puppeteer, Typescript
180	New Home	Data Analytics, Data Mining, Statistical Analysis, Web Application	CSS, HTML5, JavaScript, MySQL, PHP, Python, SQL, React.js
182	Yararacad	Computer Aided Desing; Computer Aided Manufacturing	Python; HTML/CSS; STEP
184	Distillery	Automation, Data Analytics, Distributed Systems, Energy Conservation, Simulation, Software Development	Docker, Haskell, Java, Python, Hadoop (MapReduce, HDFS), Perf
193	LingoLudus	Educational, Gaming	Python
195	Flix	Android, Mobile App	Java, Python, Machine Learning

Data Science

PROJ. NO.	PROJECT TITLE	PROJECT AREA	PROJECT TECHNOLOGY
81	Outcome prediction in cricket based on pre-match features and in-game scores	Data Analytics	Python, Machine Learning
82	Analysing the Intrinsic Memorability of a Procedural Crime-Drama Television Series	Artificial Intelligence, Computer Vision, Data Analytics, Image/ Video Processing, Multimedia	Excel/VB, Python, Machine Learning
196	Visualisation Tool for Social Bias in NLP Models	Natural Language Processing	Primarily Python



Project Summaries

in Chronological Order (Project Numbers 1-196)

Project Numbers 1-196

1. Library Athena

PROJECT VIDEO HERE

This project has been developed to read Public Domain Works in the web browser without needing to download special software. This project has converted tens of thousands of ebooks to a format that is readable by anybody, whether on mobile, tablet, or desktop.

Class	Computer Applications
Project Area	Content Management System, Educational, Filesystems, Model View Controller
Project Technology	CSS, HTML5, JavaScript
Student Name(s)	Gytis Daujotas | Sayed Mahmood Alawi
Email	gytis.daujotas2@mail.dcu.ie | sayed.alawi2@mail.dcu.ie
Supervisor	Dr Michael Scriney

2. The Viability of Rapid Prototyped Implants for Orthopaedic use

PROJECT VIDEO HERE

This project investigates the viability of rapid prototyped implants for orthopaedic use. The aim of this project was to manufacture a steel fracture plate similar to ones on the market and also 3D print the same plate. Then connect each piece to a piece of synthetic bone with a fracture in it. A compression test was used to test how well the plates kept the bone in place.

Class	Biomedical Engineering
Project Area	3-D Modelling, Biomedical Engineering, Mechanical Design and Manufacture
Project Technology	Solidworks
Student Name(s)	Megan McKenna
Email	megan.mckenna29@mail.dcu.ie
Supervisor	Dr Bryan MacDonald

3. DNA LAMP Amplification Instrument

PROJECT VIDEO HERE

The aim of this project was to design and construct an integrated portable "Lab-on-a-Disc" (LoaD) analysis system for nucleic acid amplification and detection. LAMP (Loop-Mediated Isothermal Amplification) is the method by which target genes are amplified and fluorescence detection is used to identify whether a target gene is present in a sample. A rig had to be designed and built that could spin a microfluidic LoaD and heat it to 65°C for LAMP testing. Solidworks was used to design the enclosure and to visualise the placement of all the components. The rig was assembled using laser cut black PMMA and 3D printed components. Electronic schematic diagrams were drawn using KiCad and LabVIEW was used as the control software.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Arduino, Control Systems, Device Design, Mechanical Design and Manufacture, Mechatronic Systems, Power Electronics, Software Development
Project Technology	C/C++, LabVIEW, Solidworks, microfluidics
Student Name(s)	Eimantas Davalis
Email	eimantas.davalis2@mail.dcu.ie
Supervisor	Dr David Kinahan

4. Finite Element Analysis of Deep Drawing

PROJECT VIDEO HERE

Deep drawing is an industrial process used for the production of metallic objects such as containers, pressure vessels, automotive parts and pipes. The objects are produced by drawing a sheet of metal into a forming die using force from a press. Objects produced using this process are generally monolithic (one-piece), making them strong and lightweight. It is also a fast and relatively inexpensive process for high-volume manufacturing. The objective of the project is to carry out a simulation of the process in ANSYS workbench and to investigate how changing various parameters influences the outcome of the process.

Class	Mechanical and Manufacturing Engineering
Project Area	Finite Element Analysis
Project Technology	ANSYS Workbench
Student Name(s)	Enrico Calef
Email	enrico.calef2@mail.dcu.ie
Supervisor	Dr Bryan MacDonald

5. Daltaí – Student Discount service

PROJECT VIDEO HERE

A student discount web application designed to connect students with physical SMEs offering them discounts. This project puts focus on physical businesses that cannot conduct sales through online channels as they may be struggling after the COVID-19 pandemic. This web application aims to increase the sales of physical SMEs by offering discounts to users, using the application allows students to save money.

Class	Enterprise Computing
Project Area	Web Application
Project Technology	CSS, HTML5, JavaScript, Nodejs, Python, SQLite, Django
Student Name(s)	Cian O'Donoghue | Kevin Boyle
Email	cian.odonoghue37@mail.dcu.ie | kevin.boyle39@mail.dcu.ie
Supervisor	Silvana MacMahon

6. FacePass

PROJECT VIDEO HERE

FacePass is a more secure method of demonstrating ownership of a specific credential. FacePass' goal is to give developers a safe and simple method to integrate face recognition as a user validation mechanism into their authentication systems. FacePass introduces the concept of OTG (one-time-gesture), which, when combined with face recognition, provides a high degree of security and protection against brute force and/or social engineering attacks. With growing worries about existing credential verification methods, FacePass paves the path for a completely password-free future.

Class	Computer Applications
Project Area	Security
Project Technology	Nodejs, Python, React.js
Student Name(s)	Kevin Andrei | Jeff Thomas
Email	kevin.andrei2@mail.dcu.ie | jeff.thomas6@mail.dcu.ie
Supervisor	Dr Tomas Ward

7. An Analysis of 3D-Printed Prosthetics

PROJECT VIDEO HERE

The aim of this project is to analyse methods of improving prosthetic production using the introduction of 3D printed material in an effort to reduce time taken to make said prosthetics, reduce knowledge and trained expertise required to develop said prosthetics, and to increase viability of acquiring and using a prosthetic by those who would have previously been unable to. This project accomplishes this by analysing the cost associated with 3D-printed prosthetics, potential flaws associated with designing and making these prosthetics, and examine ways in which it is possible to reduce the associated costs and issues that arise. The project also endeavoured to design a 3D-printable prosthetic leg in order to fulfil a gap identified by the World Health Organisation.

Class	BMEDIM
Project Area	Biomedical Engineering
Project Technology	ANSYS Workbench, Excel/VB, Solidworks
Student Name(s)	Jack O'Reilly
Email	jack.oreilly42@mail.dcu.ie
Supervisor	Dr Alan Kennedy

8. FuelFinder Web Application

PROJECT VIDEO HERE

FuelFinder is a web application that locates fuel stations and electric charging stations across Ireland with accurate live pricings. It incorporates all necessary fill up information in one easy to use place. A near me feature will showcase the nearest stations to the user. A filter option will allow for users to fine tune their requirements, for example if a user wanted a fast charging electrical point. A comparison calculator will offer users a way to calculate the savings they could make from one station to another.

Class	Enterprise Computing
Project Area	Data Analytics, Databases, GPS/GIS, Statistical Analysis, Web Application
Project Technology	CSS, HTML5, JQuery, JavaScript, Nodejs, PHP, Python, REST, SQL
Student Name(s)	Cameron Gleeson | Harry O'Byrne
Email	cameron.gleeson25@mail.dcu.ie | harry.obyrne2@mail.dcu.ie
Supervisor	Dr Graham Healy

9. Design and prototype development of a portable vertical axis wind turbine

PROJECT VIDEO HERE

This project is based on the design and prototype development of a portable vertical axis wind turbine. The concept is that this turbine would be used to charge an electric vehicle while it is parked. The turbine would fold downwards making the turbine compact enough to fit into the boot of the electric vehicle. For example, the owner of vehicle arrives to work on a given day where they notice it is breezy or windy, takes the turbine out of the boot, unfolds the blades, places the turbine on the roof of the vehicle and plugs it in to charge. The task in this instance was to design and develop a prototype of this device and test it in a wind tunnel.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Arduino, Circuit Modeling, Fluid Mechanics, Graphics, Mechanical Design and Manufacture, Mechatronic Systems, Motion Analysis, Renewable Energy Technology, Simulation
Project Technology	C/C++, Excel/VB, Matlab, Solidworks, QBlade
Student Name(s)	Fionn Byrne
Email	fionn.byrne39@mail.dcu.ie
Supervisor	Dr Corné Muilwijk

10. Simulation of Network Frequency Controller Under Varying Supply Conditions for Electricity Distribution Networks

PROJECT VIDEO HERE

The aim of this project was to improve the performance of existing and future frequency controllers on Ireland's interconnectors. An increase in asynchronous generation on the power system calls for more automatic frequency regulation. A model of the power system on Simulink was used to observe the response of the controller to frequency events which were manually triggered in a Matlab script. The maximum controller response was increased from the current industry limit of 150MW and the impact of these changes were investigated. The controller was adapted from a Proportional controller to a Proportional-Integral-Derivative (PID) controller to make it more robust to sudden changes in frequency. The effect of adjusting power ramping rates was also examined to improve frequency regulation.

Class	Mechatronic Engineering
Project Area	Mechatronic Systems, Power Electronics, Renewable Energy Technology, Simulation
Project Technology	Matlab, Simulink
Student Name(s)	Niamh Briody
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Supervisor	Dr Paul Young

11. Computational Biomechanics of Cerebral Aneurysms

PROJECT VIDEO HERE

This project investigates the "Computational Biomechanics of Cerebral Aneurysms." The project involved the development of a 3D finite element model of a cerebral aneurysm. With the use of MRA images in 3D Slicer the geometry of the chosen cerebral aneurysm was developed. The geometry of the aforementioned cerebral aneurysm model was then imported into an engineering simulation software known as FEBio. Finite element analysis was then performed on the cerebral aneurysm model in situ. The results obtained from the finite element analysis stage of the project were then analysed and thus discussions and conclusions were made based on the results obtained.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	3D Slicer and FEBio
Student Name(s)	Richard Maguire
Email	richard.maguire34@mail.dcu.ie
Supervisor	Dr David MacManus

12. Edge Analytics Over Smart Doorbell for Object Detection

PROJECT VIDEO HERE

This project is about an edge device (doorbell) to analyze and detect objects using data analytics and machine learning (AI). It can detect harmful and common objects and even people. From the objects it can detect, the device should know if the environment is safe or not. All analyzation, data and training machine learning models are all done in the device itself without the use of external sources like the Cloud for privacy and security matters. It uses Neural Network A.I. to analyze objects.

Class	Electronic and Computer Engineering
Project Area	Artificial Intelligence, Data Analytics, Embedded Systems, Image/Video Processing, Internet of Things, Security
Project Technology	C/C++
Student Name(s)	Adrian De Vera
Email	adrian.devera2@mail.dcu.ie
Supervisor	Dr Ali Intizar

13. CryptoCruise: A decentralized carpooling application

PROJECT VIDEO HERE

This project is a decentralized peer-to-peer carpooling web application that allows users to conduct carpooling journeys using cryptocurrency. The application is built on top of the ethereum blockchain network using smart contracts. The front end of the application is built using ReactJS and the backend consists of an Express API server and peer-to-peer file system called IPFS that allows users to communicate with the smart contract. Metamask is the wallet used to store and use the users cryptocurrency.

Class	Computer Applications
Project Area	Web Application, Blockchain technology
Project Technology	CSS, Docker, HTML5, JavaScript, React.js, Solidity, Ganache,truffle,express,webpack
Student Name(s)	Cian Crowley-Smith | Angel Milici
Email	cian.crowleysmith22@mail.dcu.ie | angel.milici2@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

14. Power Electronics in Matlab/ DC-DC Converter Matlab Simulation

PROJECT VIDEO HERE

The FYP goal is to write a fully functioning Matlab code that is able to efficiently simulate a 2 set state space equation for a DC – DC Converter. A DC-to-DC converter is an electronic circuit or electromechanical device that converts a source of direct current (DC) from one voltage level to another. The Converter chosen for simulation is called the Buck Converter. The code should automatically be able to simulate the open switch elements, perform the switching sequence of the circuit and then continue to simulate the closed switch elements of the Buck Converter; as well as to monitor and increase the accuracy + performance of the system by implementing numerical methods for solving ODE's, Implicit Euler combined with the Newton Raphson, onto the parameters associated with the code.

Class	Mechatronic Engineering
Project Area	Power Electronics
Project Technology	Matlab
Student Name(s)	Nikola Milijanovic
Email	nikola.milijanovic2@mail.dcu.ie
Supervisor	Dr Brendan Hayes

15. Sustainable use of plastics in the healthcare industry for a circular economy

PROJECT VIDEO HERE

This project is based on the sustainability of the healthcare industry's use of plastics and whether it is in line with the concepts of the circular economy. To address this problem, I researched a chosen list of plastic products used in the healthcare industry to discover what plastic they are made from, what their use is, what their previous material was. One of products were then taken and analysed further with the use of the Cambridge Engineering Selector (CES) to discover a possible biodegradable or reusable alternative. Evaluating further the Life Cycle Assessment regarding carbon footprint of both the current material and possible alternative.

Class	Biomedical Engineering
Project Area	Energy Conservation, Life Cycle Assessment
Project Technology	ANSYS Workbench
Student Name(s)	Caoimhe McDonnell
Email	caoimhe.mcdonnell227@mail.dcu.ie
Supervisor	Dr Anne Morrissey

16. Secure IoT Sensor Application connected via untrusted on-chip platform

PROJECT VIDEO HERE

This project investigated the potential of using a Trusted Execution Environment on an Internet of Things embedded device as a way to secure and isolate code.

Class	Electronic and Computer Engineering
Project Area	Internet of Things, Security
Project Technology	C/C++
Student Name(s)	Szymon Masternak
Email	szymon.masternak7@mail.dcu.ie
Supervisor	Dr Derek Molloy

17. Oraculi

PROJECT VIDEO HERE

Oraculi is an online platform for the creation of digital classrooms tailored for teaching programming. Students have access to a custom workspace which contains a text editor and an emulated terminal, which is designed to make getting started with programming easy. Tutors can share their workspace to students in order to teach them programming concepts. Tutors can also look and see what each student is doing to ensure that none of them get stuck.

Class	Computer Applications
Project Area	Cloud Computing, Educational, Filesystems, Network Applications, Software Development, Web Application
Project Technology	Docker, HTML5, JavaScript, Nodejs, React.js, express.js, GoTTY, tmux, zsh, firebase, Google APIs
Student Name(s)	Stefan Lupu | Marius-Constantin Senchea
Email	stefan.lupu2@mail.dcu.ie | marius.senchea2@mail.dcu.ie
Supervisor	Dr Stephen Blott

18. Investigation of Loading on Buried Natural Gas Pipes

PROJECT VIDEO HERE

This project looks at the effect of changing pipe diameter, backfill material and buried depth on the stresses and deformation experienced due to traffic-loading and seismic activity. A finite element analysis (FEA) is carried out to systematically change these parameters and view their effect on the problem. The methodology behind this project is to look at the "worse-case" scenario to see what level of deformation and stresses the pipe will experience in the harshest of environments.

Class	CAMIM
Project Area	Finite Element Analysis
Project Technology	ANSYS Workbench
Student Name(s)	Michael Long
Email	michael.long8@mail.dcu.ie
Supervisor	Dr Anne Morrissey

19. An Investigation into the Effects of the Irish Sea Offshore Environment on Materials Commonly Used in the Construction of Offshore Wind Turbines

PROJECT VIDEO HERE

This project, done in collaboration with The Commissioners of Irish Lights, was concerned with the evaluation of the effect of the Irish Sea offshore environment on the ultimate tensile strength of a variety of materials which are commonly used in the construction of offshore wind turbines. To make this evaluation, I purchased sheets of steel (Stainless, S235, S355), cut tensile (dog bone) specimens from them, attached those specimens to rigs, and installed the rigs in three tidal zones: Submerged Zone (below low tide), Splash Zone (between low & high tide), Atmospheric Zone (above high tide). These zones aimed to simulate the environments to which offshore turbines are exposed. Tensile testing took place in the 0th (control), 7th, and 14th weeks. The conclusion is not yet finalised.

Class	Mechanical and Manufacturing Engineering
Project Area	Advanced Material Engineering, Mechanical Design and Manufacture
Project Technology	Solidworks
Student Name(s)	Shane Cawley
Email	shane.cawley5@mail.dcu.ie
Supervisor	Dr James Carton

20. Real-Time Smartphone Based Volume Rendering Using Texture Mapping

PROJECT VIDEO HERE

Volume rendering via texture mapping allows for the visualisation of volumetric medical image data using modern 3D computer graphics hardware. This project involved the development of an Android application using OpenGL ES which served as a texture mapping based volume renderer for Android smartphones. The application was designed to display a medical image dataset of a patients lungs post Covid-19 infection. The problems faced in Direct Volume Rendering on mobile devices include rendering speed and achieving a high quality image output. The aim was to achieve an optimum system configuration in terms of performance and user experience by testing solutions designed to improve rendering speed and image output quality.

Class	Electronic and Computer Engineering
Project Area	3-D Modelling, Android, Graphics
Project Technology	Java, OpenGL
Student Name(s)	Seán Hudson
Email	sean.hudson4@mail.dcu.ie
Supervisor	Dr Robert Sadlier

21. Anonymous DNS

PROJECT VIDEO HERE

AnonymousDNS is a system that provides a secure DNS resolution solution for privacy conscious internet users. Currently the majority of the DNS queries occur in plaintext and can be seen and manipulated by bad actors, AnonymousDNS facilitates users to make DNS requests in a secure and anonymous way. Combining technologies such as DNS via HTTPS & Tor to encrypted and anonymise DNS traffic. AnonymousDNS also allows users to specify custom and managed blocklists to block advertisements and trackers systemwide.

Class	Computer Applications
Project Area	Network Applications, Security, Software Development
Project Technology	CSS, Docker, HTML5, Python
Student Name(s)	Fergal Moylan | Andrew Finn
Email	fergal.moylan2@mail.dcu.ie | andrew.finn8@mail.dcu.ie
Supervisor	Dr Stephen Blott

22. Centrifugal Microfluidics Test for Concussion

PROJECT VIDEO HERE

The aim of this project is to begin the first step in designing a device for use as concussion test. At present there are no devices capable of testing for concussion immediately after it has occurred (a point of care device). The device builds on the 'Lab on a disk' technology developed by Dr David Kinahan and aims to adapt it for point of care use. This technology involves the use of a rapidly spinning disk to complete a series of 'wash' steps with a blood sample. The sample is propelled through microtubules by centrifugal force and transferred through layers by burst valves. The sample and wash solvents mix in the mixing chamber. At the end of these steps, a colour change will indicate the presence of a protein released by the brain present in high concentration after a concussion.

Class	Biomedical Engineering
Project Area	3-D Modelling, Biomedical Engineering, Device Design, Fluid Mechanics
Project Technology	Solidworks, Autocad, Graphtec
Student Name(s)	Shane Whelan
Email	shane.whelan39@mail.dcu.ie
Supervisor	Dr David MacManus

23. Improving text-to-image search with contrastive losses and advanced sentence embeddings

PROJECT VIDEO HERE

The goal of this project is to develop a text-to-image search engine that extends and improves upon an existing engine developed by a previous masters project student. The engine will not rely on image metadata but directly on image content. Achieving this will involve training a deep network to find a joint embedding of images and text such that images and words with similar meanings have nearby representations in the space, and words and images with different semantics appear far away. This project involves extending the previous work by experimentation with different loss functions, data augmentation strategies, and more advanced sentence embeddings such as doc2vec or SentenceBERT. This project involves python software development skills, image processing and analysis.

Class	Electronic and Computer Engineering
Project Area	Computer Vision, Image/Video Processing, Information Retrieval, Natural Language Processing, Software Development, Web Application
Project Technology	HTML5, Python
Student Name(s)	Vivek Raj
Email	vivek.raj2@mail.dcu.ie
Supervisor	Dr Kevin McGuinness

24. Track & Review Game Data for Amateur Sports Teams

PROJECT VIDEO HERE

In modern day professional sports, data-tracking and analysis has been adopted as industry standard. When watching almost any sport on television, infographics are displayed showing informative statistics every few minutes. The aim of our application is to provide amateur sports teams with an affordable way of accessing data relating to their own games – mirroring the current trends seen in professional sport. This is to be delivered through an application which provides users with an interface to track game data in real time, and to view game reports afterwards, containing important statistics, pertaining to the team and its players. In doing so, amateur teams can begin data-driven decision making in pursuit of their goals.

Class	Enterprise Computing
Project Area	Web Application
Project Technology	JavaScript, Nodejs, Python, SOAP
Student Name(s)	Darragh Markey | Connor Kelly
Email	darragh.markey4@mail.dcu.ie | connor.kelly285@mail.dcu.ie
Supervisor	Dr Silvana MacMahon

25. Optimal Location of Windfarms

PROJECT VIDEO HERE

The aim of this project is to use data provided by Met Eireann to find the Optimal location for a windfarm in Ireland. Met Eireann records data such as windspeed, wind direction and precipitation at a number of weather stations around Ireland. This project aims to use all the necessary relevant data to determine which of Met Eireann's weather stations would make the most efficient weather station in Ireland, and therefore, determine what attributes this location has that makes it suitable.

Class	Mechatronic Engineering
Project Area	Data Analytics
Project Technology	R/Rstudio
Student Name(s)	Saul Holland Phelan
Email	saul.hollandphelan8@mail.dcu.ie
Supervisor	Dr Jeremiah Murphy

26. Cyrpto Price Predictor

PROJECT VIDEO HERE

Our project is a cryptocurrency price predictor. The main aim of this project is to develop a web app for traders who are in the market and aim to maximise profits based on the indicated price predictions as well as what the market sentiment is like. Users will be able to view price predictions of a selected cryptocurrency, view the market sentiment, search market news, and view the crypto fear and greed index.

