Simon Staal

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EDUCATION

09/2019 – 06/2023	**MEng Electronic and Information Engineering** *Imperial College London*	London, UK

- Achieved 1st in First (73% overall) & Second Year (83% overall), starting penultimate year
- Obtained the 2021 Head of Department Prize for top academic performance and on the 2021 Dean's List for academic excellence
- Modules of interest: Information Processing (79%), Algorithms and Complexity (100%), Instruction Set Architecture and Compilers (86%), Programming for Engineers (94%), Digital Electronics and Computer Architecture (81%)

2014 – 2018	**International Baccalaureate** *St. Peter's College*	Adelaide, Australia

- Placed in the top 10 graduates of my year with 41/45
- Relevant subjects: Physics HL (7), Mathematics HL (6), French HL (7), Chemistry SL (7)

PROFESSIONAL EXPERIENCE

RME Project Management Internship
Amazon

07/2021 – 09/2021 | UK

Worked with Amazon's reliability maintenance engineering robotics program team on a UK/EU project to update processes associated with their robotics stations. Collaborated with teams spanning different business sectors, developing strong communication skills and expanding my data gathering and analysis techniques.

Undergraduate Tutor
Imperial College London

11/2020 – 07/2021 | London, UK

Worked with the Department of Electrical Engineering to provide learning support to 1st Year students in programming and computer architecture.

Academic Tutoring

11/2018 – present

Providing teaching support part-time for students from Years 5-12 in STEM topics, with a focus on Mathematics (both in-person and remote).

SKILLS AND AWARDS

Technical Skills

C / Assembly / C++ / Node.js (Advanced)
SystemVerilog / Python / SQL / MATLAB (Intermediate)
Experienced in Bash scripts and Git
Certified AWS Cloud Practitioner
Capable of writing clear documentation using LaTeX and markdown

Other Skills

Fluent in French and English, basic Dutch
Certified First-Aider
Background of photo/video editing with the Adobe Suite

Awards

EIE 2nd Year Head of Department Prize (2021)
Dean's List for Academic Excellence (2021)
Australian Institute of Physics SA Bragg Certificate (2019)
AMT Australian Mathematics Competition Distinction (2018)
Charles Gillham Memorial Prize for Physics (2018)
Australian Mathematics Competition Senior Division Distinction (2018)
Da Costa Scholarship for Best Academic Performance (2017)
SA/NT Public Speaking Rostrum Voice of Youth Semi-Finalist (2017)

PROJECTS

05/2021 – 06/2021	**Debonair (85%)** 🔗

- Worked in a team of 6 to build a fully integrated rover system capable of exploring environments, identifying and navigating around obstacles, record and send data and respond to user input.
- Created the entire system architecture, setting up an AWS EC2 instance to act as an MQTT broker communicating over SSL/TLS to handle fully secure communication between our web-app and the rover itself.
- Developed the back-end of the web app, also hosted on AWS, working in Node.js to handle HTTP requests from our front-end over SSL/TLS for full encryption, updating and reading from an external database and sending instructions to the rover.
- Wrote a Node.js pathfinding module in C++, using NAPI to interface between the C++ code and Node, allowing for complex pathfinding in micro-seconds of processing time.
- Programmed an ESP32 micro-controller to act as the 'brains' of the rover, sending regular updates to our web-app and transmitting instructions between the other rover subsystems.
- Demo: https://www.youtube.com/watch?v=QJuqwNQwGvM 🔗
- Github: https://github.com/sts219/Debonair 🔗

02/2021 – 04/2021	**Odyss-C Compiler (80%)**

- Developed a preprocessed C90 to MIPS assembly compiler in a pair, with full support for integer and floating point data types, pointers and arrays, as well as limited support for characters.
- Worked on workflow scripting, testing and AST visualization. Also implemented many basic C language features, such as loops, enums, if/else statements and more, as well as internal memory management, scoping, and stack/frame handling.
- Github: https://github.com/sts219/Odyssey_C_Compiler

02/2021 – 03/2021	**World of DE-10s (A+)**

- Built an online, 1v1 tank game with a team of 6, involving an IoT system where 2 FPGAs, acting as controllers, are connected to 2 PCs which act as nodes. These nodes communicate with a TCP server hosted on an AWS EC2 instance. This instance handles communication between the player nodes and a 3rd PC which runs the game in unity, allowing for real-time gameplay from anywhere in the world.
- Personal role was focused on setting up the AWS EC2 instance running the TCP server, which involved configuring the necessary settings and writing scripts to automate server environment initialisation and allowing the server to be booted up remotely via SSH.
- Github: https://github.com/sts219/World_of_DE10s

11/2020 – 12/2020	**MIPS CPU (83%)**

- Created a fully functional, synthesizable processor in verilog, compliant with the MIPS instruction set specification (Revision 3.2) and capable of interacting with any Avalon compatible memory interface as part of a team of 5.
- Includes an independent test-bench which can be used to assert the functional correctness of any given CPU.
- Worked on all aspects of implementation, including testbenching, workflow automation and CPU design.
- Github: https://github.com/sts219/MAPS-MIPS-CPU

05/2020 – 06/2020	**YTB Circuit Simulator (66%)**

- Worked in a team of 3 to create a software package in C++ which performs a transient analysis on a circuit, outputting the voltages at each node and currents through each component in a CSV format.
- Supports resistors, capacitors, inductors, voltage sources and current sources and up to 100 nodes, with performance testbenching for node and component complexity.
- Developed I/O interface and data representations, as well as take lead on performance optimisation.
- Github: https://github.com/sdoif/YTBCircuitSimulator

VOLUNTEERING

10/2021 – present	**Wellbeing Representative**	London, UK

Imperial College Electronic and Information Year 3

Working to improve student life as Imperial College's well-being union representative for the 3rd year EIE cohort. Gather data on student issues through surveys and 1-1 discussions and co-ordinate with other representatives to raise these problems to the department.

2020 – 2021	**Mentoring**	London, UK

Collaborated with Imperial's Electrical Engineering Society to provide advice to first year students, which developed into 1-1 mentoring about academics, internship applications and maintaining a healthy work-life balance.

2017 – 2018	**French Society**	Adelaide, Australia

Spent 2 years heavily involved in St. Peter's French Society, working as treasurer and president. Collaborated with other schools and local french teaching organisations to create events for younger years, expanding students' appreciation of french language and culture.

2016	**Burnside Library**	Adelaide, Australia

Worked part-time twice a week after schools to support the local Burnside community library