Theodore Russell | Engineering Graduate

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Profile

I am a highly motivated graduate with a deep passion for making a meaningful impact in the world through engineering. I am committed to continuous improvement and strive to be forward-thinking in my approaches, constantly seeking new knowledge and innovative solutions. For this reason, I value a diverse and collaborative environment, as different perspectives can come together and drive progress. With my exceptional interpersonal and communication skills, I will build strong relationships in the workplace and foster a supportive environment. That said, I also thrive independently and will tackle any problems with determination and a positive attitude.

Education and Qualifications

Durham University **Graduated: June 2023**
Master of Engineering (Mechanical), 1st Class Honours. This was part of an integrated master's degree, where I studied general engineering for two years prior to specialising.

St Ambrose College, Hale Barns **September 2012 – June 2019**
A-Levels: Mathematics **A***, Physics **A**, Computing **A**, Biology **A**
GCSE: Grade 8 in Mathematics and English Literature, A* in Physics and Chemistry, A in Further Maths, Computing, Biology, French, Geography, Religious Studies and Grade 6 in English Language.

Experience

Masters Research Project – "Artificial Intelligence for 3D CAD Geometry analysis" **Academic Year 2022-2023**
I developed artificial neural networks using PyTorch to recognise the geometric properties, such as size and rotation, of 3D digital models with the aim of minimising design-to-manufacture time and cost. In this work, I completed a critical review of relevant state-of-the-art literature, and learned how to make informed decisions based on empirical results and research. My final report was of publishable quality, as demonstrated by it achieving a high 1st class grade.

Mechanical Engineer, CRUX Product Design **July 2022 – September 2022**
Designing simulation tools in a fast-paced, agile environment for various industry-leading clients
In this position, I developed and integrated physics models and image-processing apps with user-friendly web interfaces using Python, with the purpose of rapid product evaluation and optimisation prior to prototyping. I spearheaded the creation of an online simulation software catalogue, to accelerate future projects. I learned how to perform remote deployment to Linux servers and manage projects with version control.

General Engineer, Durham University Spaceflight Society (UKSEDS) **Academic Years 2021-2023**
Designing a high-altitude balloon for Earth imaging, and aiming for my Level 1 UKRA H-I class Rocketry Certificate
As part of Durham's branch of UKSEDS (UK Students for the Exploration and Development of Space), I used SOLIDWORKS to develop models of a thrust-vectored-control mount for our team's rocket engine, as part of the Mach-23 competition. Similarly, I adapted a balloon payload to have improved insulating camera mounts and stability, which was launched up to 40km into the atmosphere. Moreover, this project required knowledge of embedded systems to deploy the payload parachute when free-fall occurred.

Project Manager, Level 3 University Design Group Project **Academic Year 2021-2022**
In a team of 5, we designed a kitchen-top, powered appliance for the automatic release of vacuum-sealed jar lids and bottle tops.
As manager of the group, I applied Myers Briggs and Belbin's psychometric tests to evaluate how team members could be assigned roles aligning with their strengths and weaknesses. After market research and competitor analysis, we created a feasibility report for the stakeholders to outline the potential profit, the sustainability aims, and the sociological benefit the product would have. To ensure the project timeline was on track, I deployed a Gantt chart with the key deliverables. The final detailed design and presentation achieved a high 1st Class mark. The key skills I took away from this was how to be responsible, perform tasks swiftly and efficiently, and how to communicate with a team.

Breakrooms Coding Project, Collingwood College **October 2021 (1 week)**

Whilst working in a long-hour volunteering role, it was vital that my team members took regular breaks. Due to COVID, the capacity and availability of breakrooms in my university was limited. Using Flutter (Dart), I programmed a cross-platform web app which allowed members of my team to scan unique QR codes on the doors of their building to schedule breaks from work. This meant the capacity of spaces could be monitored for COVID regulations. Data was stored and manipulated using Google Firebase.

Head Freshers' Representative, Collingwood College **October 2021 (1 month)**

In this role, I managed a team of 45 creative individuals to organise ten days of social events for the largest Durham University freshers' week on record, for more than 640 new students at my college.

With a budget of over £30,000 and government COVID guidelines changing daily, there were significant challenges faced. I learned how to motivate and inspire a team that was surviving on a few hours of sleep, how to adapt to last-minute changes, how to prepare and perform thorough risk assessments, and how to present and collate my ideas effectively. Took ownership of any failures and ensured the team worked effectively together, through regular meetings, bonding activities, and by introducing a 'buddy' system to help maintain moral.

Tech Committee Member, Collingwood College **Academic Years 2020-2023**

In this role, I set up lighting and audio equipment for performances and live events.

Through this, I reinforce my electrical theory knowledge with practical experience. This requires a strong sense of responsibility and excellent communication, as there are several hazards that could cause serious harm, such as the heavy equipment.

Designing a Touch-Free ParkRun timing system, University Group Project **Academic Year 2020-2021**

Currently, ParkRun uses volunteers that hand out tokens and manually record timings. This wasn't feasible due to COVID, and my team's project addressed this.