Class	Computer Applications
Project Area	Web Application
Project Technology	HTML5, JavaScript, Python
Student Name(s)	joseph lyons | Vincent Achukwu
Email	joseph.lyons34@mail.dcu.ie | vincent.achukwu2@mail.dcu.ie
Supervisor	Dr Martin Crane

27. Job Posting and Resume Analyzer

PROJECT VIDEO HERE

Resume Analyzer is an online web app which allows job-seeking software engineers to upload and analyze their resumes and learn about current job market requirements.The web app compares information found in the resume such as the user's skills to those required by the job market. The job market requirements and insights are found by analyzing and extracting information from large numbers of job posts. This data is then used to provide an insightful statistical overview of the current job market which informs the user about how relevant their skills are to the current job market and how they could improve their skills or resume.

Class	Computer Applications
Project Area	Artificial Intelligence, Data Analytics, Data Mining, Databases, Natural Language Processing, Software Development
Project Technology	CSS, HTML5, JavaScript, Python, REST, SQL, React.js
Student Name(s)	Darragh McGonigle | Stephen McAleese
Email	darragh.mcgonigle3@mail.dcu.ie | stephen.mcaleese2@mail.dcu.ie
Supervisor	Dr Michael Scriney

28. Upcycling Cars – A Challenge to Convert Transport to Zero Emissions

PROJECT VIDEO HERE

This project is based on the idea of upcycling. Upcycling is essentially giving something a new life, turning something old into something new. Upcycling a car involves converting a car that runs on petrol or diesel into a car that runs solely on electricity. To upcycle a car you simply remove the parts you no longer need such as the engine, gearbox, fuel tank, exhaust, radiator and the oil and fuel filters and replace them with electrical components such as an electric motor, batteries, battery charger, etc. The aim of my project is to design an electric vehicle system which could theoretically be placed in any internal combustion engine car on the road in Ireland today and to find the most cost effective and efficient way to carry out this upcycling process.

Class	Biomedical Engineering
Project Area	Automotive Technology, Circuit Modeling
Project Technology	Excel/VB
Student Name(s)	Sean Rock
Email	sean.rock3@mail.dcu.ie
Supervisor	Dr James Carton

29. Universal Design of an Internet Radio Appliance

PROJECT VIDEO HERE

The aim of this project is to design and prototype an internet based audio streaming appliance. The project requires that concepts of Universal Design are put into practice so that all people regardless of their age, disability or any other factors are able to interact with this appliance without any limitations. The appliance consists of a raspberry pi which contains all the software and code to run the appliance. An LCD Display to show the metadata of the currently playing station or podcast. A right and left speaker for audio connected to a DAC to provide better quality and audio output from the pi board. There is also a remote control for navigation and web server to make configurations to the appliance.

Class	Electronic and Computer Engineering
Project Area	Mobile App, Multimedia, RaspberryPi, Software Development, Web Application
Project Technology	Python
Student Name(s)	Alexander Dare
Email	iseoluwani.dare2@mail.dcu.ie
Supervisor	Prof Barry McMullin

30. A Study into the Impact of Regulations in the Pharmaceutical Industry

PROJECT VIDEO HERE

As of recent times the regulations of the pharmaceutical industry have increased to benefit the consumers. However, the question emerges in this highly regulated environment, what are the key influencers and how is the industry making a profit in a research & development driven environment. This project investigates the impact of regulations in the Pharmaceutical Industry. This entails a systematic structured literature review then developing an IDEF0 model that is used to illustrate the intricacy of the regulatory requirements required for operating a drug manufacturing company. This IDEF0 model is used as well as the information collated from the structured literature review to display the positive and negative impacts these regulations have on the pharmaceutical industry.

Class	BMEDIM
Project Area	Information Retrieval, Statistical Analysis
Project Technology	IDEF0
Student Name(s)	John Catubig
Email	john.catubig2@mail.dcu.ie
Supervisor	Dr John Geraghty

31. SwapIT

PROJECT VIDEO HERE

SwapIT is a swapping service in which users can swap pre-loved items for desired products. It will accessible via a web application. SwapIT will provide users with access to a diverse range of goods. Our service enables users to rid of unwanted items safely and securely. We have created an application that is accessible, efficient, and secure. SwapIT will also offer the opportunity for other companies to set up enterprise accounts on our application. Thus creating virtual shopfronts.

Class	Enterprise Computing
Project Area	Databases, E-Commerce, Web Application
Project Technology	CSS, HTML5, JavaScript, Nodejs, Python, Django
Student Name(s)	Steven Lee | Robert Taylor
Email	Steven.lee39@mail.dcu.ie | Robert.taylor6@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

32. Interactive Interior Design

PROJECT VIDEO HERE

Interactive Interior Design is a web application created to aid users in planning and designing rooms in the real world. This project was inspired by the common frustrations of arranging rooms and our background in Technical Graphics in secondary school. The website provides the ability to build a room in their browser where they can place and move around objects like furniture, lights, and doors freely. The website gives the user the ability to make their digital room as close to their real room as they want using the options for precise measurements.

Class	Computer Applications
Project Area	3-D Modelling, Graphics
Project Technology	CSS, HTML5, JavaScript, Python, Three.js
Student Name(s)	Filip Detyna | Oisin Donegan Davis
Email	Filip.detyna2@mail.dcu.ie | oisin.donegandavis3@mail.dcu.ie
Supervisor	Dr Hyowon Lee

33. Research and Design a bench scale model of a Multi-Stage Distillation Unit

PROJECT VIDEO HERE

In a world with an ever-expanding population, so does the demand for fresh drinking water. Fresh water supplies are very limited, this has led to some countries resorting to desalination technologies to produce fresh drinking water from sea water. This project investigates methods of distilling sea water to produce clean drinking water. The main focus of this project is multi-stage flash systems, which is one of the leading thermal desalination technologies, designing a bench scale model of such a system that can be used to demonstrate how a system of its kind works. It will consist of 2 "stages" operating at different pressures and temperatures to flash boil saline water and to collect purified water.

Class	Biomedical Engineering
Project Area	Water Treatment
Project Technology	ANSYS Workbench, Solidworks
Student Name(s)	Sinéad Catherine Sexton
Email	sinead.sexton8@mail.dcu.ie
Supervisor	Dr Lorna Fitzsimons

34. CleverClix

PROJECT VIDEO HERE

This project resonates with how stressful and confusing preparing for college exams can be for students. Research suggests that students need more assistance when preparing for upcoming exams. CleverClix wanted to alleviate this issue by designing a smooth and simple online academic application portal to help students prepare for upcoming college exams. CleverClix addresses this by providing filtering functions to easily access past exam papers, creating interactive exercises on these topics and present solutions to past exam questions.

Class	Enterprise Computing
Project Area	Educational, Information Retrieval, Natural Language Processing, Software Development, Web Application, Human-computer Interaction
Project Technology	CSS, Docker, HTML5, JavaScript, MongoDB, MySQL, Python, REST, SQLite, Scrapy, PDF Miner
Student Name(s)	Calum Miskelly | Adam Gaynor
Email	calum.miskelly2@mail.dcu.ie | adam.gaynor3@mail.dcu.ie
Supervisor	Dr Michael Scriney

35. Investigate Optimal Heating Element Design for Most Efficient Airflow in Home Use Electric Radiators

PROJECT VIDEO HERE

Glen Dimplex Heating and Ventilation produce several products that fulfil similar roles, these have been designed for manufacture in different economies resulting in different elements used in residential heating products. This project will analyse the current methods of estimating heat transfer using available correlations to propose an ideal method of calculating the effectiveness of these various heating elements, with a view to enable quick business decisions to be made regarding the choice of elements for future projects. Subsequently, this project will support the proposed correlations using Ansys Fluent, simulating the elements in a real-world environment. And finally will use product testing to validate the CFD and mathematical correlations.

Class	CAMIM
Project Area	Fluid Mechanics, Mechanical Design and Manufacture, Thermodynamics
Project Technology	ANSYS Workbench
Student Name(s)	Eamonn Lynch
Email	eamonn.lynch44@mail.dcu.ie
Supervisor	Dr Yan Delaure

36. Performance Evaluation of AI Models as Microservices in a Cloud Environment

PROJECT VIDEO HERE

This project aims to evaluate the performance of AI models when incorporated into a microservice architecture. For this project, open-source car detection models are evaluated in a variety of software environments to gain performance metrics and serve to better understand the expected results of how an AI model would perform as a microservice. This project aims to emulate the cloud environment that a microservice architecture would be deployed within and performs relevant testing on how these AI models would perform in those conditions. The performance evaluation in this project is achieved using Python, Docker, Amazon Web Services, and Kubernetes.

Class	Electronic and Computer Engineering
Project Area	Artificial Intelligence, Cloud Computing
Project Technology	Docker, Python, Kubernetes
Student Name(s)	Colm Kenneally
Email	colm.kenneally3@mail.dcu.ie
Supervisor	Dr Mingming Liu

37. Designing a model optimising solar to heat domestic heating system conversions

PROJECT VIDEO HERE

The aim of this project is to, using Excel, develop an interactive model that would gather data from the user regarding their dwelling and current heating system, and based on this data, would give the user different options to optimise their system incorporating solar energy. The model will take into account different types of technology as well as grants available for these types of upgrades and will be designed so non-technically versed people can use it as easily as technically versed people.

Class	Mechanical and Manufacturing Engineering
Project Area	Renewable Energy Technology
Project Technology	Excel/VB
Student Name(s)	Edouard Perrier
Email	edouard.perrier3@mail.dcu.ie
Supervisor	Dr James Carton

38. Sports Energy Monitoring Using Low Power Wearable Sensors

PROJECT VIDEO HERE

This project uses a system of wearable sensors to collect motion data from a golf swing. This data is used to train a neural network which can then be used to recognize a golf swing motion. The sensor system is made up of two STM sensor tiles which communicate with a Beaglebone blue via BLE. The Beaglebone blue processes the collected data and implements the 'swing recognition' functionality.

Class	Electronic and Computer Engineering
Project Area	BeagleBone, Internet of Things, Sensor Data, Wearable_Technology
Project Technology	C/C++
Student Name(s)	Patrick Somers
Email	patrick.somers2@mail.dcu.ie
Supervisor	Dr Derek Molloy

39. Pygame Platformer with Networking Functionality

PROJECT VIDEO HERE

This project is a Pygame based platformer with networking functionality. Players use server-based matchmaking to join other players in multiplayer rooms, and try to race towards the end of the level against each other, while avoiding enemies with simple AI obstructing them. Simple, easy to use UI will be used by players to find other players for this purpose, or to play the game in a single player manner. The game has complex movement and momentum-based mechanics using Pygame's systems.

Class	Computer Applications
Project Area	Gaming, Graphics, Software Development
Project Technology	Python, Pygame, Client-Server Model, Networking
Student Name(s)	Ciprian Hutanu | James Byrne
Email	ciprian.hutanu3@mail.dcu.ie | james.byrne252@mail.dcu.ie
Supervisor	Renaat Verbruggen

40. Analyse and Investigate methods of Improving Hydroelectric Energy storage Systems

PROJECT VIDEO HERE

Renewable energy systems suffer from intermittency issues in their supply. Pumped Hydroelectric energy storage offers a solution for this problem. The aim of this project is to analyse PHES to improve the technologies already in place. The density of the fluid used in the PHES is a key factor in energy produced by the system. The aim is measure the effects of varying the density of the fluid on the energy production.

Class	Mechatronic Engineering
Project Area	Arduino, Electric Generation, Mechanical Design and Manufacture
Project Technology	C/C++, Solidworks
Student Name(s)	Mark Carberry
Email	mark.carberry6@mail.dcu.ie
Supervisor	Dr Greg Mcnamara

41. Cloud-Connected CO_2 sensor

PROJECT VIDEO HERE

Air quality monitoring has become more prevalent recently as it has been shown that CO_2 monitoring in indoor spaces can be used as a Covid-19 infection risk proxy. Installation of CO_2 monitors at fixed locations in a building is the most common solution but fives limited coverage and can be relatively expensive. This project aims to develop a portable, or wearable, CO_2 monitor which reports CO_2 levels to the cloud, allowing larger areas to be covered at less expense. I will develop an embedded system that interfaces with a CO_2 sensor and communicates with a cloud-based data logging service. A means of estimating indoor location will also be required.

Class	Electronic and Computer Engineering
Project Area	Arduino, Cloud Computing, Data Analytics, Embedded Systems, GPS/GIS, Internet of Things, Robotics, Sensor Data, Sensor Technology, Web Application
Project Technology	C/C++, Eclipse, HTML5, JavaScript
Student Name(s)	Stephen Carragher
Email	Stephencarragher1@gmail.com
Supervisor	Dr Conor McArdle

42. Examining pressure differentials across aspiration catheters used for clot retrieval under varied hydrodynamic and hydrostatic conditions

PROJECT VIDEO HERE

This project in conjunction with Cerenovus it will examine the pressure differentials across an aspiration catheter used in clot retrieval. The experiment will effectively identify the effect of changing the flare angle at the tip, it will be compared against a straight catheter with a cylindrical opening. The results will be analysed and compared against catheters that are currently available.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	LabVIEW
Student Name(s)	Amy Comerford Maloney
Email	amy.comerfordmaloney3@mail.dcu.ie
Supervisor	Dr.Owen Clarkin

43. MyTrip

PROJECT VIDEO HERE

This project is a web application built for travel enthusiasts. The goal of our project is to create a system that accurately recommends events, activities and restaurants to users when traveling. Although other travel web applications exist, we believe that they cater towards particular groups of people, such as families and couples. Our solution will make recommendations based on the users behaviour and previous experience. We are using collaborative filtering to implement this recommender system. We believe this to be the most accurate approach in comparison to content based filtering. This will be combined with the sentiment analysis of reviews to give us information on if other users have enjoyed a given recommendation.

Class	Computer Applications
Project Area	Artificial Intelligence, Natural Language Processing, Software Development, Web Application
Project Technology	CSS, HTML5, JavaScript, Python, SQLite, Machine Learning
Student Name(s)	James Fallon | Alex O' Neill
Email	james.fallon22@mail.dcu.ie | alex.oneill89@mail.dcu.ie
Supervisor	Prof Gareth Jones

44. Choreganise Mobile App

PROJECT VIDEO HERE

This project is the investigation, design and development of a mobile app and as a business idea, this app is a chore organiser for family homes and house shares. It will be a central place for the whole house to monitor and assign tasks, while also competing to be the top on a house leaderboard. In depth study of the target market and finances have been done to ensure the project can be profitable.

Class	Enterprise Computing
Project Area	Mobile App
Project Technology	HTML5, Python, REST, SQL, React.js
Student Name(s)	Kevin Drumm | Dylan Matthews
Email	kevin.drumm3@mail.dcu.ie | dylan.matthews4@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

45. Estates Building Decarbonisation

PROJECT VIDEO HERE

The problem of interest for this project is the decarbonisation of the estates building in DCU. This offers a chance to see the effect that a blend of retrofitting the original structure and adding a new build extension have on the energy use and efficiency of a building. This project is intended to evaluate the best possible route towards a full decarbonisation of the estates building. The evaluation process will be conducted with the aid of Design Builder, a BEPS (Building Energy Performance Simulation) software that runs on the EnergyPlus modelling engine. The end goal is to identify a pathway to carbon neutrality.

Class	CAMIM
Project Area	3-D Modelling, Energy Conservation
Project Technology	Design Builder
Student Name(s)	Brian Dufficy
Email	brian.dufficy2@mail.dcu.ie
Supervisor	Dr Greg McNamara

46. An Investigation into the Effectiveness of the Alkaline Wash of a Clean-in-Place Cycle on Damaged Polymers Contaminated with Micrococcus luteus

PROJECT VIDEO HERE

Contamination results in 2.8% of batches being rejected from biomanufacturing facilities. Damage to polymer surfaces may allow microbes to adhere to the polymer and survive cleaning processes. This project aims to determine if damage to polymer surfaces may affect the cleanability of polymers and the possibility that with increased surface damage is an increased risk of contamination. By simulating processing conditions utilised during a clean-in-place cycle this hypothesis was tested against Micrococcus luteus contamination to determine the effect of different surface conditions on the cleanability of the polymer.

Class	BMEDIM
Project Area	Biomedical Engineering
Project Technology	Excel/VB, R, Bioprocessing
Student Name(s)	Gavin Jackson
Email	Gavin.jackson4@mail.dcu.ie
Supervisor	Dr Owen Clarkin

47. NextGame

PROJECT VIDEO HERE

NextGame is an easy to use game recommendation web app that allows users to discover games that match their preferences. What separates us from already existing game recommendation systems is that we seek to provide deeper recommendations than friends and tags. An under examined component in game recommendations is the aesthetic of the game. Our project seeks to incorporate this nebulous feature to augment recommendations and ultimately provide a more personalized experience.

Class	Computer Applications
Project Area	Databases, Gaming, Image/Video Processing, Web Application
Project Technology	CSS, HTML5, Python, Machine Learning, PostgreSQL
Student Name(s)	Jack Brosnan | Mubarak Omballi
Email	jack.brosnan8@mail.dcu.ie | mubarak.omballi2@mail.dcu.ie
Supervisor	Dr Michael Scriney

48. Development and Testing of PVA-C to be used as Brain Matter inside a 3D Head Phantom for Neurosurgical Training

PROJECT VIDEO HERE

The overall goal of this project is to consider the dynamic properties of Polyvinyl Alcohol-Cryogel (PVA-C) to see if it can be used as an appropriate brain tissue mimicking material. A Micro Fourier Rheometer (MFR) is used to measure the dynamic properties of PVA-C. The dynamic properties obtained from the MFR testing are analysed with fractional calculus to give the stress/strain relationship. The results will determine how elastic/viscous the material is and determine if PVA-C can effectively mimic brain tissue.

Class	BMEDIM
Project Area	Biomedical Engineering
Project Technology	Bioprocessing
Student Name(s)	Emily Burke
Email	emily.burke42@mail.dcu.ie
Supervisor	Dr Harry Esmonde

49. Development of an Augmented Reality System for use in IoT applications

PROJECT VIDEO HERE

This project is based on the development of an augmented reality (AR) system for use in internet of things (IoT) applications. The overall goal is to show that IoT devices can be used in conjunction with an augmented reality system to display the information provided by the IoT device on a smartphone. An AR application will be developed for a smartphone, on this application it will superimpose data from the IoT device to a graph on a live video feed of reality.

Class	Electronic and Computer Engineering
Project Area	Augmented Reality, Internet of Things
Project Technology	C/C++, HTML5, JavaScript
Student Name(s)	Pierre Tracey
Email	pierre.tracey3@mail.dcu.ie
Supervisor	Dr Robert Sadlier

50. AutoArray

PROJECT VIDEO HERE

Our project is a website on which users can search for parts for their vehicles. They will be provided with a list of online vendors selling that part along with the price for that part and a rating/review of the vendor. Users can pay per search or purchase one of the subscription options. Users save time shopping around and save money by comparing. Vendors can benefit from promoted ads which will also generate revenue. Technologies used includes, HTML5, CSS, JavaScript, Python, Django, SQLite3, REST and Node JS.

Class	Enterprise Computing
Project Area	E-Commerce, Information Retrieval, Model View Controller, Software Development, Web Application
Project Technology	CSS, Docker, HTML5, JavaScript, Nodejs, Python, REST, SQL, SQLite, Django
Student Name(s)	Seán Boyle | Nathan Middleton
Email	sean.boyle36@mail.dcu.ie | nathan.middleton3@mail.dcu.ie
Supervisor	Dr Silvana MacMahon

51. OC53: Development of an in vitro protocol for the representative analysis of resorption rate of coral

PROJECT VIDEO HERE

This project aims to develop an invitro method of testing and analysis for the resorption rate of coral samples conditional to pH and particle size. Research into this topic is necessary to increase sustainability and improve medical procedures for the future.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	imageJ
Student Name(s)	Tiernan Cahill
Email	tiernan.cahill2@mail.dcu.ie
Supervisor	Dr Owen Clarkin

52. Contractify

PROJECT VIDEO HERE

Contractify is an Android Mobile Blockchain application that allows users to buy and sell items/products on a decentralised ethereum blockchain. Users can pay each other directly using Ether. Each transaction takes place on a public blockchain so a permanent record is easily accessible. Users will also be able to access information of each other for record. The overall goal of this application is to create a marketplace where establishing legitimacy and trust is paramount. The secondary objective is to bring blockchain technology to a use case and format that the average person can understand and appreciate.

Class	Computer Applications
Project Area	Android, Biometrics, Databases, E-Commerce, Mobile App, Blockchain technology
Project Technology	Python, REST, SQL, XML, Android Kotlin, Solidity, Flask, SQLAlchemy
Student Name(s)	Peter Browne | Kealan O'Connor
Email	peter.browne26@mail.dcu.ie | kealan.oconnor65@mail.dcu.ie
Supervisor	Dr.Michael Scriney

53. Car Park Space Availability Application

PROJECT VIDEO HERE

This project is a parking application that helps drivers locate available spaces in DCU car parks and provides a greener parking experience by reducing emissions. RaspberryPi with a camera will be used to capture footage of a particular parking space. This footage will then send data to the application which will determine if a particular parking space is empty or full. This will then be displayed on the app's UI.

Class	Enterprise Computing
Project Area	Mobile App, RaspberryPi, Sensor Technology, Software Development, Traffic Simulators
Project Technology	CSS, HTML5, JavaScript, Python
Student Name(s)	Beatrice Viviana Bejan | Roisin Lynch | Mia Duffy
Email	beatrice.bejan2@mail.dcu.ie | roisin.lynch35@mail.dcu.ie | mia.duffy54@mail.dcu.ie
Supervisor	Dr Silvana MacMahon

54. Additively Manufactured Wrist Splint

PROJECT VIDEO HERE

The objective of this project is to gain an insight into the effects of changing parameters such as wall thickness and surface area on the integrity of an additively manufactured wrist splint. A customized wrist splint model is designed using the Solidworks software and analysed the in Ansys Workbench to evaluate the weaknesses in the design. The design is optimized by minimizing its weight by reducing the amount of material required to print the model while maintaining the strength and integrity of the wrist splint. The weight will be minimized by reducing wall thickness of the splint and by reducing surface area to find optimal results before the splint would be subject to permanent deformation or failure. Results of analysis on Ansys will be documented and reported on.

Class	BMEDIM
Project Area	3-D Modelling, Additive Manufacturing, Biomedical Engineering, Finite Element Analysis, Mechanical Design and Manufacture, rehabilitation engineering
Project Technology	ANSYS Workbench, Solidworks
Student Name(s)	Sarah McArdle | Sarah McArdle
Email	sarah.mcardle27@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

55. Design of a cold gas thruster valve and test rig

PROJECT VIDEO HERE

This project entails the optimised design of a converging-diverging nozzle for interfacing with a high-performance aerospace solenoid valve manufactured by NAMMO Ireland. In addition, a testing rig is designed to measure the output thrust of the device using a load cell. The objective is to 3D print, test and compare a range of nozzles designed to accelerate nitrogen at supersonic velocities to generate thrust forces greater than 10N. The three core components of the project are the design of the nozzle, design of the rig and implementation of an appropriate data acquisition system.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Additive Manufacturing, Arduino, Automotive Technology, Electric Generation, Embedded Systems, Energy Conservation, Fluid Mechanics, Mechatronic Systems, Power Electronics, Renewable Energy Technology, Robotics, Sensor Technology, Software Development
Project Technology	Excel/VB, LabVIEW
Student Name(s)	Cathal Kavanagh
Email	cathal.kavanagh72@mail.dcu.ie
Supervisor	Dr David Kinahan

56. Robotic vision controlled automated packing

PROJECT VIDEO HERE

This projects investigates the packing problem. The project used various computer vision and deep learning techniques to control a robotic manipulator to pick and place objects and package them neatly autonomously. This project incorporates hardware components and designing software. The project is run in real time. It is controlled using a Raspberry PI controller and is used to command a robotic arm manipulator to pick irregular shaped objects and package them neatly inside a packing region.

Class	Mechatronic Engineering
Project Area	Automation, Computer Vision, Image/Video Processing, Mechatronic Systems, RaspberryPi, Robotics, Software Development
Project Technology	Python
Student Name(s)	Micheal Culloo
Email	micheal.culloo2@mail.dcu.ie
Supervisor	Dr Paul Whelan

57. Design and build of a fluid structure interaction experimental system: Impact Analyses

PROJECT VIDEO HERE

The aim of this project is to design and build a mechanism which will create a impact of a delrin/ plastic cylinder perpendicular into a flexible rubber membrane. The membrane is submerged in water and its deformation is to be recorded and analysed by a side camera. Design is to include mechanical, electrical and software design and the force of impact is to be controlled by the user.

Class	Mechanical and Manufacturing Engineering
Project Area	3-D Modelling, Additive Manufacturing, Arduino, Circuit Modeling, Control Systems, Device Design, Fluid Mechanics, Mechanical Design and Manufacture
Project Technology	ANSYS Workbench, Solidworks
Student Name(s)	Ilie Dobrovolschi
Supervisor	Dr Yan Delaure

58. Entrapta – sound mapping public spaces for neurodivergent people

PROJECT VIDEO HERE

Entrapta is a tool to help autistic students and hearing impaired find quiet locations around campus. This project is a hardware and software, data driven project with accessibility as its focus. The users should be able to visit a site and view all of the supported places and their average decibel reading. We would be collecting data with our own custom hardware, the live data would be stored in a database and used to predict which days and which locations are loud at what times. With this we would hopefully help the users decide on which locations suit their needs.

Class	Computer Applications
Project Area	Arduino, Cloud Computing, Data Analytics, Databases, Device Design, Digital Signal Processing, Embedded Systems, Internet of Things, Sensor Data, Sensor Technology, Software Development, Web Application, Wireless Technology
Project Technology	C/C++, CSS, Digital Signal Processing, Docker, HTML5, JavaScript, Nodejs, Python, REST, React.js, Graphite, MQTT
Student Name(s)	Cliodhna Harrison | Maciej Swierad
Email	cliodhna.harrison23@mail.dcu.ie | maciej.swierad2@mail.dcu.ie
Supervisor	Dr Stephen Blott

59. Updating an existing phosphate sensing system.

PROJECT VIDEO HERE

This project involves updating an existing phosphate sensing system. This involves updating the detector from a photodiode to a more sensitive mini spectrometer. To do this, a PCB was designed to connect the spectrometer to an existing control board. A PCB was designed for an infra-red LED to shine through the phosphate sample. The spectrometer was tested using known concentrations of phosphate. These results will be verified. If the spectrometer works, the existing system will be updated to include the spectrometer.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Arduino, Circuit Modeling, Mechanical Design and Manufacture, Mechatronic Systems, Sensor Data, Sensor Technology, Software Development
Project Technology	C/C++, Excel/VB, Solidworks, Fusion 360 Electronics
Student Name(s)	Harry Beggy
Email	harry.beggy2@mail.dcu.ie
Supervisor	Dr Nigel Kent

60. An Investigation into the Environmental and Economic Impact of the Installation of Solar Panels in an Irish Household by means of a Life Cycle Analysis (LCA) and a Life Cycle Cost Analysis (LCCA)

PROJECT VIDEO HERE

While photovoltaics (PV) are an emissions-free source of electricity for homeowners and an alternative to purchasing grid electricity, they still incur negative environmental impacts during their lifecycle, as well as requiring an initial investment of several thousand euros for the homeowner. To assess whether PV's impacts can be considered net negative or positive, Life Cycle Analysis (LCA) is used to assess PV's global environmental impacts and Life Cycle Cost Analysis (LCCA) is used to assess PV's economic impacts to the consumer.

Class	CAMIM
Project Area	Life Cycle Assessment
Project Technology	Excel/VB
Student Name(s)	Luke Gilroy
Email	luke.gilroy3@mail.dcu.ie
Supervisor	Dr Greg McNamara

61. Safety and Sustainability of the Bicycle

PROJECT VIDEO HERE

Safety and sustainability of the bicycle contains many different elements. In my project we will be focusing on the design of a bicycle lock. The reason for this problem is that to many bicycles are being stolen in Ireland, with over 7,000 stolen in 2020. This means that there is clearly a problem with a part of the locking system.

Class	Mechanical and Manufacturing Engineering
Project Area	3-D Modelling
Project Technology	Solidworks
Student Name(s)	Cónall Cleere
Email	conall.cleere5@mail.dcu.ie
Supervisor	Dr Anne Morrissey

62. VirtualOffice

PROJECT VIDEO HERE

This project is a virtual office delivered through a web application, which provides users with the necessary tools for working remotely. The virtual office aims to ease the transition to remote working, with its key features of a Workfeed, instant messaging, video conferencing and more. The application is integrated with services including Gmail, Google Calendar, Slack, and Jira, allowing for a single stream of updates and user interaction with these regularly used services.

Class	Computer Applications
Project Area	Software Development, Web Application
Project Technology	CSS, Docker, HTML5, JavaScript, MySQL, Nodejs, Python, SQLite, React.js
Student Name(s)	John McLaughlin | Shauna Sheridan
Email	john.mclaughlin22@mail.dcu.ie | shauna.sheridan34@mail.dcu.ie
Supervisor	Dr Michael Scriney

63. Testing and validation of BendLabs flex sensors for use in smart glove based applications in medical patient management

PROJECT VIDEO HERE

This project presents the testing and validation of flexible elastomeric sensors by BendLabs using custom designed testing rigs, for smart gloved based applications in the field of healthcare monitoring. The creation and function of the testing rigs was to assess the two sensors offered by BendLabs, and to determine if they performed better than alternate solutions such as resistive flex sensors and IR sensors. The test rigs created are catered to testing the 2D single dimension sensor and the 3D dual dimension sensor. These sensors have a wide range of applications, with the focus of this project assessing them through a healthcare monitoring perspective allowing the collection of hard data on patients with deteriorating movement related diseases such as Parkinson's.

Class	Electronic and Computer Engineering
Project Area	Sensor Data, Sensor Technology, Wearable_Technology, Wireless Technology, Human-computer Interaction, rehabilitation engineering
Project Technology	Excel/VB, Blender
Student Name(s)	Benjamin Hannity
Email	benjamin.hannity2@mail.dcu.ie
Supervisor	Dr Shirley Coyle

64. Finite Element Analysis of Stent Deployment

PROJECT VIDEO HERE

This project investigates the finite element analysis of stent deployment. For this project, the finite element analysis software known as ANSYS will be used to investigate the stress distributions of the stent when a given displacement is applied. The peak stress, residual stress and percentage recoil and different parameters including different sized arteries will be evaluated. This study helps to understand and acknowledge the effects of plaque thickness in the arteries in relation to stent deployment.

Class	Biomedical Engineering
Project Area	Biomedical Engineering, Device Design, Finite Element Analysis
Project Technology	ANSYS Workbench
Student Name(s)	Meghan Cobbe Smith
Email	meghan.cobbesmith2@mail.dcu.ie
Supervisor	Dr Bryan MacDonald

65. Design and assembly of a test rig to manage pipe alignment and valve assembly in the Pharmaceutical Industry

PROJECT VIDEO HERE

The problem that this project deals with is the misalignment of pipes within the pharmaceutical industry and all the effects that come with it. A training rig was designed and assembled to allow for the effects of pipe misalignment to be demonstrated as well as help to train workers to be able to easily identify said pipe misalignment. This rig has been commissioned by the pharmaceutical consultancy and training providers SCRI-IS technologies and therefore the rig itself will have real world applications. The pipe rig consists of a pipe loop containing several valves and pipe connections. Beside a select few of these connections a specialized pipe misalignment tool has been placed which will allow for parallel and angular misalignment of the pipes.

Class	Mechatronic Engineering
Project Area	Mechanical Design and Manufacture
Project Technology	Solidworks
Student Name(s)	Sean Whelan
Email	sean.whelan48@mail.dcu.ie
Supervisor	Dr Brian Corcoran

66. Cyclic potentiodynamic polarization study of 3D printed Nitinol in simulated body fluids

PROJECT VIDEO HERE

This project explores the corrosion resistance of nitinol manufactured through selective laser melting in simulated bodily fluids. This utilizes cyclic potentiodynamic polarisation to map the voltage and current at which breakdown of the titanium oxide layer occurs. Also, the samples will be viewed under high magnification using the SEM to visualise any pitting or defects that may occur. EDS allows for the material composition to be viewed, this will indicate the presence of nickel leaching in areas of corrosion. The variation between samples relates to the selective laser melting parameters, the parameters that will change are the scanning speed, hatch spacing and laser power. Two samples of each set of parameters are made allowing for the corrosion of the XY and XZ also to be assessed.

Class	BMEDIM
Project Area	Additive Manufacturing, Advanced Material Engineering, Biomedical Engineering
Project Technology	Solidworks, Scanning electron microscope and EDS
Student Name(s)	Dalton leighburn
Email	Dalton.leighburn2@mail.dcu.ie
Supervisor	Dr Dermot Brabazon

67. The design and construction of a temperature and humidity sensor

PROJECT VIDEO HERE

This project looks at the construction and a temperature and humidity sensor, and the testing of that sensor within an air environment as well as a vacuum environment. The sensor will need to be coded to operate correctly in both environments and the results will be compared to other functional sensors for making improvements on the code or design of the sensor.

Class	Electronic and Computer Engineering
Project Area	Arduino, Sensor Technology
Project Technology	C/C++
Student Name(s)	Matthew English
Email	matthew.english5@mail.dcu.ie
Supervisor	Dr Rajani K. Vijayaraghavan

68. Biomechanics of traumatic brain injury: 3D finite element model of the human brain

PROJECT VIDEO HERE

The project involves numerous steps. Firstly, the brain model was generated using a medical image processing software called 3D slicer. The model was based on MRI scans of an elderly female. The second step comprised of the Finite Element Analysis. This included meshing, as well as performing simulations on the model. FeBio and solidworks were used to complete this step. Two experiments were performed. The first examined intercranial pressure while, the second simulated a blunt force to the frontal lobes of the model. Results and conclusions were drawn from the experiments.

Class	Biomedical Engineering
Project Area	3-D Modelling, Advanced Material Engineering, Biomedical Engineering, Finite Element Analysis, Tissue Engineering, rehabilitation engineering
Project Technology	Solidworks, 3D Slicer.org and FeBio
Student Name(s)	Luke White
Supervisor	Dr David MacManus

69. Efficient Implementation and Performance Evaluation of the Simon96/96 lightweight cipher

PROJECT VIDEO HERE

This project outlines how the lightweight Simon cipher can be implemented in using hardware and software methods. This project will focus on the 96/96 variant using the two different implementations will be clocked against each other to outline the benefits of one another within the lightweight cryptographic industry/ devices. Through these implementations we will be able to see the different aspects as the speed, the power/energy used and how the methods can be improved for future use.

Class	Electronic and Computer Engineering
Project Area	Circuit Modeling, Cryptography, Device Design, Internet of Things, Software Development
Project Technology	C/C++, Eclipse, FPGA, Verilog::VHDL
Student Name(s)	Michael Adekoya
Email	michael.adekoya2@mail.dcu.ie
Supervisor	Dr Mr Xiaojun Wang

70. Development of a battery powered commercial zero turn lawnmower

PROJECT VIDEO HERE

The objective of the project is to develop a design for an electric commercial zero turn lawnmower capable of mowing conventional commercial jobs, including football fields and parks. The requirements included having an 8-hour battery life and complete electronic joystick operations with all the controls and the operator's fingertips. All battery-operated machinery safety standards were included in the design. The overall completed design would have the manufacturing process in mind and use best practices in the design.

Class	CAMIM
Project Area	3-D Modelling, Energy Conservation, Lean Manufacturing, Mechanical Design and Manufacture, Vehicle Control
Project Technology	Solidworks
Student Name(s)	Ciaran Boyle
Email	ciaran.boyle38@mail.dcu.ie
Supervisor	Dr Paul Young

71. Vocal Co

PROJECT VIDEO HERE

The project is a web application that aims to train a user's vocal abilities. Users are able to upload songs and vocal exercises to the application which is then converted into a backing track for them to sing along to. The program then processes and analyse the user's voice to give them feedback on their performance. A user's progression is recorded over time and this data is used accordingly to advise users on how to improve their singing abilities.

Class	Computer Applications
Project Area	Data Analytics, Statistical Analysis, Web Application
Project Technology	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQLite, React.js
Student Name(s)	Daniel Irein | Erika Rellermo
Email	daniel.irein2@mail.dcu.ie | erika.rellermo2@mail.dcu.ie
Supervisor	Dr Michael Scriney

72. Analysis of Ireland's Natural Gas in a carbon free Energy System

PROJECT VIDEO HERE

This project goes into detail on the uses of Biogas and Biomethane in Ireland. Primary focus of the project is placed on the rollout of biogas plants in a small and largescale environment with careful consideration of the financial aspect as well as feedstock requirements to make sure it is economically viable. A prediction is to be made on how many such plants can be developed in Ireland along with how much of Ireland's current non-renewable gas in the gas grid can be offset by the natural gas biomethane.

Class	Biomedical Engineering
Project Area	Energy Conservation, Renewable Energy, Sustainability
Project Technology	Excel/VB
Student Name(s)	Emil Manoj
Email	emil.manoj2@mail.dcu.ie
Supervisor	Dr James Carton

73. Colisense – Rapid on-site detection of E.coli

PROJECT VIDEO HERE

The Colisense project was developed to allow the rapid detection of E.coli from water samples. E.coli is a bacterium that reproduces at a rapid rate and can cause infections when ingested. There can be outbreaks of E.coli in recreational waters, potentially harming the people of the community. This system provides the accurate detection of E.coli within 75 minutes, faster than the industry norm of 4 hours. The system consists of fluorescence detection, an incubation block with PI temperature control, an Arduino Teensy as an MCU, a display unit and firmware to conduct the test and deliver these results.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Arduino, Circuit Modeling, Control Systems, Sensor Data, Sensor Technology
Project Technology	C/C++, Matlab, Simulink, Solidworks
Student Name(s)	Adam Worthington
Email	adam.worthington2@mail.dcu.ie
Supervisor	Nigel Kent

74. StockCompete

PROJECT VIDEO HERE

StockCompete is a gamified stock trading platform for non-professional traders. It offers a collection of features such as leaderboards, real-time data visualisations and social media sentiment analysis to help users with investment decisions. It also gives users full control over their investments via a User Dashboard, which includes a graphical representation of owned stocks as well as transaction history and account information. The platform is based within the EU Market offering competitive low costs, unique features and an easy-to-use platform. Revenue streams are generated through commission fees, account subscriptions and Google AdSense.

Class	Enterprise Computing
Project Area	Artificial Intelligence, Data Analytics, Databases, Natural Language Processing, Software Development, Web Application
Project Technology	CSS, HTML5, JavaScript, Nodejs, Python, Machine Learning
Student Name(s)	Aaron Nolan | Ben Strickland
Email	aaron.nolan67@mail.dcu.ie | ben.strickland2@mail.dcu.ie
Supervisor	Dr Graham Healy

75. Visualising the Protein Structure Universe

PROJECT VIDEO HERE

This project focuses on the 3D visualisation of proteins using their associated structural data, which can be obtained from a large repository known as the Protein Data Bank (PDB). The PDB comprises data files for a vast array of proteins and other macromolecules. The primary objective of the project was to develop software that could extract the relevant structural information from a PDB file and use it to generate a 3D model of the specified protein. Following the extraction and processing of the data using Java, the model was generated using a framework known as X3DOM, which allows the display of 3D content on the web.

Class	Electronic and Computer Engineering
Project Area	3-D Modelling, Biomedical Engineering, Graphics
Project Technology	Eclipse, HTML5, Java, X3DOM
Student Name(s)	Ryan Patterson
Email	ryan.patterson4@mail.dcu.ie
Supervisor	Dr Robert Sadleir

76. Investigating the Effect of Scaffold Architecture on the Mechanical Properties of 3D Printed Bone Scaffolds Using Computational Modelling

PROJECT VIDEO HERE

This project investigates the effect of multiple pore shapes and multiple scaffold porosities on the mechanical properties of 3D printed PLA bone scaffolds. Data was gathered from experimental compression tests of PLA specimens in order to mechanically characterise the scaffold. This data was used in the computational models. Compression tests were carried out on these models in ANSYS, using stress patterns and stress values, the location and magnitude of the failure stress was determined for each scaffold. This study aims to find the pore shape that provides the best strength for compressive loads and fracture healing. For the purpose of this project the loading environment considered was the cortical bone in the femoral shaft.

Class	BMEDIM
Project Area	Tissue Engineering
Project Technology	ANSYS Workbench
Student Name(s)	Dean Devlin
Email	Dean.Devlin3@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

77. An Examination of the Mechanical Properties, Porosity and Morphology of Bone Void Fillers Produced from Coral Species Grown in Different Conditions

PROJECT VIDEO HERE

This project investigates the mechanical properties and porosity of coral for the purpose of being used as bone void filler. The samples tested, produced by Zoan BioMed, were of three different coral species, each grown in two different alkalinity levels. The coral was tested in order to determine the compressive and diametral tensile strengths. The porosity was calculated using gas pycnometry to measure the true density of the coral. The coral was photographed under the microscope comparing the pore distribution between the samples. A statistical evaluation was performed to analyse the results.

Class	Biomedical Engineering
Project Area	Biomedical Engineering, Statistical Analysis
Project Technology	SPSS
Student Name(s)	Zara Turvey
Email	zara.turvey2@mail.dcu.ie
Supervisor	Dr Owen Clarkin

78. SAGE

PROJECT VIDEO HERE

SAGE is a decision making application which ultimately simplifies the decision making process for friends, family, and colleagues when it comes to planning and organising events. SAGE offers 3 categories to choose from such as activities, restaurants and movies. It takes the users' availability into account with the aid of an in-app calendar to find a solution that suits all group members availability for an event to take place. It has a swipe feature where the user can swipe right for "yes" and left for "no" to indicate whether they like or dislike an item. It recommends an activity in which all group members have similar interests.

Class	Computer Applications
Project Area	E-Commerce, Social Networking, Web Application
Project Technology	JavaScript, Python, Material UI, Firebase, Next.js
Student Name(s)	Joanna Talvo | Chloe Ward
Email	joanna.talvo2@mail.dcu.ie | chloe.ward35@mail.dcu.ie
Supervisor	Dr Annalina Caputo

79. Micro Turbine Array

PROJECT VIDEO HERE

The problem faced in this project is the large cost of implementing wind energy and the restrictions that come with it, including the need for space. This Final year project is the design, construction and testing of a micro turbine array which will be used in large urban areas to harness energy from the wind. The Goal is to be able to provide another form of green energy production on a domestic level which would be viable for use on larger apartment buildings for example.The design will be a vertical axis Savonius design which has a span of 1 m2 and consists of 4 individual towers of blades which are staggered to give better performance in less than ideal wind speeds. This design choice was made over a traditional turbine design to make the most of the available space.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Additive Manufacturing, Energy Conservation
Project Technology	Solidworks, 3D Slicing Software (Cura)
Student Name(s)	Luke Treacy
Email	luke.treacy7@mail.dcu.ie
Supervisor	Dr.Greg McNamara

80. Internal Skiving Gear Demonstration Rig

PROJECT VIDEO HERE

Internal gear skiving is a machining process used to create internal gears. The actual machining process uses a tool to cut into a metal piece to form teeth for a gears. The aim of this project is to create a rig that simply demonstrates the 3 movements that occur during internal skiving of a gear. There are two rotary motions and one linear motion that occur during this process. This project will not attempt to actually create a gear.

Class	Mechanical and Manufacturing Engineering
Project Area	3-D Modelling, Additive Manufacturing, Device Design, Educational, Mechanical Design and Manufacture
Project Technology	Solidworks
Student Name(s)	Olatomiwa Bammeke
Email	olatomiwa.bammeke2@mail.dcu.ie
Supervisor	Dr Tamas Szecsi

81. Outcome prediction in cricket based on pre-match features and in-game scores

PROJECT VIDEO HERE

This project investigates all games from the Indian Premier League from 2008-2020 and a predictive model is created to determine whether a home win will occur. Stage 1 is pre-game prediction based on features such as teams, venue and date. Stage 2 is in-game prediction using features such as runs scored and wickets lost by both teams at each stage of the game. The project is written in python, and uses packages from sci-kit learn.

Class	Data Science
Project Area	Data Analytics
Project Technology	Python, Machine Learning
Student Name(s)	George Dockrell
Email	george.dockrell2@mail.dcu.ie
Supervisor	Dr Mark Roantree

82. Analysing the Intrinsic Memorability of a Procedural Crime-Drama Television Series

PROJECT VIDEO HERE

This project investigates the use of predicted memorabilty scores produced by SOTA vision transformers as a measure of scene / shot importance in a crime-drama series. We examine to what extent, if any, 'significant' scenes revealing clues or evidence are more memorable than other scenes. We also compare how the presence of different characters affects the memorability of a scene. Finally, we investigate the use of memorability scores as well as other measures defined in the literature as features for an episode director classifier.