I gained knowledge on design development cycles – such as assessing the market's needs, developing tests and surveys, analysing data and continuous iterative design. It engaged my creative and innovative mind and taught me how to present effective solutions.

Model Car, University Group Project **March 2020 (2 months)**

Making a model car capable of driving forward, tapping a wall, then moving back the same amount of distance through mechanical distance measuring techniques.

This project was experimental and more practical than higher level designs, allowing me to develop key skills, from soldering components and circuits to the computer aided design of 3D-printed rack and pinions.

Work Experience, Health and Safety Executive **July 2018 (1 week)**

Working closely with different departments at HSE, I learned about the essential role it acts in the engineering industry. It was interesting to discover the variable components of risk, as well as unexpected areas that can cause significant harm. When applied to engineering applications, such as space exploration, it is clear that thorough and vigorous testing must be performed for a mission to be a success. Moreover, the safety policies created would not be possible without the entire team working effectively to gather and share data from their research, which is fundamental to success.

Physics and Engineering Society Member, St Ambrose College **October 2017 – July 2019**

I prepared and performed presentations, to fellow students, on different emerging sectors within physics and engineering. I also worked in teams for research and design competitions, such as for the strongest paper bridge.

Key Skills: Efficient research and investigation ability, as well as producing presentations that convey essential details without being too technically-complex for the younger students.

Technical Skills

- **Visual Basic (10yrs): Advanced**
- **C++ (7yrs): Advanced**
- **Python (3yr): Advanced**
- **Excel: Advanced (LinkedIn: Top 5% out of 15.4M people)**
- **MATLAB: Intermediate**
- **SOLIDWORKS, CAD: Intermediate**
- **LTSPICE: Intermediate**
- **Java (2yrs): Intermediate**
- **Flutter (2yr): Intermediate**
- **SQL (1yr): Intermediate**

Volunteering

Start	Duration	Organisation	Description
2020	1-month	Durham University	Fundraising for Student Mind, using running/sports.
2019	3 days	DUCK, Durham	Raising money and awareness for Amnesty. International via the 'Jailbreak' challenge.
2019	1-week	Shrewsbury Pilgrimage, Lourdes	A week-long experience assisting people with disabilities and seniors.
2017	2 years	St Ambrose College	Student mentoring GCSE Maths, Computing and Geography.
2017	2 years	Edmund Rice International	Spreading advocacy and awareness of those in need – focusing on homelessness in the UK.
2017	4 weeks	National Citizen Service (NCS)	Creating a fundraiser, presenting to stakeholders at Dragon's Den and then running the event.

Interests

Programming

I love programming in my spare time, whether it's a C++ 3D Physics and Rendering Engine using OpenGL, a Flutter App for mobile, or an SQL database and Java GUI for a product management system. Similarly, I use python to develop a range of tools – from stock exchange bots to automated schedule generators for the teams I organise. I further develop my programming skills and engineering knowledge through physical applications, such as using an Arduino micro-controller and ultra-sonic sensors in a project to make a self-driving RC car from scratch. I find that most programming languages are transferrable and can be quickly learned.

Social Media Ambassador, Durham University Engineering Dept **Academic Years 2021-2023**

I maintained the Department's social media accounts, proactively sought news stories and engagement opportunities from academic staff, industrial partners, and student engineering groups, such as the 'Women in Engineering' society. I also created promotional content for various social media platforms (podcasts, YouTube videos, Instagram, Facebook, and Twitter).

Events Coordinator, Durham University **October 2020 – June 2023**

Assisted the Events Team to organise formal, three-course meals with drinks receptions and entertainment for 250-1600 guests. I hired performers and musicians and was responsible for ensuring their needs were met. Furthermore, I performed speeches and awards-giving, which helped boost my confidence and improve my public speaking. Often, this role required working under heavy time pressures and deadlines, which I learned to handle with a breeze.

Gymnastics and Trampoline Club President, Captain, and Social Media Officer **October 2019 – June 2023**

In 2019, I competed for Durham University in the Northern English University Trampoline league. In 2020, I became the Publicity Officer for the club, meaning I focused on advertising the club through media campaigns, social events and online interactive media. In 2021, I was voted in as the Captain for Durham University Gymnastics, where I organised taxi and gym hires, along with taking my team to national competitions. In 2022 I was elected club President, meaning I ran the whole organisation alongside my committee of 12 and budget of £8000. I learned the importance of leading by example and focused my goals on making the club an inclusive, welcoming environment for all.

Cheerleading **October 2019 – June 2023**

As a sport, cheerleading is the epitome of teamwork and communication. Without it, the advanced stunts that we perform would not be possible. My team performed at several charity fundraising matches, and the atmosphere that was created is enough motivation for a lifetime. As coach I ensured each teammate was comfortable with the rate of skill progression, and that the team atmosphere was built on strong, trusting relationships.

YouTube Channel **October 2014 – 2016**

I ran a YouTube channel where I got over 30,000 views for my creative coding concepts, conveyed using the popular video game, Minecraft.