Class	Data Science
Project Area	Artificial Intelligence, Computer Vision, Data Analytics, Image/Video Processing, Multimedia
Project Technology	Excel/VB, Python, Machine Learning
Student Name(s)	Seán Cummins
Email	sean.cummins26@mail.dcu.ie
Supervisor	Prof Alan Smeaton

83. Algorithm modelling: configuration of a PID controller block for insulin regulation of type 1 diabetic patients

PROJECT VIDEO HERE

Demonstration of how meal sizes and meal times affect blood glucose levels in patients with type 1 diabetes and the use of modelling to understand how PID controllers can be used to make a fully closed loop artificial pancreas system.

Class	BMEDIM
Project Area	Biomedical Engineering, Control Systems
Project Technology	Matlab, Simulink
Student Name(s)	Alana Morrissey
Email	alana.morrissey29@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

84. DRiVE – Driving Aid Android Application

PROJECT VIDEO HERE

DRiVE is an Android Application that targets driver fatigue and hopes to prevent accidents surrounding this issue using a driver drowsiness detection system, as well as a crash detection system which will hope to improve response times to accidents. The drowsiness detection system monitors the driver's face through the device's front camera and processes each frame and monitors it to detect different driver states, with the states being Alert and Drowsy. An alarm will then sound with the intention of waking up the tired driver. The crash detection monitor makes use of the phone's accelerometer and if a crash is suspected, will send an sms to a pre-saved emergency contact with the users current location of the possible accident.

Class	Computer Applications
Project Area	Android, Image/Video Processing, Mobile App
Project Technology	Java, MLKit
Student Name(s)	Ryan Whelan | Cian Wisdom
Email	ryan.whelan29@mail.dcu.ie | cian.wisdom2@mail.dcu.ie
Supervisor	Dr Monica Ward

85. Biomechanics of Traumatic Brain Injury: 2D Finite Element mouse brain model

PROJECT VIDEO HERE

This project entails the works and findings of using software based mouse brain models to understand the stresses and strains that are experienced by the different regions within the brain during and following a traumatic brain injury. The hope of this project is to gain more information around the physiological effects of a traumatic injury on the brain and its uniquely complexed regions. Sections of a mouse brain will be modelled on Solidworks, along with its surrounding boundaries such as the meninges and the skull. Once modelled, each section along with their surrounding boundaries will be apply in ANSYS Workbench, where they will be set up in order for information to be retrieved and computed for further investigation and discussion.

Class	Biomedical Engineering
Project Area	Biomedical Engineering, Finite Element Analysis, Simulation
Project Technology	ANSYS Workbench, Solidworks
Student Name(s)	Evan Shefflin
Email	evan.shefflin2@mail.dcu.ie
Supervisor	Dr David MacManus

86. Early Education Math Games

PROJECT VIDEO HERE

This project is a web-based framework with the goal of teaching children mathematical topics. Our program plans on hosting a variety of educational mathematics based games aimed at children from the ages of 5-8. The minimum project features of our application will be in the form of web-based interactive games and quizzes on various mathematical topics. Once this is completed, we are planning on adding complexity in the form of text-to-speech integration, user profiles to enable progress tracking and question history, and a Teacher administration page to give the teacher the Ability to alter, remove or add questions and topics as they see fit.

Class	Computer Applications
Project Area	Content Management System, Databases, Educational, Gaming, Web Application
Project Technology	JavaScript, MySQL, SQL, React.js
Student Name(s)	Sean Colgan | Brendan O'Driscoll
Email	sean.colgan8@mail.dcu.ie | Brendan.odriscoll5@mail.dcu.ie
Supervisor	Paul Clarke

87. Computer Vision (Deep Learning) based Object Avoidance System for Remotely Guided Vehicles

PROJECT VIDEO HERE

The aim of this project was to develop a deep learning based, locally hosted computer vision anti collision system for a semi-autonomous vehicle. As a demonstration, a small radio controlled car with an on board embedded computer was used along with a camera. This was driven remotely on a path containing multiple obstacles, with the response monitored.

Class	Electronic and Computer Engineering
Project Area	Artificial Intelligence, Computer Vision, Image/Video Processing, RaspberryPi
Project Technology	Python
Student Name(s)	Ephraim Emmanuel
Email	ephraim.emmanuel2@mail.dcu.ie
Supervisor	Dr Paul Whelan

88. Race23

PROJECT VIDEO HERE

Our project is an exploration of reinforcement learning using tensorflow and pytorch to compare and contrast learning algorithms such as Proximal Policy Optimisation (PPO) and Deep Deterministic Policy Gradient (DDPG) through various OpenAI Gym environments, with the ultimate goal of training a 2D race car to navigate a virtual racetrack, improving its performance as it learns and showcasing the power of reinforcement learning through a visual dashboard.

Class	Computer Applications
Project Area	Artificial Intelligence
Project Technology	Python, Machine Learning
Student Name(s)	Niall Dagg | Conor Kostick
Email	niall.dagg3@mail.dcu.ie | conor.mckeon22@mail.dcu.ie
Supervisor	Dr Paul Clarke

89. Visualisation of Metal 3D-Print Process Data

PROJECT VIDEO HERE

This project explores using Python programming language to develop a program to visualise the metal 3D-printing process-data. The common issue with many existing data visualisation software is that they cannot process large datasets. The aim of this project was to tackle this issue. Both 2D and 3D plotting is offered by this custom desktop application. The data of each individual layer can be visualised in 2D, and multiple layers can be plotted in 3D. These plots are a great aid in identifying any porosity/anomalies in the 3D printed models through qualitative analysis.

Class	Mechatronic Engineering
Project Area	Additive Manufacturing, Data Analytics, Software Development
Project Technology	Python
Student Name(s)	Charles Thomas
Email	charles.thomas6@mail.dcu.ie
Supervisor	Dr Inam Ul Ahad

90. Finite Element Analysis of the Structural Performance of an Axial Flow Compressor Blade and Disk

PROJECT VIDEO HERE

The computational model is built to mimic a real world multi-stage axial compressor design typically found in a commercial aircraft engine. The model is built using solidworks CAD software as a single fraction of the entire disk, or one blade essentially. The blade and hub slice is then imported and analysed in ANSYS Worbench and ANSYS Mechanical, a finite element software, where operating loading and boundary conditions are specified and analysis can be carried out. Particular attention is given to the use of cyclic symmetry boundary conditions which allows the user in this case to model the entire disk and visualise the results in a more realistic manner. The affect of altering blade parameters such as the number of blades and blade pitch angle is also explored.

Class	CAMIM
Project Area	3-D Modelling, Finite Element Analysis
Project Technology	ANSYS Workbench, Excel/VB, Solidworks
Student Name(s)	Tyler Stewart
Email	Tyler.stewart3@mail.dcu.ie
Supervisor	Dr Bryan Mac Donald

91. Design and analysis of a transport and lifting machine for the installation of steel beams

PROJECT VIDEO HERE

The project investigates the design and analysis of a new machine, its purpose is to assist in the installation of steel beams. The machine will be an all-terrain, electric scissors lift purposefully designed to lift heavy steel beams and position them carefully. The design process will go through the selection of every feature with a justification. The analysis will include motion analysis, FEA simulation and calculations to test the design. A final CAD concept will be produced.

Class	CAMIM
Project Area	3-D Modelling, Device Design, Simulation
Project Technology	Solidworks
Student Name(s)	Colin Leonard
Email	colin.leonard27@mail.dcu.ie
Supervisor	Dr Paul Young

92. How cycling aids in the knee rehabilitation of sports injuries

PROJECT VIDEO HERE

In this project I speak about the importance of cycling to knee injury recovery. The practical element of my project involves designing a lift that will assist someone with getting onto a stationary bike. This application will hopefully reduce the need to attend the physio and mean the patient can recover from the comfort of their own home.

Class	Biomedical Engineering
Project Area	Biomedical Engineering, rehabilitation engineering
Project Technology	Solidworks
Student Name(s)	Andrew Sweeney
Email	andrew.sweeney26@mail.dcu.ie
Supervisor	Dr Anne Morrissey

93. Recipify: Recipe Recommendation Service

PROJECT VIDEO HERE

This project, Recipify, is a web application that serves as a recipe recommendation service. Users can create an account and begin receiving recipe recommendations based on a variety of factors. The user can enter their personal preferences into multiple categories which range from dietary restrictions to likes and dislikes. These preferences can be combined with constantly changing external data such as time of day or weather. The result of this is a uniquely tailored recipe recommendation feed for the user.

Class	Computer Applications
Project Area	Databases, Information Retrieval, Software Development, Web Application
Project Technology	CSS, HTML5, JavaScript, MySQL, Nodejs, SQL, React.js, Prisma, Next.js
Student Name(s)	Bryan McHugh | Conor Rooney
Email	bryan.mchugh22@mail.dcu.ie | conor.rooney38@mail.dcu.ie
Supervisor	Dr Monica Ward

94. Membrane Distillation Project

PROJECT VIDEO HERE

One of the greatest resource problems facing the world is fresh water and in this project, a possible solution for producing fresh water is investigated, through the development of a direct contact membrane distillation experiment. This project began with researching desalination techniques and progressed to the completed design and assembly of a direct contact membrane distillation system. Once the system and design of experiment were successfully established, experimentation ensued with all results recorded. The results were then analysed and evaluated with the purpose of inspecting the performance of the experiment in relation to the two varied factors of feed temperature and feed flow.

Class	Mechatronic Engineering
Project Area	Fluid Mechanics, Mechatronic Systems, Sensor Data, Water Treatment
Project Technology	Excel/VB, ** For the first Q Project Area, I wasn't sure if I was meant to select all that apply or not, if it can only be one then the most appropriate is "Water treatment".
Student Name(s)	Sarah Walsh
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Supervisor	Dr Lorna Fitzsimons

95. Materials Recovery

PROJECT VIDEO HERE

Rare earth elements (REEs) are naturally occurring minerals, that are widely used in electronics, medical devices and renewable energy systems. Many of these REEs are in very short supply due to the difficulty in extracting them from mineral reserves and the amount that is lost in discarded or unused mobile phones and other pieces of electronic equipment. A literature view is conducted on the recycling process of electronic waste. An in depth view on REEs is reviewed. Also alternative material other than REEs are investigated by researching different sustainable materials that are used on different types of medical devices.

Class	Biomedical Engineering
Project Area	Advanced Material Engineering, Biomedical Engineering, Environmental Mapping, rehabilitation engineering
Project Technology	Microsoft Office
Student Name(s)	Brevin Benny
Email	brevin.benny2@mail.dcu.ie
Supervisor	Dr Anne Morrissey

96. PixelPerfect

PROJECT VIDEO HERE

This project is based on a Facial Image Restoration using a Convolutional Network to repair the missing pixels. Its a web application based and hosted using Oracle Cloud to integrate the front-end to the backend which contains all of the trained model from neural network.

Class	Computer Applications
Project Area	Image/Video Processing
Project Technology	CSS, Python, React.js, Machine Learning
Student Name(s)	Jude Laguipo | Trung Tinh Lien
Email	jude.laguipo3@mail.dcu.ie | trung.lien2@mail.dcu.ie
Supervisor	Dr Hossein Javidnia

97. An investigation into the benefits of incorporating heat pumps into DCU ventilation systems to recover heat from waste air

PROJECT VIDEO HERE

Heat pumps are investigated as a solution to aid in decreasing energy consumption and reducing emissions. Ventilation systems all across DCU were changed from open loop to closed loop to avoid mixing between fresh air entering the system and waste air leaving the system. This was done to prevent the spread of Covid-19, however, energy costs increased. The heat energy present in the waste air can be recovered using an air source heat pump as it would be a very efficient and low emissions technology in this setting.

Class	CAMIM
Project Area	Energy Conservation, Thermodynamics
Project Technology	Excel/VB
Student Name(s)	Paola Gega
Email	paola.gega2@mail.dcu.ie
Supervisor	Dr James Carton

98. Backstage

PROJECT VIDEO HERE

Backstage is the new hub for information on the nightlife industry in Dublin. A one stop shop for everything you need to know about nightlife Ireland. A web application for students and young adults looking for a place where they belong and where nightlife venues can list events. We have various categories that will cater to all groups and communities. Giving more freedom to venue owners and users. Users will be able to leave reviews and venue owners can update their events within their accounts. Users will have a community sense with various app features. The event attendance count, rewards and opportunities with venues for users. Backstage will also bring the spotlight to lesser known venues by expanding their audience.

Class	Enterprise Computing
Project Area	E-Commerce, Software Development, Web Application
Project Technology	HTML5, JavaScript, Python, REST, SQLite
Student Name(s)	Seamus McGrath | Bill Oshafi
Email	seamus.mcgrath56@mail.dcu.ie | bill.oshafi2@mail.dcu.ie
Supervisor	Silvana MacMahon

99. Peatland Drain Segmentation from Aerial Imagery

PROJECT VIDEO HERE

Through machine learning techniques and computer vision concepts, this project investigates into the development and implementation of a solution to identify and map peatland drains within their aerial imagery. The datasets of this project are aerial images of numerous peatland drains located in Ireland specifically and are provided by the project supervisor, Dr Kevin McGuinness. Training of the solution model is based on peatland drains already mapped onto their aerial image (training dataset) and the testing of the solution is conducted through putting unseen aerial imagery (test dataset) through the model of the solution. The aim of the model is to predict the location of the peatland drains in the unseen aerial imagery.

Class	Electronic and Computer Engineering
Project Area	Artificial Intelligence, Computer Vision, GPS/GIS, Image/Video Processing, Intelligence Pattern Matching, Software Development
Project Technology	Python, Machine Learning
Student Name(s)	Elif Hande Tugrul
Email	elif.tugrul2@mail.dcu.ie
Supervisor	Dr Kevin McGuinness

100. Development of Virtual Laboratories for Engineering Students

PROJECT VIDEO HERE

This project was created to provide an online alternative to laboratories and experiments, mainly aimed towards 1st year engineering students. It uses H5P software for an interactive video, Solidworks for a simulation of the experiment, manipulation of a data sheet in Microsoft Excel and a series of assessments and quizzes on the Loop platform used by DCU. The interactive video shows the performance of the experiment with built in interactions for the student to answer. The Solidworks simulation allows the student to interact with the experiment apparatus. The excel sheet is designed to make the student manipulate data, form equations and present graphs. The Loop quizzes provide a way of assessing the knowledge gained by the student.

Class	Mechanical and Manufacturing Engineering
Project Area	Educational, Web Application
Project Technology	Excel/VB, HTML5, Solidworks
Student Name(s)	Luke Magner
Email	luke.magner2@mail.dcu.ie
Supervisor	Dr Paul Young

101. Student Assistant Chatbot

PROJECT VIDEO HERE

Our project consists of developing a Chatbot for use by students in a university setting that would provide a range of services and resources. This includes answering basic queries, timetables, campus addresses/ locations, current events, module deadlines, etc. It would be built using the AzureBot framework with a backend developed using the principles and technology of Natural Language Processing. Through this we hope to make an app capable of self-improvement as to give the user an easier and satisfying experience.

Class	Computer Applications
Project Area	Natural Language Processing, Human-computer Interaction
Project Technology	.NET, JavaScript, MySQL, Python, Machine Learning
Student Name(s)	Conor Lynch | Niall Martin
Email	conor.lynch97@mail.dcu.ie | niall.martin36@mail.dcu.ie
Supervisor	Darragh O'Brien

102. Low-Cost Real-Time Camera Motion Stabilization

PROJECT VIDEO HERE

This project focused on the design and development of a low-cost camera gimbal. Camera gimbal systems contain three main components, sensors, motors, and a controller. The sensors (gyroscope, accelerometer) tell the controller where the camera is, and how it is moving, in terms of pitch, roll, and yaw. The controller then drives the motors which are located on each axis to keep the camera stable. The goal was to investigate if an affordable solution could be made for everyday users that falls under the standard €200-€800 price tag for such a system. The work requirements included, system design, Solidworks modelling and 3D printing. It involved advanced motor control, focusing on brushless DC motors and a substantial amount of control system design and programming using MATLAB and C++.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Arduino, Circuit Modeling, Control Systems, Device Design, Embedded Systems, Image/Video Processing, Mechanical Design and Manufacture, Mechatronic Systems, Sensor Data, Sensor Technology, Software Development
Project Technology	C/C++, Matlab, Python, Simulink, Solidworks
Student Name(s)	Eamon Kilheaney
Email	eamon.kilheaney2@mail.dcu.ie
Supervisor	Dr Derek Molloy

103. WeCare

PROJECT VIDEO HERE

For those who live alone and don't have someone to check in on them on a regular basis, we want to offer a voice interaction agent service. We plan to develop the voice interaction agent on Google Nest. We hope to be able to install Google Nest in the homes of those who might benefit from additional care and companionship. Once you have a Google Nest and a Wifi connection in your house, our service will work.

Class	Enterprise Computing
Project Area	Natural Language Processing, Software Development, Speech Recognition
Project Technology	Nodejs
Student Name(s)	Jack O'Leary | Tadgh McGrady | James Mulcahy
Email	jack.oleary24@mail.dcu.ie | tadhg.mcgrady2@mail.dcu.ie | james.mulcahy6@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

104. Image processing for remote monitoring of industrial processes

PROJECT VIDEO HERE

This project aims to develop an accurate, generalisable solution which will monitor control panels remotely. This is done by using image processing techniques to read and recognise components on the panel. Once these components are read and recognised, their values/states are uploaded to an online server for remote monitoring.

Class	Mechatronic Engineering
Project Area	Cloud Computing, Computer Vision, Databases, Image/Video Processing, Mechanical Design and Manufacture, RaspberryPi
Project Technology	Python
Student Name(s)	Georgios Chalkiadakis
Email	georgos.chalkiadakis2@mail.dcu.ie
Supervisor	Dr Nigel Kent

105. Non Centrifugal Event-Triggered Valves

PROJECT VIDEO HERE

Lab on a chip systems are emerging as an alternative to traditional laboratory operations. They can perform the same tests as large laboratories with reduced reagent use, reduced human interaction with the assay and reduced processing times. This project focusses on non-centrifugal event triggered valves. The chip facilitates fluid flow around the chip without external stimulation from a motor. The release of one valve triggers the release of another, allowing sequential loading of samples in the chip. This allows the chip to be used in point-of-use settings, outside traditional laboratories.

Class	CAMIM
Project Area	Device Design
Project Technology	microfluidics
Student Name(s)	Kieran Murphy
Email	kieran.murphy85@mail.dcu.ie
Supervisor	Dr David Kinahan

106. Safework Wallet

PROJECT VIDEO HERE

The project idea is to create a web application which can be used on a mobile or desktop device in order to store all construction workers certificates and documents they require to get inducted onto site. Workers can upload their certificates and documents to our web application and can then generate a qr code which will be scanned when they enter the site by the health and safety officer. The idea came from one of our team members who has worked in the construction industry and noticed induction times were a major issue on sites. The app uses a django backend with a rest framework and a node.js, html and css frontend.

Class	Enterprise Computing
Project Area	Web Application
Project Technology	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQLite
Student Name(s)	Toms Ludbarzs | Paul Kennedy | Georgia Cullen
Email	tomsludbarzs@mail.dcu.ie | paul.kennedy33@mail.dcu.ie | georgia.cullen23@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

107. SentiBot

PROJECT VIDEO HERE

This project involves an Interactive Chatbot that makes use of Machine Learning and AI Techniques to understand and interpret queries. The bot can find and extract information from the Amazon Market Place via Amazon-Buddy. The data returned allows the bot to analyze a range of information on a product, which it can then perform Sentiment Analysis and Quality of Review Checks using a Product Reviews data. The bots analysis is available to the user, should a user query for it.

Class	Computer Applications
Project Area	Artificial Intelligence, Automation, Data Analytics, Databases, Information Retrieval, Natural Language Processing, Software Development, Statistical Analysis, Web Application
Project Technology	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQL, React.js, Machine Learning, Django, PostGres Database
Student Name(s)	Matthew Kenny | Michael Joyce
Email	maitiu.ocionnaith3@mail.dcu.ie | michael.joyce32@mail.dcu.ie
Supervisor	Prof Gareth Jones

108. Creating a launch monitor that tracks the speed and launch angle of a golf ball

PROJECT VIDEO HERE

My project is to create a track monitoring system that can calculate the launch angle and carry distance of a golf ball after a golf swing. This will be done by programming an application that can determine the flight path of the golf ball in motion by tracking the ball with a camera and predicting where the ball will land and it's metrics just before launch. My main objective will be: Create a program that can recognise a golf ball within an image and create a rectangle around the golf ball to show a user that it has recognised the ball. The image will be a screenshot of footage taken from a professional golfer. From there, I will move onto actually showing a live test of my program where i,born an actual golfer onto a course and tested my program.

Class	Mechatronic Engineering
Project Area	Computer Vision, Image/Video Processing, RaspberryPi
Project Technology	Python
Student Name(s)	Adenugba-Oluwamayowa Olowu
Email	adenugba.olowu2@mail.dcu.ie
Supervisor	Brendan Hayes

109. Test system for the compressive buckling and delamination of adhesive skin patches

PROJECT NOT ON DISPLAY

This project tests the buckling and delamination of adhesive skin patches. To achieve this, one would have to put stress under the adhesives in a controlled setting and be able to measure the percentage area of detachment from the surface. My design focuses on achieving a curve in the adhesives tapes with a measurable radius and as this radius gets smaller, more strain is applied to the adhesive until delamination occurs.

Class	Biomedical Engineering
Project Area	Biomedical Engineering, Data Analytics
Project Technology	Excel/VB, Solidworks
Student Name(s)	julia chartienitz
Email	julia.chartienitz2@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

110. Fluency

PROJECT VIDEO HERE

Our project is a real-time object translation mobile application to help user's learn new languages through interacting with their environment. The application uses the mobile devices camera along with a trained detection model to detect objects in the camera frame. These objects are then translated from the user's native language to the language they want to translate to. The goal of our project is to make the experience of learning new languages a more interactive and rewarding experience through visual learning.

Class	Computer Applications
Project Area	Android, Computer Vision, Educational, Image/Video Processing, Mobile App, Multimedia
Project Technology	JavaScript, Flutter, Dart, GIT CI
Student Name(s)	Luke Dunne | Jordan Mc Connell
Email	luke.dunne45@mail.dcu.ie | Jordan.mcconnell6@mail.dcu.ie
Supervisor	Dr Monica Ward

111. Design and Prototype development of Wave Energy Harvesting system with focus on increasing efficiency

PROJECT VIDEO HERE

This project is centered around designing and prototyping a wave energy harvesting system. The main focus of this project is to design a rig with which the parameters of the design can be varied. This is to be able to test different configurations to see which set up is most efficient which could be able to save companies looking to use this type of system time and resources in the future.

Class	Mechanical and Manufacturing Engineering
Project Area	Electric Generation, Energy Conservation, Fluid Mechanics, Mechanical Design and Manufacture, Renewable Energy Technology
Project Technology	C/C++, Solidworks
Student Name(s)	Paul McDermott
Email	paul.mcdermott8@mail.dcu.ie
Supervisor	Dr Corné Muilwijk

112. Assessment of mechanical and wear properties of polymer-coated fine gold wires for cardiovascular devices

PROJECT VIDEO HERE

This project is in collaboration with Fire1 Foundry as they develop a novel remote monitoring cardiovascular device. This device is composed of several hundred individually polymer coated micro fine gold wires wound into litz cable. In this project, the wear resistance of cables with different types of polymer coatings are analysed pre and post heat treatment. Mechanical characterization of the individual gold wires coated with different polymers and the effects of varied heat treatments assessed. The aims of this project are to recommend an optimal polymer coating for this specific application and to be able to predict the mechanical behaviour of the coated wires post the manufacturing stages of the device.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	Solidworks
Student Name(s)	Evelyn Twomey
Email	evelyn.twomey5@mail.dcu.ie
Supervisor	Dr Owen Clarkin

113. Modelling Contracts for Service and Maintenance

PROJECT VIDEO HERE

This project investigates corrective and preventative maintenance of dump trucks within the mining industry at different service interval ranges. A model built through ExtendSim measures performance metrics within the system for the trucks when maintenance is being performed. The model is a closed loop system based within a service maintenance contract for dump trucks. Simulating this model optimises the systems performance metrics being measured at different corrective and preventative maintenance interval ranges.

Class	Mechanical and Manufacturing Engineering
Project Area	Automation, Lean Manufacturing, Simulation
Project Technology	Excel/VB, ExtendSIM
Student Name(s)	Ciarán Murphy
Email	ciaran.murphy375@mail.dcu.ie
Supervisor	Dr John Geraghty

114. Automated Plant Pathogen Detection Using Cell Lysis and qPCR Using Lab-on-a-Disc (LoaD) and 2 Degrees of Freedom Technology

PROJECT VIDEO HERE

Bacterial canker of tomato, caused by Clavibacter michiganensis ssp. michiganensis (Cmm), is one of the most destructive diseases that affects tomato crops worldwide. Lab on a Disc (LoaD) research has gained significant industrial interest due to their ability to be automated and portable for rapid testing and analysis of analytes. Using centrifugal microfluidic technology, the project aims to manufacture a device capable of rapidly detecting Cmm pathogen DNA. The automated device incorporates cell lysis and qPCR assays for a rapid, single use detection platform for Cmm.

Class	BMEDIM
Project Area	Additive Manufacturing, Automation, Biomedical Engineering, Device Design, Mechanical Design and Manufacture
Project Technology	LabVIEW, Solidworks, microfluidics
Student Name(s)	Matthew Cavazzana
Email	matthew.cavazzana2@mail.dcu.ie
Supervisor	Dr Eadaoin Carthy

115. Exploration of neural networks for fast time domain simulation of modern and complex systems

PROJECT VIDEO HERE

This project investigates the use of neural networks in order to speed up the simulation of systems. This was investigated by simulating a transmission line using the standard ode servers and then again using neural networks. The end was result was expected that a neural network would perform much quicker than the ode server. The approach taken involved simulating an RLC ladder for one step, two steps and then generalizing it for n-steps. Then it was required to complete the same steps for the neural network approach. Once completed, the results of the neural network are to be tested against the ode servers. The coding was completed through the use of standard MATLAB libraries.

Class	Electronic and Computer Engineering
Project Area	Simulation
Project Technology	Matlab
Student Name(s)	Daniel Fagan
Email	daniel.fagan23@mail.dcu.ie
Supervisor	Dr Marissa Condon

116. Equimeet

PROJECT VIDEO HERE

Equimeet is a new way to reduce travel time and distance when meeting with friends. Users simply input 2 locations, for themselves and a friend, and a list of equidistant cafes, restaurants or other establishments are returned. Additionally, users looking to make new friends or who are new to an area can match with others using a dating app style interface. After matching based off of similar interests and conversing for a short while, both users can decide to meet up in which case they will be given a list of locations equidistant from them both.

Class	Enterprise Computing
Project Area	Web Application
Project Technology	CSS, Docker, HTML5, JavaScript, REST
Student Name(s)	Jack Hand | Max Amrabure
Email	jack.hand3@mail.dcu.ie | max.amrabure2@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

117. Industry 4.0

PROJECT VIDEO HERE

The project which I have been working on is industry 4.0. This project is mainly focuses on digitalisation of Legacy equipment. The machine which was used for this project was MDX-40A and there were 2 sensors connected to the machine one was measuring the vibration at various states and other was to measure the power consumed at each state. All the information gathered from the sensors were stored in a cloud and for the purpose AWS was used.

Class	Mechatronic Engineering
Project Area	Arduino, Automation, Cloud Computing, Mechatronic Systems, Sensor Data
Project Technology	Python
Student Name(s)	Amanullah Nareko | Aman Narejo
Email	amanullah.narejo2@mail.dcu.ie
Supervisor	Dr Nigel Kent

118. GNN for Anomaly detection of Traffic Flow in a SUMO network

PROJECT VIDEO HERE

Traffic accidents, inclement weather; all examples of Traffic anomalies, events which have a negative impact on a given traffic network, creating imbalance between the demand placed on the traffic network and it's capacity to meet this demand. The detection of these Traffic anomalies greatly mitigates the aforementioned demand-capacity imbalance caused by these traffic incidents. This project aims to develop and evaluate a Graph Neural Network based model to perform the task of traffic incident detection in an urban traffic network.

Class	Electronic and Computer Engineering
Project Area	Artificial Intelligence, Simulation, Traffic Simulators
Project Technology	Python, Machine Learning
Student Name(s)	Jordan McConnon
Email	jordan.mcconnon5@mail.dcu.ie
Supervisor	Dr Mingming Liu

119. A comprehensive computational analysis on the biofidelity of aortic phantom materials'

PROJECT VIDEO HERE

Each year with growing reliance on cardiovascular devices to reduce mortality comes greater need for verification tests that precisely simulate the in-vivo environments. The goal of my project is to investigate through computational methods, the ability of current mock vessels to replicate predicted in-vivo environments of the planned implantation site. These differences will be investigated across a range of pulse pressures such as normal pulse pressure, hypotension and hypertension as well as comparing to aortic models of varying stiffness relating to the disease state of the patient. Finally I plan on providing recommendations based off computational simulations for the manufacture of future arterial phantoms.

Class	BMEDIM
Project Area	Biomedical Engineering, Tissue Engineering
Project Technology	ANSYS Workbench, Excel/VB, Solidworks
Student Name(s)	Cathal Culligan
Email	Cathal.culligan2@mail.dcu.ie
Supervisor	Dr David MacManus

120. HODL – A cryptocurrency portfolio and price prediction app

PROJECT VIDEO HERE

HODL is a comprehensive Android application which aims to provide its users with a seamless, all encompassing cryptocurrency portfolio, analytics and price prediction experience. HODL offer users various utilities, the main features include; Current price charts, an in-app portfolio to track your crypto holdings, price prediction and current cryptocurrency news corresponding to your favourite coins. The application makes use of the Android Studio software and is based in Java. Python is used to implement an LSTM system, which implements neural networks to attempt short-term cryptocurrency price predictions.

Class	Computer Applications
Project Area	Android
Project Technology	Java, Python, Firebase Database, Firebase Auth
Student Name(s)	Cameron Fitzpatrick | Dylan Bowbrick
Email	cameron.fitzpatrick47@mail.dcu.ie | dylan.bowbrick2@mail.dcu.ie
Supervisor	Prof Martin Crane

121. An investigation into the effectiveness of ultrasonic cleaning as an intermediate cleaning stage in the additive manufacture of orthopaedic implants

PROJECT VIDEO HERE

This project is being conducted in partnership with the Stryker Corporation and focuses on resolving the challenges around the removal of industrial polish from porous regions of 3D printed Ti64 medical implants. The problem this project aims to address is the optimisation of process parameters in the intermediate cleaning of polish from additively manufactured orthopaedic devices. The aim of this study is to use an evidence-based approach to generate manufacture recommendations and design a process flow for intermediate cleaning in future additive manufacturing lines. This research will assist in developing a deeper understanding of ultrasonic cleaning of porous Ti64, and support future development of intermediate cleaning in Stryker's additive manufacturing line.

Class	BMEDIM
Project Area	Additive Manufacturing, Biomedical Engineering
Project Technology	Excel/VB, Solidworks, Ultrasonic Cleaning, Scanning Electron Microscope and Additive Manufacturing
Student Name(s)	Cillian Molloy
Email	cillian.molloy8@mail.dcu.ie
Supervisor	Dr Dermot Brabazon

122. Phaze

PROJECT VIDEO HERE

Phaze is intended for the general public that wants to improve their fitness and well-being by tracking their micronutrient food intake and calories burnt. Today, 30% of the Irish population are obese. Through the use of image classification and additional fitness features this app makes recording food intake as simple as taking a single photo helping you to lose, maintain, or gain weight, helping you achieve your fitness goals.

Class	Computer Applications
Project Area	Android, Artificial Intelligence, Computer Vision, Databases, Educational, Image/Video Processing, Information Retrieval, Intelligence Pattern Matching, Mobile App, Software Development, Web Application
Project Technology	Java, MySQL, NoSQL, Objective-C, Python, Swift, XML, Machine Learning, Xcode
Student Name(s)	Kevin Bortas | Kevin Cogan
Email	kevin.bortas2@mail.dcu.ie | kevin.cogan3@mail.dcu.ie
Supervisor	Dr Suzanne Little

123. Development of Database to Monitor Performance of FMS Rig under I4.0

PROJECT VIDEO HERE

The project goal is the development of a SQL Database capable of storing operational data generated by a Flexible manufacturing system rig. This operational data will be used to compare against simulations, and analyze points of inefficiency in the system. The data is transferred from various points in the system to a central control unit, to then be processed and stored by an external analysis software. This involves a variety of device intercommunication and network management, as well as health and safety and security protocols.

Class	Mechatronic Engineering
Project Area	Automation, Data Analytics, Databases
Project Technology	PLC Programming, Ignition SCADA
Student Name(s)	Jacob Baneham
Email	jacob.baneham2@mail.dcu.ie
Supervisor	Dr Paul Young

124. Innovative Algorithm for 5G Network Access Traffic Steering, Switching and Splitting

PROJECT VIDEO HERE

In release 16 of 5G network standardisation effort, 3GPP introduced a new network function (NF), i.e., Access Traffic Steering, Switching and Splitting (ATSSS). Traffic Steering corresponds to the best network selection between the 5G and WiFi. Traffic Switching corresponds to seamless handover between 5G and WiFi. Traffic Splitting corresponds to network aggregation between 5G and WiFi. A distributed algorithm needs to be designed such as it will consider different context parameters like channel conditions, user demand, network load, priority of the services etc.

Class	Electronic and Computer Engineering
Project Area	Network Applications, Simulation, Software Development, Wireless Technology
Project Technology	C/C++, NS-3, XML
Student Name(s)	Shea Keogh
Email	shea.keogh36@mail.dcu.ie
Supervisor	Prof. Gabriel-Miro Muntean

125. Finite Element Analysis of Raymond Mill Driveshaft to Determine the Cause of Failure

PROJECT VIDEO HERE

This project will analyse the drive shaft in a Raymond Mill grinding machine using a finite element analysis. This analysis will concentrate on determining how the forces being applied cause stress concentration on the shaft, specifically around both sets of bearings and how these repeated forces can cause fatigue and inevitably affect the service life of the shaft. The end goal of this project is to be able to predict when a complete failure may occur so the necessary maintenance can be carried out.

Class	CAMIM
Project Area	3-D Modelling, Finite Element Analysis, Mechanical Design and Manufacture
Project Technology	ANSYS Workbench, Solidworks
Student Name(s)	Mikey Bambrick | Mikey Bambrick
Email	mikey.bambrick4@mail.dcu.ie
Supervisor	Dr Paul Young

126. Creating a Solar-Powered Web Server

PROJECT VIDEO HERE

This project investigates the idea of using a solar panel and battery to power a web server on a single-board computer. This web server hosts a low energy website developed using HTML and CSS. The project aim is to maximise the uptime of the website by minimising the power needed to run it, and drawing the most from the solar panel. During times when there is no power coming from the solar panel, the battery is used as a power source.

Class	Electronic and Computer Engineering
Project Area	Blogging, Internet of Things, RaspberryPi, Renewable Energy Technology
Project Technology	CSS
Student Name(s)	Niamh Gleeson
Email	niamh.gleeson22@mail.dcu.ie
Supervisor	Prof Barry McMullin

127. DriveMate

PROJECT VIDEO HERE

DriveMate is a mobile application that allows users to organize and book driving lessons with driving instructors in real-time. Our application provides users with a friendly and comfortable experience that allows both learner drivers and instructors to communicate with each other at a more convenient level. With DriveMate, the traditional process of finding a suitable instructor is simplified for learners. DriveMate also benefits instructors, as we offers a dedicated platform for them to advertise their services to a wide range of users.

Class	Enterprise Computing
Project Area	Databases, E-Commerce, Mobile App, Software Development
Project Technology	CSS, JavaScript, NoSQL, React.js, Firebase, React Native
Student Name(s)	Chisom Oguama | Patrick Trapp
Email	chisom.oguama2@mail.dcu.ie | patrick.trapp2@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

128. Hit the Ground Running

PROJECT VIDEO HERE

The objective of this project is to design, fabricate and test a flexible pressure sensor to measure real time foot plantar pressure. Cost efficiency is a key aspect that was considered whilst designing the sensor. The flexible capacitive pressure sensors were developed and tested under laboratory conditions in this project to determine the capability of the sensor.

Class	Mechatronic Engineering
Project Area	Sensor Technology
Project Technology	C/C++, Capacitance meter
Student Name(s)	Niamh Saunders
Email	niamh.saunders3@mail.dcu.ie
Supervisor	Dr Shirley Coyle

129. Budget Buddy

PROJECT VIDEO HERE

Budget Buddy was developed to help people budget and save on their grocery shopping. The software can track and analyse the user's spending habits and showcase it in the form of graphs. This is where users can view their data and develop better ways to spend/save their money. Users can also log products with expiry dates through the camera of their smartphone and can get alerts days before the food expires to reduce waste and get more value for their money.

Class	Enterprise Computing
Project Area	Android, Mobile App, Optical Character Recognition
Project Technology	Java, MySQL, PHP, XML
Student Name(s)	Conor Sweeney | Andrew Harrington
Email	conor.sweeney36@mail.dcu.ie | andrew.harrington24@mail.dcu.ie
Supervisor	Dr Monica Ward

130. Assessing the feasibility of achieving accurate predictions of the flow characteristics induced by a submersible axial flow mixer using CFD

PROJECT VIDEO HERE

With simulation driven design becoming more and more favorable compared to the traditional build and break methodology, this project looks at Computational Fluid Dynamics (CFD) as an Engineering design tool. It assesses the feasibility of creating a CFD model of submersible axial flow mixer using limited resources and computational power and the accuracy of said model in comparison to the theoretical correlations available, and a physical model of the system.

Class	CAMIM
Project Area	Fluid Mechanics, Simulation
Project Technology	ANSYS Workbench, Excel/VB
Student Name(s)	Conor Lennon
Email	conor.lennon33@mail.dcu.ie
Supervisor	Dr Yan Delaure

131. Design, Create and Test a 3D Printed, Low-Cost Prosthetic Knee Joint

PROJECT VIDEO HERE

The goal of the project is to design, create and test a 3D printed low-cost prosthetic polycentric knee joint. Inspiration from the Stanford knee joint was taken to design the prosthesis for this project. Compression testing will be done on material samples and on scaled down versions of the knee joint. Percentage infill and the print orientation will be explored. More rigorous testing will be done using finite element analysis. This is done so that there will be less waste and no need for testing rigs to be manufactured.

Class	BMEDIM
Project Area	3-D Modelling, Additive Manufacturing, Advanced Material Engineering, Biomedical Engineering, Device Design, Finite Element Analysis
Project Technology	ANSYS Workbench, Solidworks
Student Name(s)	Conchúr Ó Floinn
Email	conchur.ofloinn2@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

132. Negative Film Scanning with a DSLR

PROJECT VIDEO HERE

This project is to develop a Light Bed that can backlight Negative Film and a Software that can be used to take images of negative film and correct them to look like the initial image that was captured, rather than what was burned on the film. The Software works by identifying the orange colour that is present on the negative film, isolating and removing it, and then flipping the image to correct the colours. The Light bed is a uniform bed of light designed to act as a backlight, and to ensure that the negative film looks correct when captured with a digital camera.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Circuit Modeling, Device Design, Image/Video Processing
Project Technology	Python, Solidworks
Student Name(s)	Paul Cotter
Email	paul.cotter3@mail.dcu.ie
Supervisor	Dr Tamas Szecsi

133. 3-D Printing of Flexible Parts for Electronic Drums

PROJECT VIDEO HERE

The project investigates the possibilities of 3D printing, specifically with electronic drum parts. The project is aimed to produce parts which can have the same mechanical properties and operation as factory parts, this can lead too geometrical changes of the parts which would be much easier to accomplish with 3D printing technology. Also on a broader scale in can be used as a basis for printing with flexible filaments for other projects for other people as problems do occur often.

Class	Mechanical and Manufacturing Engineering
Project Area	3-D Modelling, Additive Manufacturing
Project Technology	Solidworks, 3D Printing Slicer software
Student Name(s)	David Lally
Email	david.lally6@mail.dcu.ie
Supervisor	Dr Alan Kennedy

134. Design and build an XY motorised stage for a mechanical indentation system

PROJECT VIDEO HERE

An XY motorised stage is a mechanical device which can precisely manoeuvre a test sample in a single plane of motion. The stage is driven using motors and controlled by user input through a keypad controlled by a microcontroller. The purpose of this project is to create a more accurate and repeatable process to manipulate test pieces for the university's indentation system. The key aspects of this project are mechanical design, programming, and electrical circuitry.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Arduino, Mechanical Design and Manufacture, Software Development
Project Technology	C/C++, Matlab, Solidworks
Student Name(s)	Joe Shannon
Email	joseph.shannon4@mail.dcu.ie
Supervisor	Dr David MacManus

135. Rehabilitation Robotics: The design and development of a hand rehabilitation device

PROJECT VIDEO HERE

The focus of this project is robotics in the rehabilitation sector, how it has been used to benefit people's lives and, what is missing thus far. There is a focus on hand rehabilitation for post stroke/spinal cord injury patients. The project aims to design a hand rehabilitation device that is accessible and suitable for home use.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	C/C++, Solidworks
Student Name(s)	Esther Adebayo-Fatoye
Email	esther.adebayofatoye2@mail.dcu.ie
Supervisor	Dr Nigel Kent

136. Core voting

PROJECT VIDEO HERE

Core voting is a web application that will make voting more secure using blockchain technology. It will be a web application that anybody will be able to access using a computer or smart phone. It will allow remote voting for citizens outside of the country.

Class	Computer Applications
Project Area	Data Analytics, Databases, Distributed Systems
Project Technology	AngularJS, HTML5, Java, JavaScript, MySQL, SQL
Student Name(s)	Stephen Chan | Stephen Norton
Email	stephen.chan4@mail.dcu.ie | stephen.norton3@mail.dcu.ie
Supervisor	Paul Clarke

137. Inflation based test system for characterisation of equibiaxial deformations of low-cost hernia meshes based on mosquito nets

PROJECT VIDEO HERE

The title of this project is 'Inflation based test system for characterisation of equibiaxial deformations of low-cost hernia meshes based on mosquito nets'. It involves the investigation of the behaviour of mosquito nets which are used for hernia repair in developing countries, when subjected to forces similar to that generated by a groin hernia. A small device was designed to apply equibiaxial pressure to samples. The samples were pressurised and the deformation was recorded as the change in height upon inflation. The failure modes of the mesh were analysed. The viability of placing two mesh samples over the opening was investigated. This is not common practice in industry. The effect of this was examined and discussed. imilar to that generated by a groin hernia. A small device was designed to apply equibiaxial pressure to samples. The samples were pressurised and the deformation was recorded as the change in height upon inflation. The failure modes of the mesh were analysed. The viability of placing two mesh samples over the opening was investigated. This is not common practice in industry. The effect of this was examined and discussed.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	Excel/VB, Solidworks
Student Name(s)	Lauren Shearer
Email	lauren.shearer2@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

138. Calculating improved efficiency of boiler upgrade in a food processing plant

PROJECT VIDEO HERE

An energy audit is undertaken for an upgraded boiler and steam distribution network in a factory. The project focuses on the analysis of the factory's boiler functions and usage before and after the upgrade. It assesses energy efficiency and other potential operational impacts of the upgrade. This is then used to calculate the energy and financial savings of the investment as well as the payback period.

Class	CAMIM
Project Area	Energy Conservation, Thermodynamics
Project Technology	Excel/VB
Student Name(s)	Sinead Corbally
Email	sinead.corbally4@mail.dcu.ie
Supervisor	Dr Lorna Fitzsimons

139. Sign Language Teaching Aid

PROJECT VIDEO HERE

The Sign Language Teaching Aid aims to help people understand and learn sign language through a web-based application. For the front-end application, a free web hosting domain was used to host the website so anyone with the URL can access it in real-time. The user can input a letter or a word into the search bar to see the hand sign equivalent. Users will be able to select a sign to practice and have their performance evaluated using machine learning. To create the neural network used by the application, image data was found for all letter signs in Irish Sign Language. This data was sorted into folders based on sign. The folders were fed into the program, which automatically created training, testing and validation sets. Signs for words may be added at a later date.

Class	Computer Applications
Project Area	Artificial Intelligence, Data Analytics, Educational, Image/Video Processing, Intelligence Pattern Matching, Web Application, Human-computer Interaction
Project Technology	CSS, HTML5, JavaScript, Python, Machine Learning, Shell
Student Name(s)	Melanie Man Wing Lee | Luke Derwin
Email	melanie.lee27@mail.dcu.ie | luke.derwin2@mail.dcu.ie
Supervisor	Dr Michael Scriney

140. The Effect of Process Parameters on the Corrosion of 3-D Printed Stainless Steel

PROJECT VIDEO HERE

A common failure point for stainless steel is the effect of corrosion, this can cause the metal to degrade and lose mechanical integrity. This study investigates the surface passivity of typical stainless-steels 316L and 304, and also 3-D Printed 316L at three different process parameters, to see if these process parameters affect the resistance of the metal to corrosion. This project will analyse the five different sample types and compare and contrast those results.

Class	Biomedical Engineering
Project Area	Additive Manufacturing, Biomedical Engineering, Data Analytics, Mechanical Design and Manufacture
Project Technology	Excel/VB, Gamry Framework
Student Name(s)	Rhiannon Bradley
Email	rhiannon.bradley7@mail.dcu.ie
Supervisor	Dr Dermot Brabazon

141. Automated Guided Vehicle Routing & Scheduling Algorithms

PROJECT VIDEO HERE

This project provides a detailed review on the current issues in automated guided vehicle routing and scheduling and the algorithms that have been proposed to address them. After this review the selected problem from the literature is the Vehicle Routing Problem with Time Windows, the algorithms chosen and developed to test this problem are NSGA-II and NSGA-III. The performance of the algorithms is compared and contrasted on a suitable set of case studies derived from the literature.

Class	Mechatronic Engineering
Project Area	Automation, Vehicle Control
Project Technology	Python
Student Name(s)	Conor Moran
Email	conor.moran58@mail.dcu.ie
Supervisor	Dr John Geraghty

142. NostraMarket (Stock/Cryptocurrency Analysis Application)

PROJECT VIDEO HERE

NostraMarket is a web application that analyses the stock and cryptocurrency markets using asset's information and social media insights. This application will serve as a tool for analysing the market, primarily oriented towards beginner investors and trading with a simple yet powerful layout being useful for some more experienced users as well. The core of this project will be the short-time behaviour prediction using ML models combining cryptocurrency information and social media trends to serve as an information tool. Users will be able to create accounts and customise the application, following stocks, cryptocurrencies or social media sources and receive notifications with relevant updates. With this project the team attempts to develop skills useful in the FinTech industry.

Class	Computer Applications
Project Area	Artificial Intelligence, Cloud Computing, Data Analytics, Databases, Information Retrieval, Software Development, Statistical Analysis, Web Application
Project Technology	CSS, HTML5, JavaScript, NoSQL, Python, REST, Machine Learning, Firebase/GCP, Heroku, Flask
Student Name(s)	Ruben Lazar | Elias Castellano Szczedrin
Email	ruben.lazar2@mail.dcu.ie | elias.castellano3@mail.dcu.ie
Supervisor	Dr Marija Bezbradica

143. SCAN-N-GO

PROJECT VIDEO HERE

Busy retail stores are infamous for their unnecessarily long queues and checkout waiting times. Queues in retail stores are a pain-point for both customers and owners of these stores with multiple knock-on effects. We developed a platform, SCAN-N-GO, which solves these issues by transforming the customer into the cashier. SCAN-N-GO enables a customer to use their smartphone to scan a bar-coded product in a participating retail store and pay using their phone's built-in payment system. With the addition of an admin security dashboard for store owners, our solution provides a quick, seamless and security-conscious shopping experience for both customers and retail store owners.

Class	Enterprise Computing
Project Area	E-Commerce, Web Application
Project Technology	CSS, HTML5, JavaScript, Nodejs, Python, REST, SQLite, DJANGO,
Student Name(s)	Bernard McWeeney | Shaun Kee | Jamie Behan
Email	Bernard.McWeeney2@mail.dcu.ie | Shaun.Kee2@mail.dcu.ie | Jamie.Behan6@mail.dcu.ie
Supervisor	Dr Jennifer Foster

144. Peel test attachment for the study of perspiration effects in adhesive wound care dressing or ostomy applications

PROJECT VIDEO HERE

Adhesive wound dressings have become very popular in wound care or ostomy applications due to their ease of use and ability to cover wounds effectively. This project investigates the effects of perspiration in adhesives, wound care dressings, or ostomy applications applying peel test analysis. Four different medical wound care dressings were tested using a 90-degree peel test. The test was performed on three various skin substitutes using the Zwick testing machine, and the standard peel force and the displacement of the tape were recorded. The results were compared using mathematical models to reach conclusions.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	Excel/VB, R
Student Name(s)	Melly Claudia Makambala
Supervisor	Dr Garrett McGuinness

145. The design of a sensorised wearable utilising the fabrication capability of 3-D printing

PROJECT VIDEO HERE

This project aims to make health monitoring of respiratory data easier and more accessible to both the common person and practitioners who want to monitor their patients respiratory data. The masks structure was created through additive manufacture and has an adafruit Huzzah esp8266 with a BME680 sensor attached to it to monitor the users respiratory data. The ESP8266 transmits the data from the BME680 sensor to a local webserver where the data is scrapped by a python program so the data can be stored and viewed in live time. The data can then indicate the users health status with the use of medical formulas.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Additive Manufacturing, Arduino, Biometrics, Data Analytics, Educational, Graphics, Internet of Things, Sensor Data, Sensor Technology, Software Development
Project Technology	C#, Python
Student Name(s)	Sean Callaghan
Email	sean.callaghan22@mail.dcu.ie
Supervisor	Dr Dermot Brabazon

146. Thieft – Bluetooth Enabled Anti-Theft Device

PROJECT VIDEO HERE

Thieft is a Bluetooth Enabled Anti-Theft device for vehicles. The device will incorporate a Raspberry Pi, Accelerometer and GPS. The Raspberry Pi has built-in bluetooth connectivity, which allows us to detect if the owner of the vehicle's phone is in range. The accelerometer allows us to tell if the vehicle is moving. If the user's phone is not in range of the device, an SMS alert will be sent to the owner that will provide the location of the vehicle.

Class	Computer Applications
Project Area	Automotive Technology, GPS/GIS, Mobile App, RaspberryPi, SMS, Security, Sensor Data, Web Application
Project Technology	CSS, Java, JavaScript, Python, React.js
Student Name(s)	Jack O'Reilly | Niall Bermingham
Email	jack.oreilly46@mail.dcu.ie | niall.bermingham4@mail.dcu.ie
Supervisor	Dr Michael Scriney

147. Design and build of remotly opperated sensor deployment unit

PROJECT VIDEO HERE

The project asked the student to design and build an underwater sensor deployment unit. The proposed design can move in 3 axis freely in the tank and is an ideal solution to the problem. All key aspects of the project were addressed in the design of the project and extensive testing was carried out prior to any of the manufacturing taking place. CFD was used to determine if all the calculations were reliable and accurate.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Additive Manufacturing, Arduino, Mechanical Design and Manufacture, Mechatronic Systems, Robotics
Project Technology	C/C++, Solidworks
Student Name(s)	Niall Holligan
Email	niall.holligan2@mail.dcu.ie
Supervisor	Dr Yan Delaure

148. Development of a centrifugal convective PCR DNA Amplifier

PROJECT VIDEO HERE

This project aims to develop a miniaturised, real-time PCR device using natural convection and centrifugal microfluidics. Using Lab-on-a-disc (LoaD) technology, a CD sized disc containing a sample with DNA in a "PCR chamber" will be externally heated above and below the disc, creating a natural convective flow of molecules around the chamber, passing through the different temperature regions necessary for each stage of PCR. Fluorescence due to excitation by blue LEDs will be observed to confirm PCR has been achieved, while the spinning of the disc will increase the rate of PCR.

Class	Biomedical Engineering
Project Area	Biomedical Engineering, Fluid Mechanics
Project Technology	C/C++, Solidworks, microfluidics
Student Name(s)	Ryan Gainey
Email	ryan.gainey2@mail.dcu.ie
Supervisor	Dr David Kinahan

149. Hermes

PROJECT VIDEO HERE

Hermes is a driving assistant that alerts drivers to common errors that occur while on the road. This system alerts drivers if they drive over the speed limit, inform the driver about oncoming road signs and alert the driver to oncoming traffic light signals. Each driving session is stored with the information from the session such as how many alerts and road signs were passed. This information is then scored and users see a historical progress of their sessions and how their driving has changed over time.

Class	Computer Applications
Project Area	Android, Automotive Technology, Image/Video Processing, Mobile App
Project Technology	JavaScript, Python, SQL, Machine Learning, React Native
Student Name(s)	Ryan Johnson | Jamie McGuinness
Email	ryan.johnson3@mail.dcu.ie | jamie.mcguinness27@mail.dcu.ie
Supervisor	Dr David Sinclair

150. Liquid Mixing in Airlift-(photo)Bioreactors

PROJECT VIDEO HERE

Have you ever wondered how they make penicillin? or how they produce cheese at a large scale? There's a good chance that a bioreactor was used. We use bioreactors to mimic environments in nature and grow necessary substances at a natural scale. My project focuses on Airlift Bioreactors an exciting alternative to the typical bioreactor we used in most industries. The project I undertook was the manufacture of a novel sized external loop airlift bioreactor and was tested so that a better understanding could be formed of how these fascinating devices worked. The research I conducted hoped to answer the question "How does *aeration* rate in an airlift bioreactor effect the *recirculation* rate of the fluid". I hope to have answered some important questions.

Class	Mechanical and Manufacturing Engineering
Project Area	Arduino, Biomedical Engineering, Mechanical Design and Manufacture
Project Technology	Python, Solidworks
Student Name(s)	Niall Maurice Mahon
Email	Niall.mahon8@mail.dcu.ie
Supervisor	Dr Corne Muilwijk

151. Equip

PROJECT VIDEO HERE

This project is a web application for a service called Equip is being developed. Equip is a equipment rental web application for content creators to rent equipment such as cameras, lights, microphones and lenses. This is to help them increase the level of production in their content creation. The main objective of this project is to make it convenient for the creators to rent equipment and also provides an opportunity for the providers to make an additional stream of income.

Class	Enterprise Computing
Project Area	E-Commerce, Web Application
Project Technology	CSS, HTML5, JavaScript, Python, django
Student Name(s)	Stephen Luther King | Sean Adegboye
Email	stephen.king35@mail.dcu.ie | tioluwani.adegboye2@mail.dcu.ie
Supervisor	Dr Irana Tal

152. Sentiscape Messaging Application

PROJECT VIDEO HERE

Sentiscape is a mobile messaging application designed for Android smartphones. It is aimed at users looking for an application that can convey the affective side of messages as well as the informative side. It will also make it easy for users to categorise and find past conversations, using natural language processing and sentiment analysis to create emotive summaries of conversations. It is entitled Sentiscape, thanks to its association with sentimentalism.

Class	Computer Applications
Project Area	Android, Artificial Intelligence, Instant Messaging, Mobile App, Natural Language Processing, Software Development
Project Technology	Java, Python, Machine Learning
Student Name(s)	Jason Boylan | Kelan Smyth
Email	jason.boylan27@mail.dcu.ie | kelan.smyth33@mail.dcu.ie
Supervisor	Dr Hyowon Lee

153. Investigation of Cleaning In Place Valves in Pharmaceutical Facilities

PROJECT VIDEO HERE

The pharmaceutical industry is dependent on its aseptic nature. In this project, we will be looking at the Cleaning in Place processes and how it affects the polymer linings in valves such as diaphragm valves used in the industry that control the flow of water, steam or chemicals through a process line that would supply production equipment to make Active Pharmaceutical Ingredients by generating a Testing Rig Set Up. The Standard Operating Procedure is developed for the Rig. The performance of the polymers valves will be analysed and detailed from the data gathered during the testing of the valves by completing hardness, observation and seal tests.

Class	Mechatronic Engineering
Project Area	Biomedical Engineering, Sensor Data, Thermodynamics, Virtual Reality
Project Technology	Excel/VB, LabVIEW, PLC Programming, Solidworks
Student Name(s)	Eromonsele Peniel Clements
Email	eromonsele.clements2@mail.dcu.ie
Supervisor	Dr Brian Corcoran

154. Development of an experimental simulator for evaluation of Intra-Cardiac Echo (ICE) catheters and receive user feedback

PROJECT VIDEO HERE

OneProjects is a European startup medical device company that is developing a novel 4D ICE imaging platform.The ICE catheter has a rotational ultrasound transducer at the tip that rotates at 1800 RPM. This is driven by an interface unit situated near the end of the patient bed during the procedure. The aim of this project is to design, develop, manufacture and test a system that replicates the drive function of the interface unit. The rig will be able to control the speed of rotation and also include the ability to induce vibrations of varying magnitudes into the catheter. There'll be a measurement system made for analysing the speed, torque and vibrations induced from the simulator while also measuring the vibration along the catheter and surface temperature of the catheter tip.

Class	Biomedical Engineering
Project Area	3-D Modelling, Biomedical Engineering, Device Design, Mechanical Design and Manufacture, Sensor Technology, Simulation
Project Technology	Solidworks
Student Name(s)	Shane Leahy
Email	shane.leahy24@mail.dcu.ie
Supervisor	Dr David MacManus

155. An Investigation on the Influence of Stylus Length and Trigger Force on CMM Touch-Trigger Probe Lobing and Pre-Travel Error

PROJECT VIDEO HERE

The project investigates the pre-travel measurement error associated with CMM touch-trigger probe lobing effects at high and low force measurement directions, in relation to the kinematic tripod mechanism within the probe. Measurement programs to allow for testing of multiple runs at varying parameters; stylus length and probe trigger force, have been designed and implemented to gather measurement data. Finally, statistical analysis of probe accuracy, precision and total measurement uncertainty for each of the high and low force measurement directions and subsequent parameters is evaluated and discussed. This project aims to identify the optimal probe settings that will minimise measurement uncertainty and contribute toward enhancing industrial knowledge on this critical matter.

Class	CAMIM
Project Area	Engineering Metrology and Measurement
Project Technology	PC-DMIS: Metrology Measurement Software
Student Name(s)	Denis Walsh-Aslan
Email	denis.walshaslan2@mail.dcu.ie
Supervisor	Dr Tamas Szecsi

156. Garçon

PROJECT VIDEO HERE

Garçon is a dual-functionality restaurant management and remote ordering application. By combining all the operations of a restaurant into one app, and sending orders directly from the customer to system itself, Garçon reduces the inefficiencies of having multiple logistics software, and increases sales by making ordering easier, while also cutting down on necessary manpower. Built with Django, the application will take the form of a single web app with two account types, one for restaurants/bars, and one for customers.

Class	Enterprise Computing
Project Area	Web Application
Project Technology	CSS, HTML5, JavaScript, Python
Student Name(s)	Brendan Fitzsimons | Henry Lynam
Email	brendan.fitzsimons4@mail.dcu.ie | henry.lynam2@mail.dcu.ie
Supervisor	Dr Michael Scriney

157. Utile

PROJECT VIDEO HERE

Utile is an online platform that connects users to service providers, on demand. Have guests coming over tomorrow and need a cleaner today? Well within clicks you can have a securely vetted and professional cleaner at your front door within minutes. Utile prioritises usability and accessibility making it easier than ever before to get property maintenance workers (Plumbers, gardeners, electricians and more) with seamless transactions.

Class	Enterprise Computing
Project Area	Model View Controller, Web Application
Project Technology	CSS, HTML5, JavaScript, Python, REST, SQL
Student Name(s)	Ogo Onafuwa | Roberto Pop
Email	Ogo.onafuwa2@mail.dcu.ie | roberto.pop2@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

158. Cloud based distributed iot dataspaces and transactions management using blockchain

PROJECT VIDEO HERE

This project researches cloud based distributed IoT dataspaces and transaction management using blockchain. The project is hosted on Rinkeby blockchain the public Ethereum test network and was used to verify and record the transactions taken place on the data marketplace. The data collected was based on temperature and humidity, this was collected using a raspberry pi and IoT sensors. As a public blockchain is used the IoT data is encrypted via AES encryption as to not allow anyone to access the data without paying. IPFS which is a peer to peer storage network hosts all the data collected which is represented as a NFT. The data marketplace contains a web application allowing anyone with an EVM based wallet to access the website.

Class	Electronic and Computer Engineering
Project Area	Cloud Computing, Embedded Systems, Internet of Things, RaspberryPi, Sensor Data, Software Development, Web Application, Blockchain technology
Project Technology	CSS, HTML5, JavaScript, Nodejs, React.js, Solidity
Student Name(s)	Patrick Durojaiye
Email	patrick.durojaiye2@mail.dcu.ie
Supervisor	Dr Ali Intizar

159. Biomechanics of spinal cord injury

PROJECT VIDEO HERE

This project is based around the inspection of the effects Spinal cord morphology on the likelihood of injury. This project is carried out through the creation of models of a mouse's spinal cord at different vertebrae and then using these models to carry out computational analysis within an FEA software.

Class	Biomedical Engineering
Project Area	3-D Modelling, Finite Element Analysis
Project Technology	Solidworks, FEBio
Student Name(s)	Luke Reade
Email	luke.reade3@mail.dcu.ie
Supervisor	Dr David MacManus

160. Passive Radar

PROJECT VIDEO HERE

This Project uses low-power embedded systems to create a home-monitoring system. The embedded systems create a low rate personal area network, sending packets between each other. In a static environment, the received signal strength of each packet should remain broadly stable. In the event of a person entering the network area, the signal strength values would be disturbed. This project also investigates using this disturbance to detect and track an individual through the network environment.

Class	Electronic and Computer Engineering
Project Area	Embedded Systems, Internet of Things, Motion Analysis, Security
Project Technology	C/C++, Matlab
Student Name(s)	Brian Plunkett
Supervisor	Dr Conor Brennan

161. Electronic Drum Trigger Development

PROJECT VIDEO HERE

The objective of this project is the development and testing of electronic drum triggers. A Roland BT-1 Bar Trigger Pad has been purchased in order to aid development. It will be used as a benchmark to test against any manufactured prototype triggers. These prototypes are designed using CAD, manufactured and tested against the commercially available solution. The final report will consist of research of existing solutions, the design process, and findings from testing.

Class	Mechanical and Manufacturing Engineering
Project Area	3-D Modelling, Additive Manufacturing, Data Analytics, Device Design, Digital Signal Processing, Mechanical Design and Manufacture, Sensor Data
Project Technology	Excel/VB, Solidworks
Student Name(s)	Ryan Fallon-Lacey
Email	ryan.fallonlacey6@mail.dcu.ie
Supervisor	Dr Alan Kennedy

162. Allert – Allergen Scanning App

PROJECT VIDEO HERE

Allert is a cross-platform mobile application for iOS and Android. Allert provides various tools for tracking user allergen data and uses computer vision techniques to allow users to scan product ingredient listings with their smartphones to flag potential allergens.

Class	Computer Applications
Project Area	Android, Computer Vision, Image/Video Processing, Mobile App
Project Technology	CSS, HTML5, JavaScript, MySQL, Python, React.js, Terraform
Student Name(s)	Conor Clerkin | David Moore
Email	conor.clerkin7@mail.dcu.ie | david.moore45@mail.dcu.ie
Supervisor	Dr Paul Clarke

163. Subterranean Energy Storage Systems for Domestic Applications

PROJECT VIDEO HERE

This project will detail the construction and marketability of using suspended weights to store energy using the First Law of Thermodynamics principles. In periods of high energy production from renewable sources or during times of cheap energy from the grid, the weights will be hoisted up. When there is a lack of energy from renewables or the price of energy from the grid is at a peak, the weights will be let down to turn a generator and produce energy. This system has already entered the market at an industrial scale, with companies such as Gravitricity and Energy Vault creating successful demonstration rigs. This report will focus on creating a similar system but for domestic appliances.

Class	Mechatronic Engineering
Project Area	Arduino, Energy Conservation, Mechanical Design and Manufacture, Mechatronic Systems
Project Technology	Python
Student Name(s)	Max Canny
Email	max.canny2@mail.dcu.ie
Supervisor	Dr Greg McNamara

164. GMM41: Open source DASH based adaptive audio-visual media streaming on sabre

PROJECT VIDEO HERE

This project deals with a software called Sabre which calculates the QOE metrics for video streaming using different ABR schemes on varying network speeds. However, Sabre does not simulate audio. Therefore, the goal of this project is to enable Sabre to simulate synchronized audio and video DASH-based adaptive streaming. To do so, Sabre should take an additional input file, labelled audio description, and should adapt the audio and the video bitrates simultaneously based on the network bandwidth available.

Class	Electronic and Computer Engineering
Project Area	Data Analytics, Information Retrieval, Simulation, Software Development, Telecommunications
Project Technology	JavaScript, Python
Student Name(s)	Arshad Hussain Asmath
Email	arshad.asmath2@mail.dcu.ie
Supervisor	Prof. Gabriel-Miro Muntean | Dr Mohammed Amine Togou

165. Energy Conservation in Software

PROJECT VIDEO HERE

The ever increasing energy consumption of computing systems has started to limit further performance growth due to overwhelming costs and environmental concerns. Energy consumption has therefore become a more important optimisation criterion in many systems than performance. While many improvements in energy efficiency have been made at the hardware level, not so many have been made at the software level. Our project aims to apply optimization to sequential Haskell programs using the full program transformation hierarchy through the optimization of Haskell Core.

Class	Computer Applications
Project Area	Energy Conservation, Software Development
Project Technology	Haskell
Student Name(s)	Marc Kiely | Conor Fleury
Email	marc.kiely22@mail.dcu.ie | conor.fleury2@mail.dcu.ie
Supervisor	Dr Geoffrey Hamilton

166. SmartPark

PROJECT VIDEO HERE

SmartPark is a software system to digitize and automate the way parking is operated in barrier operated car parks. Our system is a web application using ANPR (automatic number plate recognition) software to read in customer's number plates, record time spent & bill customer accordingly via direct debit/ at the barrier on exit using contactless.

The problem
- Ambiguity in different parking processes; causes significant delays especially during peak hours
- Expensive ticket machines & maintenance
- Need for parking attendants on-site

Class	Enterprise Computing
Project Area	Image/Video Processing, Internet of Things, Web Application
Project Technology	JavaScript, Nodejs, Python, Machine Learning
Student Name(s)	Jonathan Clear | Shane Duffy
Email	jonathan.clear3@mail.dcu.ie | shane.duffy53@mail.dcu.ie
Supervisor	Dr Paul Clarke

167. The Design and Realisation of a Stirling Engine

PROJECT VIDEO HERE

Renewable energy production has not yet reached 100 percent efficiency. This may be a difficult goal to reach but the addition of Stirling Engines in the process could be used to limit the loss in excess heat that could be used to produce electricity. This is what the project aims to investigate, for example, by using the large amount of heat lost from the electrolysis to produce Hydrogen. This heat source could be used to power Stirling Engines to generate electricity and offset this loss. The viability of this type of engine in the production of electricity will be determined through basic testing and calculations. The ideal configuration of a Stirling Engine will operate on a very small temperature differential and therefore will be the most efficient.

Class	Mechatronic Engineering
Project Area	3-D Modelling, Energy Conservation, Mechanical Design and Manufacture, Renewable Energy Technology
Project Technology	Solidworks
Student Name(s)	Eric Redmond | Eric Redmond
Email	eric.redmond25@mail.dcu.ie
Supervisor	Dr Pascal Landais

168. Examining the effects of varied manufacturing parameters on the mechanical performance and function of embolic particulates

PROJECT VIDEO HERE

This project is in collaboration with CrannMed, to examine the mechanical performance and embolic function of CrannMed's embolic beads and to examine the effects of different crosslinking conditions on the product's performance. This includes mechanical testing such as compression testing; observing embolic performance in a hydrostatic environment to evaluate migration and occlusion; and surface morphology of the embolic beads.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	Excel/VB, Solidworks, CellScale
Student Name(s)	Maeve Nolan
Email	maeve.nolan48@mail.dcu.ie
Supervisor	Dr Owen Clarkin

169. Ultrasonic Thermometry

PROJECT VIDEO HERE

The aim of this project is to make an ultrasonic thermometer. An advantage of an ultrasonic thermometer over other temperature sensors is that it can measure an aggregate temperature across a distance instead of at a single point. Using the relationship between the time of flight (ToF) of a sound wave through a medium and the temperature of the medium, this project transmits an ultrasonic wave and finds start and end points in a sent pulse signal and received sinusoidal signal. The difficulty is that it is not clear which sent pulse corresponds to which received peak. Hence, this project sends a series of in-phase pulses followed by out-of-phase pulses. This creates a peak in the envelope of the received signal. The ToF is then measured from the first out-of-phase pulse and this peak.

Class	Mechatronic Engineering
Project Area	Arduino, Digital Signal Processing, Sensor Data, Sensor Technology
Project Technology	Digital Signal Processing, Arduino
Student Name(s)	Aoife Harte
Email	aoife.harte25@mail.dcu.ie
Supervisor	Dr Conor McArdle

170. An Irish Grammar Tool – for Beginners

PROJECT VIDEO HERE

Our project is a web-based app called 'Spraoi'. It will serve as an Irish grammar tool for beginner learners of the Irish language, in particular primary school students. Primary school teachers will be able to use the web-app to compliment their lessons and reinforce learning for young students. The web-app consists of fun and interactive learning tools such as quizzes, fill-in-the-blank sentences and crossword puzzles. The web-app aims to build a solid foundation for students to grow their knowledge of the Irish language.

Class	Enterprise Computing
Project Area	Educational
Project Technology	CSS, HTML5, JavaScript
Student Name(s)	Deborah Sealy | Jamie Nesbitt
Email	deborah.sealy2@mail.dcu.ie | jamie.nesbitt4@mail.dcu.ie
Supervisor	Dr Monica Ward

171. Modelling and Simulation of a Robot Arm

PROJECT VIDEO HERE

The chosen manipulator system is the subsea Blueprintlab Alpha 5. The system is targeted for up-to Class II ROVs allowing for the light inspection, object handling and tool use. The project sets out to conduct the kinematic modelling and the simulation of a trajectory path with the use of a developed control scheme. The modelling and simulation is conducted in open source software, Scilab, with the RTSX, robotics toolbox, extension. RTSX handles the mathematical computation of kinematic and dynamic properties allowing for trajectories to be created and used by the designed controller.

Class	Mechatronic Engineering
Project Area	Control Systems, Robotics, Vehicle Control, Virtual Reality
Project Technology	Scilab
Student Name(s)	Dylan Cannyghin
Email	dylan.cannyghin2@mail.dcu.ie
Supervisor	Dr Harry Esmonde

172. The design, building and testing of a remote climate change monitor using very low radio frequency emissions

PROJECT VIDEO HERE

For this project, I have designed an antenna that is able to pick up electromagnetic emissions from lightning strikes in the very low frequency range. These occur in thunderstorms. The frequency of these emissions can be used to determine the increase or decrease in thunderstorm occurrence, and because thunderstorms are a result of surface temperature, they are a proxy for climate change. To determine the frequency of these thunderstorms, a novel spectral analysis method was researched to discriminate lightning strikes from other sources of electromagnetic energy. This Is the use of the wavelet domain, which allows both frequency and time information to be gathered from a signal, useful for detecting lightning strikes.

Class	Electronic and Computer Engineering
Project Area	Information Retrieval, Sensor Data, Wireless Technology
Project Technology	Python
Student Name(s)	Patrick Maritan
Email	patrick.maritan2@mail.dcu.ie
Supervisor	Dr Patrick McNally

173. Carbon Efficiency of Data Centres

PROJECT VIDEO HERE

This project focuses on the carbon efficiency of data centres in Ireland, the idea behind this project stems from the European Commission's proposal to reduce greenhouse gases by at least 55% by 2030. This project aims to evaluate the potential use of wind and solar energy to provide green energy to data centres, using wind turbines and solar panels. An Excel model was developed to consider many scenarios to power data centres sustainably and this report demonstrates the findings, depicted by graphs and statistics.

Class	Mechanical and Manufacturing Engineering
Project Area	Energy Conservation
Project Technology	Excel/VB
Student Name(s)	Fiona Deane
Email	fiona.deane5@mail.dcu.ie
Supervisor	Anne Morrissey

174. PMN46: Design and development of a Software Defined Radio-Based System for 21cm Wavelength Radio Astronomy

PROJECT VIDEO HERE

The title of this final year project is the design and development of a Software Defined Radio-Based System for 21cm Wavelength Radio Astronomy. Having a budget of 250 euro a cost conscious design was built of a horn antenna radio telescope capable of being able to show the hydrogen line in various parts of the galactic plane.

Class	Mechatronic Engineering
Project Area	Software Development
Project Technology	Digital Signal Processing
Student Name(s)	Shona O'Sullivan
Email	shona.osullivan69@mail.dcu.ie
Supervisor	Prof Dr Patrick McNally

175. VotingBlock

PROJECT VIDEO HERE

Voting Block is a web application which uses the Hyperledger Fabric Blockchain to allow users to create and vote in custom elections. Elections are created by a user, and include parameters such as start date, end date, election type etc. Voters register for the specific election using their email, and once that email is verified they're able to participate in the election, whilst it's up and running. Technologies used to create this project include React, Typescript, Express, puppeteer, jest and Hyperledger Fabric.

Class	Computer Applications
Project Area	Cryptography, Software Development, Web Application, Blockchain technology
Project Technology	CSS, HTML5, JavaScript, React.js, Hyperledger Fabric, Express JS, Jest, Puppeteer, Typescript
Student Name(s)	Cody Dullard | Sean Cronin
Email	cody.dullard2@mail.dcu.ie | sean.cronin27@mail.dcu.ie
Supervisor	Dr Geoffrey Hamilton

176. GPGPU

PROJECT VIDEO HERE

This Project investigates and compares the processing time and efficiency of running computationally complex tasks sequentially on a central processing unit as compared to in parallel on a General Purpose Graphics Processing Unit. The task being examined is Method of Moments, specifically matrix multiplication in conjugate gradient normal equations. Theoretically, running such a task in parallel on a GPGPU should reduce processing time significantly.

Class	Electronic and Computer Engineering
Project Area	Data Analytics, Software Development
Project Technology	C/C++, NVIDIA CUDA C/C++
Student Name(s)	Ahmed Abdalla
Email	ahmed.abdalla3@mail.dcu.ie
Supervisor	Dr Conor Brennan

177. Tis The Season

PROJECT VIDEO HERE

'Tis The Season is our multi functional subscription based food app, that revolves around the idea of going green. Customers can have locally grown fruit and veg delivered straight to their door, and use the app to discover new recipes with the food they have just bought. All of the fruit and veg that are available to buy are in season no matter what time of year it is. This will cut down on the emission of greenhouse gases produced by the foods shipped to Ireland from abroad as our delivery vans will all be electric powered.

Class	Enterprise Computing
Project Area	Mobile App, Web Application
Project Technology	CSS, HTML5, JavaScript
Student Name(s)	Kyle Keeley | Kyle Gallagher McKenna
Email	kyle.keeley2@mail.dcu.ie | kyle.mckenna22@mail.dcu.ie
Supervisor	Dr Monica Ward

178. Electronic Drum Pad Design

PROJECT VIDEO HERE

The objective of this project is to analyze the design and data produced from both commercially available electronic drums as well as electronic drums developed in previous years projects. Using the knowledge gained from this analysis, to produce an improved CAD design for a shell of an electronic drum that can be 3D printed and fitted with two sensors that will give dual sense capability, that will deliver consistent results that can be used to contribute to the generation of new positional hit sensing algorithm.

Class	Mechanical and Manufacturing Engineering
Project Area	3-D Modelling, Intelligence Pattern Matching, Mechanical Design and Manufacture, Sensor Data, Sensor Technology
Project Technology	Excel/VB, Solidworks
Student Name(s)	James Reilly
Email	james.reilly36@mail.dcu.ie
Supervisor	Dr Alan Kennedy

179. Truing Bicycle Wheel Automation

PROJECT VIDEO HERE

My project uses an ultrasonic sensor to measure lateral deviations of a spinning bicycle wheel. An Arduino is connected to this ultrasonic sensor and reads in these deviations in millimetres. A python script then takes the readings from the Arduino and graphs them in a time (s) Vs. distance (mm) graph. The user then analyses this data and tensions the appropriate bicycle wheel spoke in order to laterally true the bicycle wheel.

Class	Mechatronic Engineering
Project Area	Arduino, Sensor Data, Sensor Technology
Project Technology	Python, arduino
Student Name(s)	chloe carey
Email	chloe.carey27@mail.dcu.ie
Supervisor	Dr Tamas Szecsi

180. New Home

PROJECT VIDEO HERE

A recommender system designed to help people looking to buy a new house. The system is given data on the current housing market. Data Analytics is then used to capture the different aspects that contribute to property prices. This can then be used to compare and rank properties, identifying the best houses in the process. The system can be used through a smartphone friendly web-app, allowing anyone to have user friendly access.

Class	Computer Applications
Project Area	Data Analytics, Data Mining, Statistical Analysis, Web Application
Project Technology	CSS, HTML5, JavaScript, MySQL, PHP, Python, SQL, React.js
Student Name(s)	Shane Lennon | Shane Grouse
Email	shane.lennon36@mail.dcu.ie | shane.grouse3@mail.dcu.ie
Supervisor	Dr Alessandra Mileo

181. BREH17 Whiteboard to PDF Capture System

PROJECT VIDEO HERE

Whiteboards are an essential everyday tool for visually sharing one's ideas with others. However, the board content is hard to archive. Kaptivo's Whiteboard Camera System is an excellent, but expensive, way of capturing whiteboard content and digitising it for remote/future access. The aim of this project is to build on the work done last year and develop a cheaper device with similar functionalities in order to make it accessible to the wider public. The project involved image processing and the python program was executed on a Raspberry Pi 4B. An RPi HQ camera (12MP) was used to capture images of the whiteboard.

Class	Mechatronic Engineering
Project Area	Computer Vision, Image/Video Processing, RaspberryPi
Project Technology	Python, Solidworks
Student Name(s)	Aditi Verma
Email	aditi.verma2@mail.dcu.ie
Supervisor	Dr Brendan Hayes

182. Yararacad

PROJECT VIDEO HERE

A CAD program built around a Python interface with the goal of allowing programmatic definition of 3D (an other dimensional) models in a structured and meaningful way, for ease of 3D printing and manufacturing. Also provides various interfaces for accessing and customizing models including a web interface and a command-line interface. Inspired by OpenSCAD but aiming to fix a lot of its oversights and allow a much richer interface.

Class	Computer Applications
Project Area	Computer Aided Desing; Computer Aided Manufacturing
Project Technology	Python; HTML/CSS; STEP
Student Name(s)	Jordan Conway McLaughlin | Andrey Murashev
Email	jordan.conwaymclaughlin24@mail.dcu.ie | andrey.murashev2@mail.dcu.ie
Supervisor	Dr Stephen Blott

183. Investigation of braided fibre structures for applications as ligaments or tendons

PROJECT VIDEO HERE

I have selected to try and design a functioning Anterior cruciate ligament from synthetic PVA fibres. The aim is to create an artificial ligament by braiding biocompatible materials together to improve strength and durability of materials. The material selection and braiding technique that is used in this project were selected based on tensile strength, the size and shape of the ACL and the biocompatibility of the material, to allow a synthetic object be absorbed by the body as if it was always there.

Class	Biomedical Engineering
Project Area	Biomedical Engineering
Project Technology	3D-Printing
Student Name(s)	Finn Ward
Email	finn.ward5@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

184. Distillery

PROJECT VIDEO HERE

Distillery is a Glasgow Haskell Compiler (GHC) plugin. It adds an optimisation pass to the GHC compilation pipeline through the implementation of the distillation transformation algorithm. Distillery's aim is to improve the energy efficiency of programs at runtime, moving towards "greener" software development. This project has an additional emphasis on analysing our plugins impact on energy usage. A suite of energy analysis tooling has been built to achieve this. The goal is to specifically target large, distributed software systems (e.g data centre's) and programs that are data-intensive. A custom Hadoop based data processing pipeline was built to act as a simulated production environment. The system designed will help to more effectively target, test and build these types of systems.

Class	Computer Applications
Project Area	Automation, Data Analytics, Distributed Systems, Energy Conservation, Simulation, Software Development
Project Technology	Docker, Haskell, Java, Python, Hadoop (MapReduce, HDFS), Perf
Student Name(s)	Cian Kehoe | Dan McCabe
Email	cian.kehoe34@mail.dcu.ie | dan.mccabe25@mail.dcu.ie
Supervisor	Dr Geoff Hamilton

185. Finite Element Analysis of Functionally Graded Bone Scaffolds

PROJECT VIDEO HERE

This project involves the use Finite Element Analysis to investigate the effects of pore geometry, porosity and selected material on functionally graded bone scaffolds. The designs were completed using Solidworks and the analysis using ANSYS.

Class	Mechanical and Manufacturing Engineering
Project Area	Finite Element Analysis
Project Technology	ANSYS Workbench, Solidworks
Student Name(s)	Roisin Feehan
Email	roisin.feehan3@mail.dcu.ie
Supervisor	Dr Inam Ul Ahad

186. Electronic Drum Module Development

PROJECT VIDEO HERE

The aim of this project was to develop an electronic drum module based on teensy 4.0 and ADS8686s chip which would be capable of processing signals from up to 16 instruments at a time and produce sound digitally. It will be an open source system which would be able to connect to almost any brand of instrument. Another part of project was to design and develop an attachment for the drum pedal which will connect to the drum module and measure the angle of the pedal in real time, which can be used to mimic sounds that will be heard from a real drum if its hit.

Class	Mechatronic Engineering
Project Area	Arduino, Software Development
Project Technology	C/C++
Student Name(s)	Talha Malik
Email	talha.malik2@mail.dcu.ie
Supervisor	Dr Alan Kennedy

187. Wobly: A New App For Hiring

PROJECT VIDEO HERE

The project we chose to design is a new web application for job opportunities, called "Wobly: A New App For Hiring". This was an application was aimed specifically on the hiring of people to find odd jobs working for people who need work completed. What set Wobly apart from other websites or applications is that the power to both find and get work were balanced on both sides. A "hirer" can put up a post advertising for work to be done, and can wait for "workers" to apply or "like" it, but at the same time can like profiles of the "workers", who have posted their resumes on the website advertising what kind of jobs that they are available to do. The aim of this is to cut down the waiting time on both sides to find or give work.

Class	Enterprise Computing
Project Area	Web Application
Project Technology	CSS, Docker, HTML5, JavaScript, Python, REST, Django
Student Name(s)	James Griffin | Ciaran O'Brien
Email	james.griffin25@mail.dcu.ie | ciaran.obrien257@mail.dcu.ie
Supervisor	Dr Gareth Jones

188. Improve the manufacturing efficiency of a catheter packaging machine

PROJECT VIDEO HERE

This project is in collaboration with Hollister ULC, a company that specialize in ostomy and continence care products. The aim of this project is to upgrade parts of the catheter packaging machine to optimize production time, reduce waste and to improve operator efficiencies. There are two main activities in this project: relocating the catheter hydration fluid container and investigating a way for the machine to detect the difference between the 40cm catheter and 17cm catheter patterned foils.

Class	Mechanical and Manufacturing Engineering
Project Area	Sensor Technology
Project Technology	IV2 Series Software
Student Name(s)	Rebecca Gilligan
Email	rebecca.gilligan6@mail.dcu.ie
Supervisor	Dr Garrett McGuinness

189. MyBarista

PROJECT VIDEO HERE

Our goal is to create an employment platform strictly for baristas. This platform will allow baristas seeking employment to create a profile on our MyBarista system which will be displayed on the website. Baristas will pay for the use of our system on a monthly subscription basis so that their profile will be available to view by employers. The system will be free to use for employers in order to entice employers to use the system. Baristas will be available for both short term and long term employment.

Class	Enterprise Computing
Project Area	Web Application
Project Technology	CSS, HTML5, JavaScript, Python
Student Name(s)	Jack Murray | brian shiel
Email	jack.murray52@mail.dcu.ie | brian.shiel4@mail.dcu.ie
Supervisor	Dr Jennifer Foster

190. Self-Balancing Robot

PROJECT VIDEO HERE

This project focuses on creating a two wheeled self-balancing robot that can move forward backwards and make left and right turns all while maintaining balance and stability. The robot should also be able to stay in a stationary position and can reject external disturbances such as a push or a bump. The main principle behind this self-balancing robot is the inverted pendulum. A feedback controller is required to keep the robot stable and balancedThe process of making the two wheeled robot can be split in to three main parts:

1. Mathematical derivations:
   – 2DOF and 3DOF Equations
2. Simulate the motions via MATLAB:
   – PID feedback control tuning and LQR controllers
3. Coding the Robot/Testing

Class	Mechatronic Engineering
Project Area	Arduino, Control Systems, Robotics
Project Technology	C#, C/C++, Matlab
Student Name(s)	Haitham Elamin
Email	haitham.elamin2@mail.dcu.ie
Supervisor	Dr Harry Esmonde

191. Gravity Battery

PROJECT VIDEO HERE

This project investigates Gravity Batteries as an energy storage system. The aim of the project is to show that excess renewable energy generated can be stored for later use on a large scale. Ireland suffers greatly from the generation of excess energy overnight and this project shows how its possible to store this energy and to use it during peak hours. A small gravity battery was developed by dropping a weight attached to a pully which turns a motor thus generating energy which is then raised using excess energy generated in turn storing the energy to be released later. Testing showed that this project has scalability. Gravity batteries can be used in preexisting mines and other areas where there is a large vertical drop or open areas such as in bogland or on the sides of hills.

Class	Mechanical and Manufacturing Engineering
Project Area	3-D Modelling, Electric Generation, Mechanical Design and Manufacture, Renewable Energy Technology
Project Technology	Solidworks
Student Name(s)	Cian Hickey
Email	cian.hickey33@mail.dcu.ie
Supervisor	Dr Greg McNamara

192. DB85: Evaluation of the physical properties of NiTi wires for use in various applications

PROJECT VIDEO HERE

An alloy consisting of Nickel and Titanium, being a shape memory alloy. Meaning when 'trained', heat treated in a held shape it can remember that shape/position and will return to that position when the material goes through phase change, essentially heated. Used in such applications as actuators, heat engines, medical implants, and the aerospace industry. This project consists of designing and manufacturing a rig to perform testing on the material to evaluate the properties such as temperature, resistance, and elongation.

Class	Mechatronic Engineering
Project Area	Advanced Material Engineering, Data Analytics, Mechanical Design and manufacture, sensor data
Project Technology	Excel, solidworks, LabVIEW
Student Name(s)	Andrew Baggot
Email	andrew.baggot2@mail.dcu.ie
Supervisor	Dr Dermot Brabazon

193. LingoLudus

PROJECT VIDEO HERE

This project aims to gamify the learning of a new language such as French by using the CALL (Computer Assisted Language Learning) approach. The current philosophy of CALL puts a strong emphasis on student centred materials that allow learners to work on their own. Such materials may be structured or unstructured, but they normally embody two important features: interactive learning and individualised learning. The project aims to create a game with a purpose, to facilitate the language learning process of a particular language such as french via a game or a selection of popular games adapted to the CALL approach.

Class	Computer Applications
Project Area	Educational, Gaming
Project Technology	Python
Student Name(s)	Yann Ndjatang | Fawwaz Kekere-Ekun
Email	yann.ndjatangsanbeya2@mail.dcu.ie | fawwaz.kekereekun2@mail.dcu.ie
Supervisor	Dr Monica Ward

194. MyTutor.ie

PROJECT VIDEO HERE

MyTutor provides a platform for tutors to advertise their services to 2nd level students seeking grinds for upcoming state exams. It allows for students to browse through a list of tutors sorted by subject type, pricing, and rating, and allows them to arrange and pay for grinds directly on the platform. Tutors will have the ability to host zoom links for virtual grinds, manage existing sessions, and contact the student directly to arrange in-person lessons. The service will be free to browse and use by students and their parents, only needing to pay for scheduled grinds. Tutors will pay a % of each grind sold and a monthly fee to publish a profile on the platform. Our aim is to target the expanding 3rd party grinds market and allow students and tutors to connect with ease.

Class	Enterprise Computing
Project Area	Educational, Social Networking
Project Technology	Docker, HTML5, JavaScript, Nodejs, Python, REST
Student Name(s)	Adam Quinn | Charles Flynn
Email	adam.quinn73@mail.dcu.ie | charles.flynn57@mail.dcu.ie
Supervisor	Dr Cathal Gurrin

195. Flix

PROJECT VIDEO HERE

This Android application recommends movies to a group based on past ratings. Our app makes deciding what movies to watch with friends much easier. One user will host a session on the app, others will join and they will all be presented with movies they can either approve or discard. At the end of a session users can see movies that best suit the whole group. The recommender system uses collaborative filtering to make recommendations. The model was trained using MovieLens datasets.

Class	Computer Applications
Project Area	Android, Mobile App
Project Technology	Java, Python, Machine Learning
Student Name(s)	Sarah Bermingham | Stephen Griffin
Email	sarah.bermingham22@mail.dcu.ie | stephen.griffin37@mail.dcu.ie
Supervisor	Dr Gareth Jones

196. Visualisation Tool for Social Bias in NLP Models

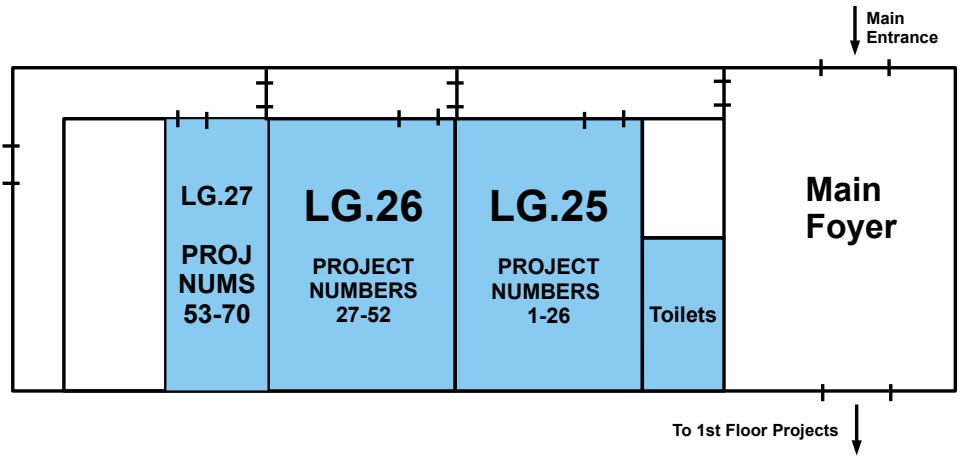
NO VIDEO AVAILABLE

This project proposes an improved metric for measuring social bias in language models and creates interactive visualisations to showcase the metrics. 22 language models are tested against this improved metric and users have the ability to compare and analyse the performance of each/several models. With this data being publicly accessible, it can ensure that researchers use the most fair language models when developing NLP tasks, limiting the harmful effects that can be caused by biased language models.

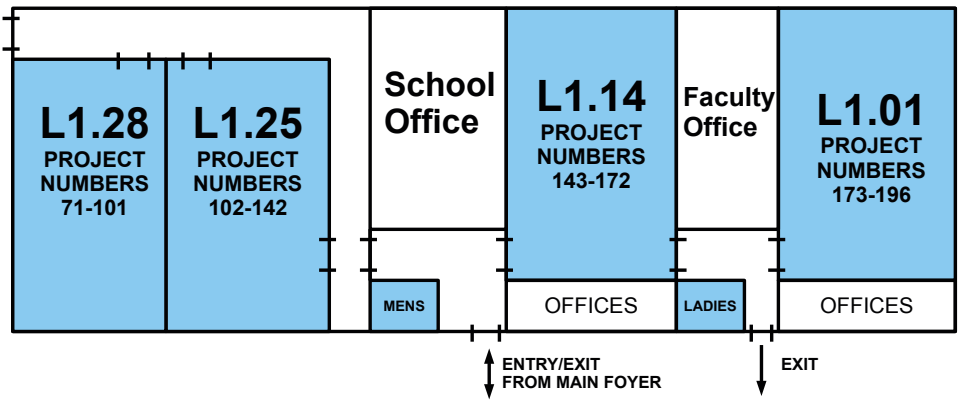
Class	Data Science
Project Area	Natural Language Processing
Project Technology	Primarily Python
Student Name(s)	Lara Murphy
Email	lara.murphy239@mail.dcu.ie
Supervisor	Dr Jennifer Foster

Lab Locations
(with Project Numbers)

Labs – Ground Floor Layout



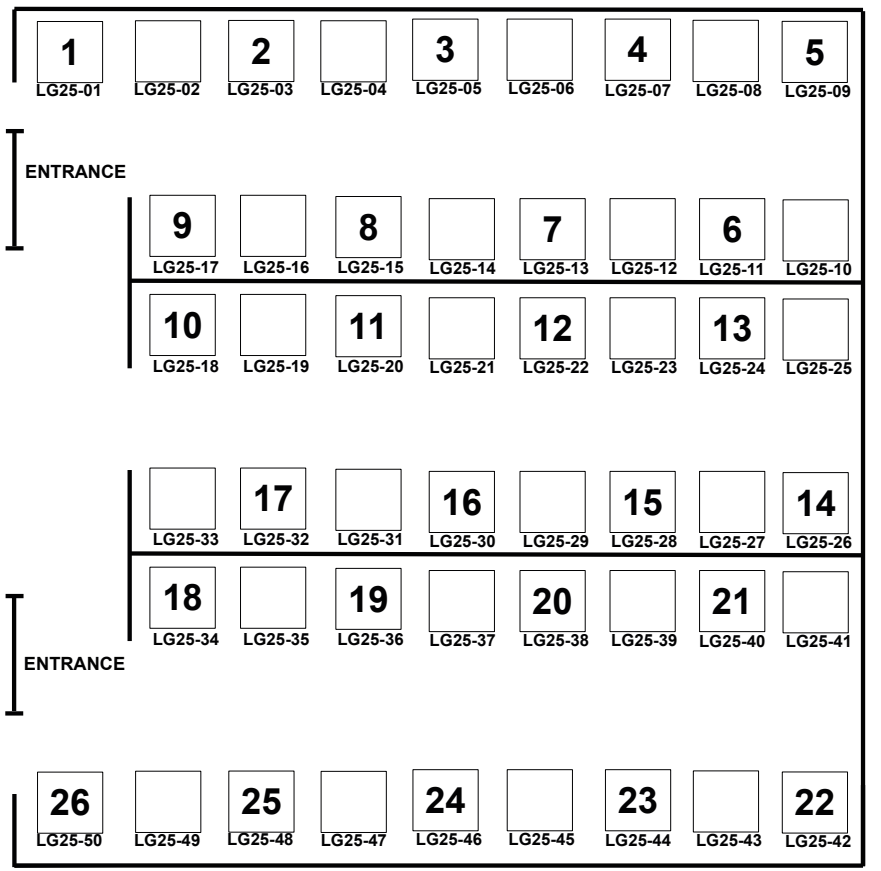
Labs – 1st Floor Layout



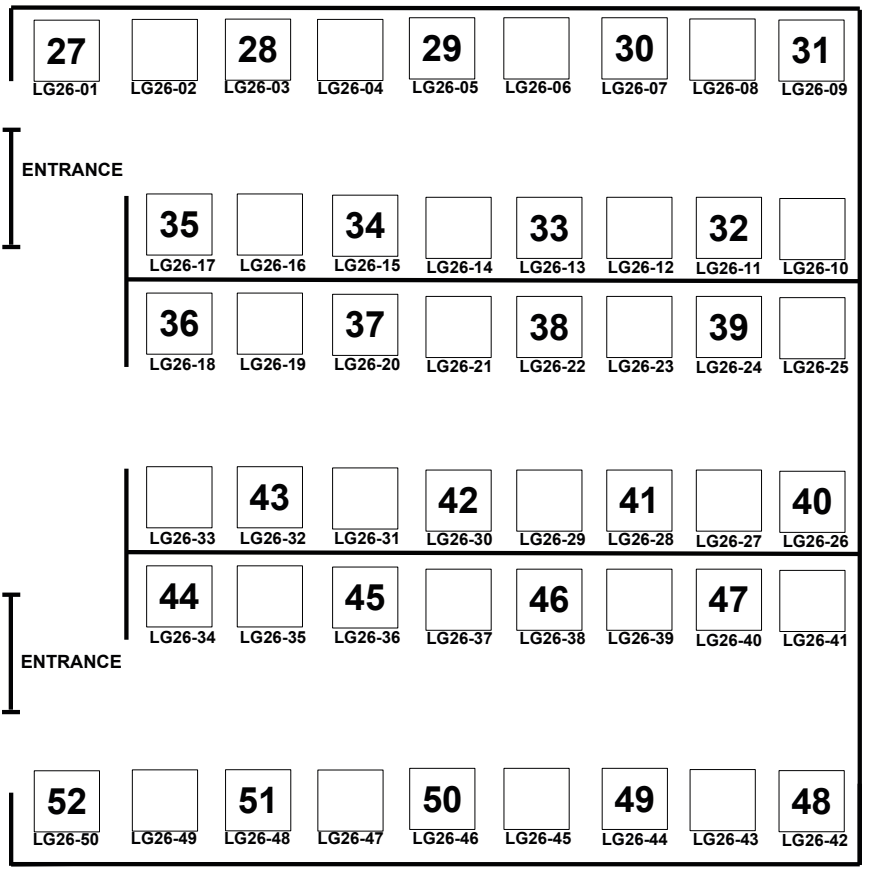
Map of Each Lab

(Where to Find Your Project in the Lab)

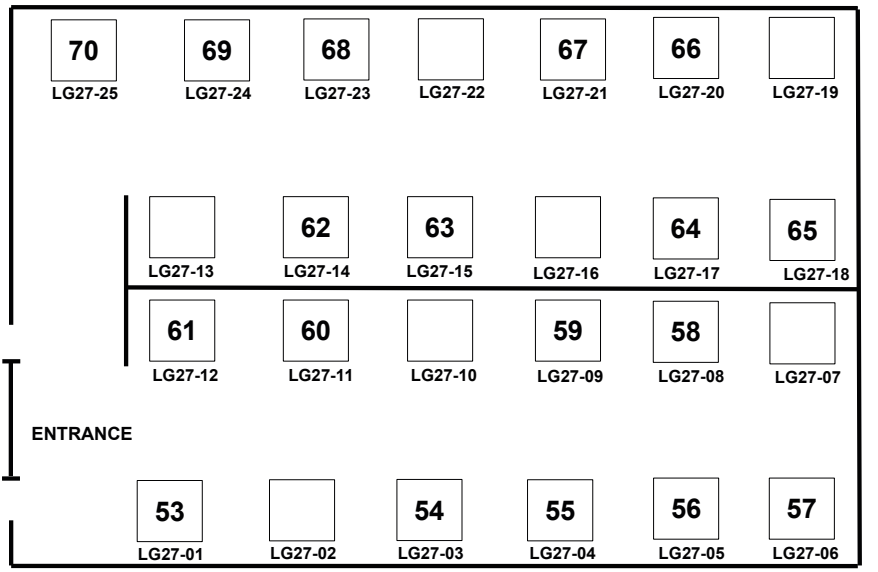
LAB – LG.25 – Map of Project Numbers – Locations Inside the Lab



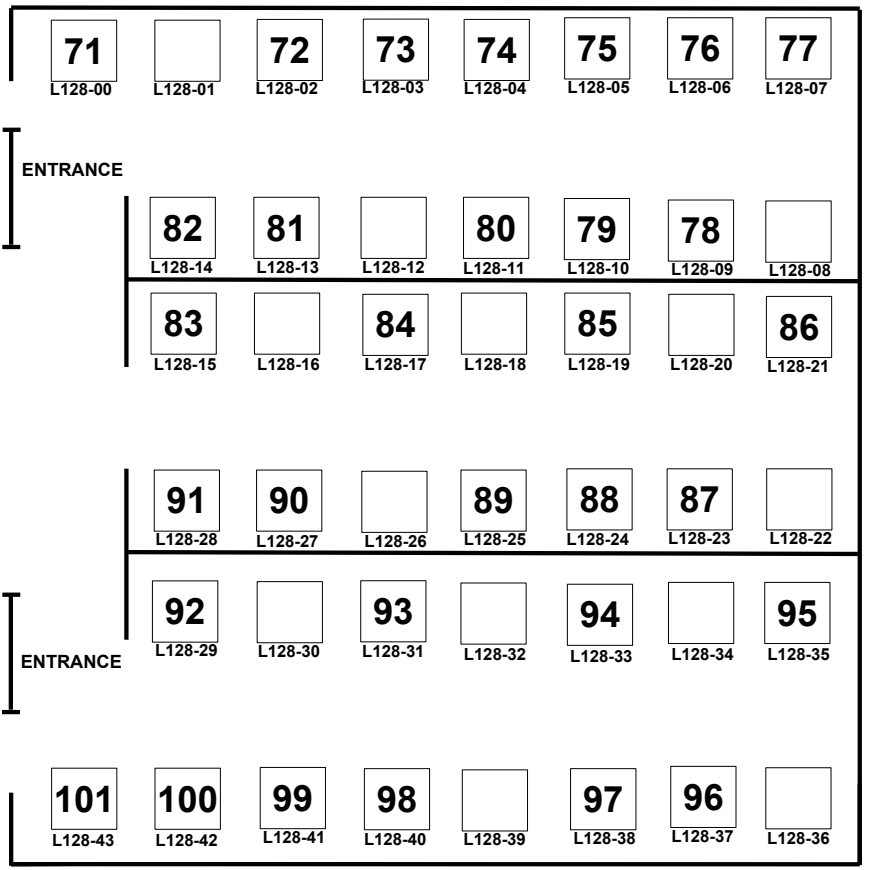
LAB – LG.26 – Map of Project Numbers – Locations Inside the Lab



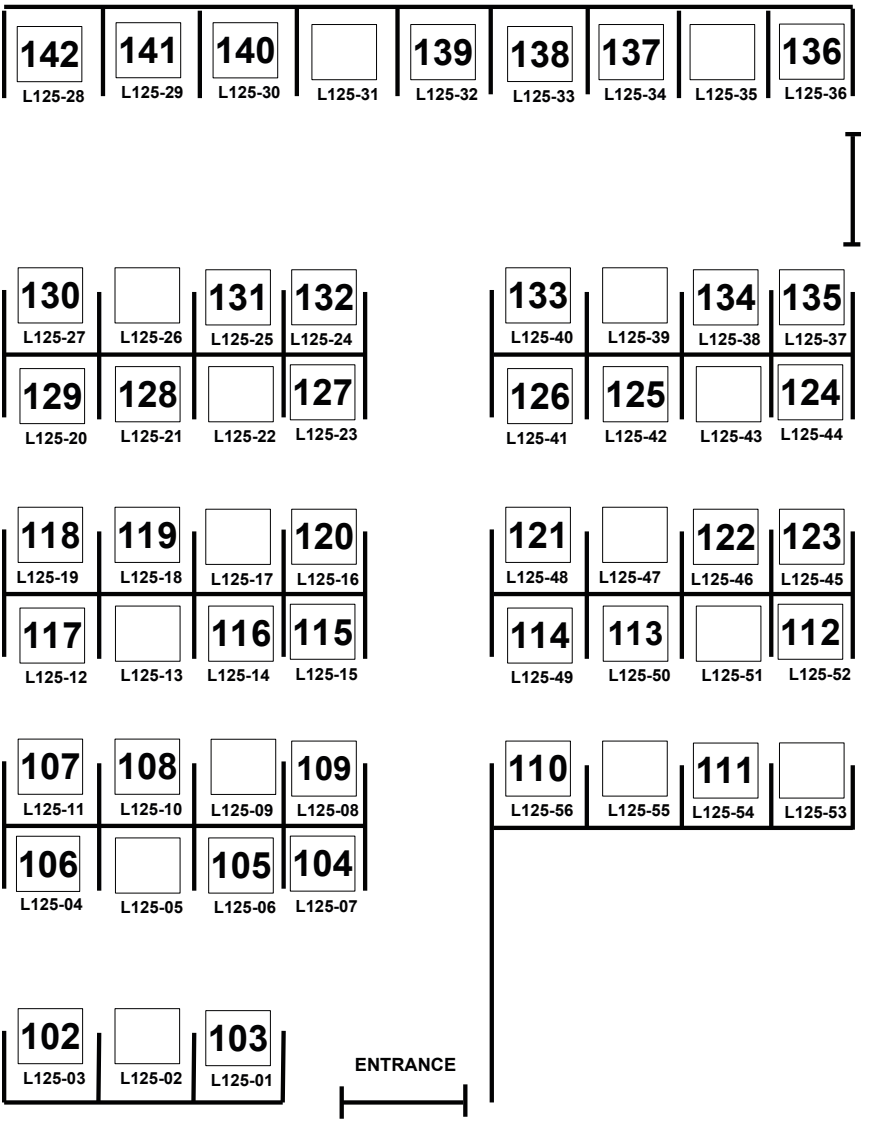
LAB – LG.27 – Map of Project Numbers – Locations Inside the Lab



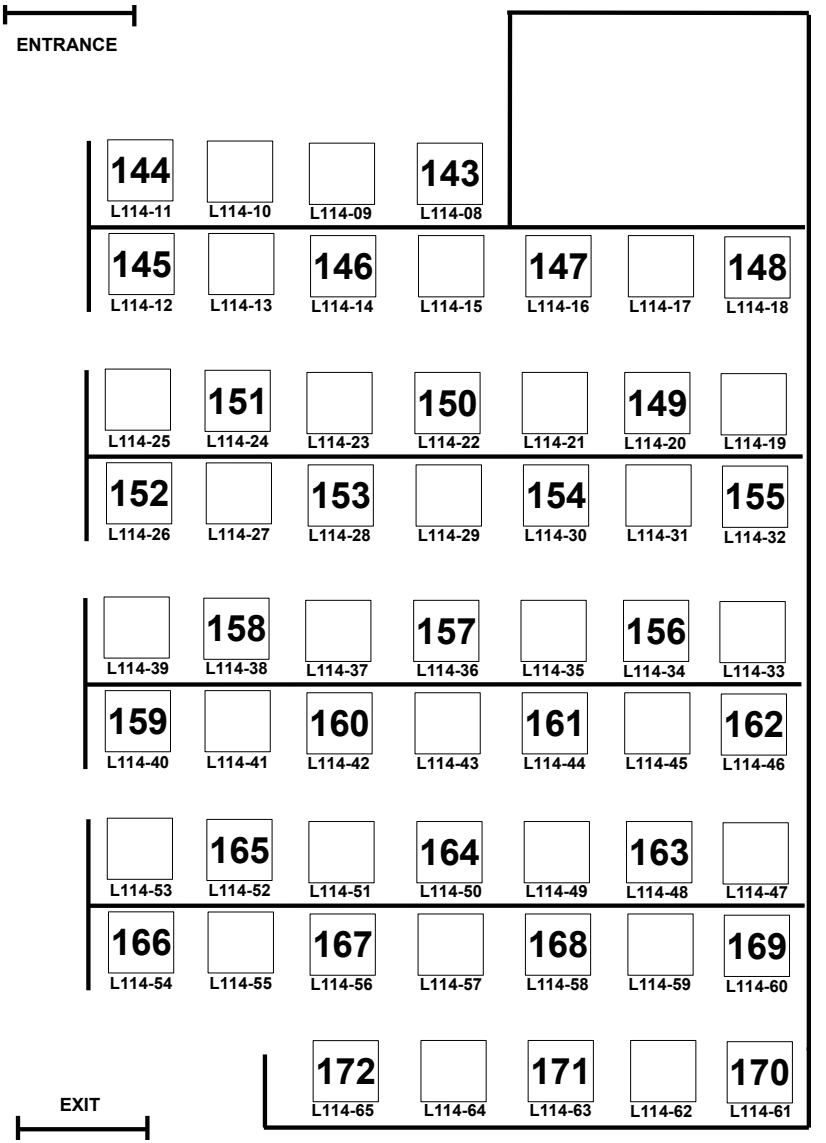
LAB – L1.28 – Map of Project Numbers – Locations Inside the Lab



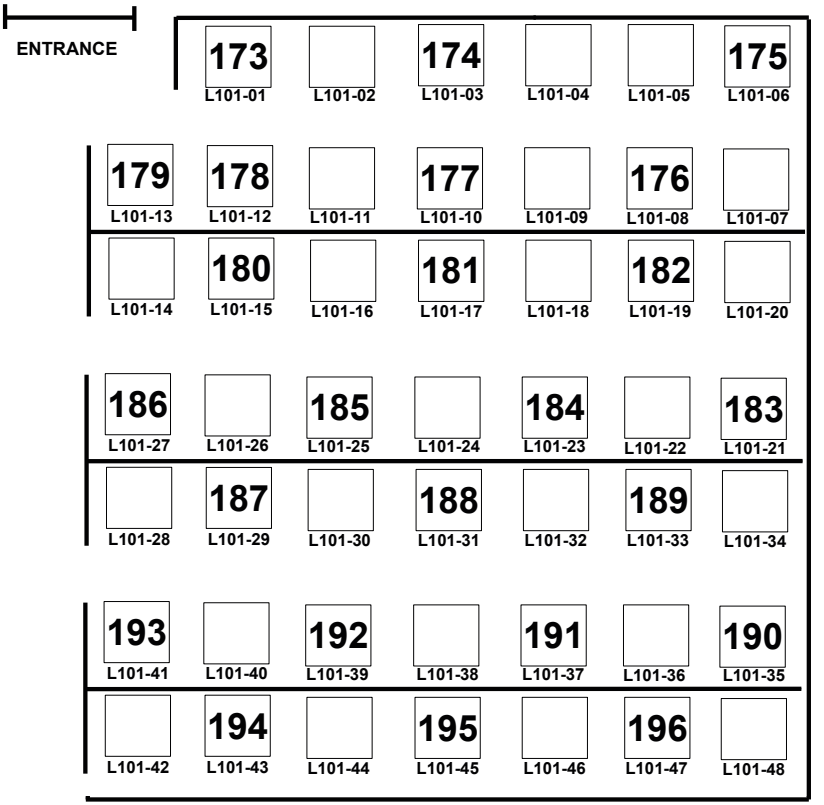
LAB – L1.25 – Map of Project Numbers – Locations Inside the Lab



LAB – L1.14 – Map of Project Numbers – Locations Inside the Lab



LAB – L1.01 – Map of Project Numbers – Locations Inside the Lab



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For more information see **Openet.com**

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dcu.ie/engineering_and_computing