NICK MARKS

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EDUCATION

BSc Computer Science and Pure Mathematics |
BE Electrical and Computer Systems Engineering

Monash University (WAM: 87.8%, GPA: 3.88/4.00)

03/2020 - 07/2024 | Melbourne, VIC

- *Relevant coursework (BSc):* Advanced Algorithms, Data Structures, Operating Systems, AI, Computer Architecture, Linear Algebra, Advanced Calculus, Modelling and Simulation, Group Theory, Real & Functional Analysis, Graph Theory.
- *Relevant coursework (BE):* Embedded Systems, Digital Systems and Logic, Deep Learning, Probability Modelling, FPGA/ASIC Design, Electrical Circuits, Signals and Systems, Information Theory, Networking, Energy/Power Systems, Web-app Development, Fluid Mechanics.

Semester Abroad

Purdue University (WAM: 92.1%, GPA: 4.00/4.00)

01/2023 - 05/2023 | West Lafayette, IN

- *Relevant coursework:* Integrated Circuit Design, Control Systems, Electromagnetics, Artificial Intelligence (AI) and Machine Learning.

PROJECTS

Autonomous Navigation through Offline Deep Learning

07/2023 - 07/2024 | Monash University

- Researched applications of offline deep learning techniques to autonomously navigate a Penguin Pi bot around varying complexities of road tracks.
- Crafted pipeline for training and deploying a model trained via Implicit Q-Learning, using tools like regression analysis and grid-search to optimise trained experts.

Rocket Guidance Systems at Purdue Orbital

01/2023 - 05/2023 | West Lafayette, IN

- Produced control systems on Purdue Orbital's guidance and navigation team for rockets launched by the team in the middle of 2023 as part of Project Icarus.
- Crafted state models and Simulink implementations of rocket attitude control and implemented a real-time operating system to interface between the control system, onboard sensors and diagnostic systems.

Pollish - A Polling Social Media Platform

03/2022 - 11/2022 | Melbourne, VIC

- Produced a full-stack polling mobile application that collated and recommended content from friends that users could vote on. The backend was built using a Django REST framework and the frontend using React Native.

Robot-assisted Drone Navigation at Monash DeepNeuron

08/2022 - 11/2022 | Monash University

- Developed a behavioral cloning-based approach to train a AI-assisted drone navigation system capable of flying point-to-point within simulation.
- Evaluated the model performance in comparison to a reinforcement-learning approach on a dataset generated by human participants in a small-scale trial (∼30 participants).

TECHNICAL SKILLS

- *Frontend:* JavaScript, React, React Native, NextJS
- *Backend:* Django, NodeJS, Express, GraphQL, Golang, Java, C#
- *Other languages:* C/C++, Verilog, Python, SQL (MySQL, Postgresql), NoSQL (MongoDB), Redis, Matlab, LaTeX
- *AI and HPC:* Pytorch, TensorFlow, OpenMP, CUDA, CMake, Docker, Pandas, Numpy
- *Cloud/DevOps:* AWS (Amplify), Google Cloud (Google App Engine), Linux, Bash, Git

LANGUAGES

English
German

EXPERIENCE

CO2 Conversion Project Lead

Monash Carbon Capture and Conversion

08/2021 - 12/2023 | Melbourne, VIC

- Founded a large-scale research project on the electrochemical reduction of CO2 into fuels in a novel, catalysed flow cell environment.
- Self-taught relevant advanced chemistry to grow the team to 10+ students and established relationships with research fellows and professors at my university and abroad.
- Our team received US$250,000 as a top 23 university finalist worldwide in the XPRIZE Carbon Removal Competition.

Lead Software Developer

Monash Young MedTech Innovators

02/2022 - 12/2022 | Melbourne, VIC

- Led a small team in the production of a cloud-based web-app built using the MERN stack. The app integrated internal medical platforms across a conglomeration of nearby hospital groups.
- Designed the app from scratch and oversaw ongoing consultation with the end client regarding requirements and specifications as well as to manage feature releases to production.

Physics Textbook Author

Edrolo

10/2019 - 02/2022 | Melbourne, VIC

- Authored Year 11 and Year 12 physics textbooks and produced digital content used in ∼40% of classrooms across the state of Victoria.

COMPETITIONS

ISC21 Student Cluster Competition (2nd prize)

11/2021 | Remote

- Optimised builds of scientific applications written in Fortran, such as XCompact3D.
- Bench-marked builds simulations running on distributed systems, improving parallel performance with OpenMP.

A-HUG Cloud Computing Hackathon

07/2021 | Remote

- Ported scientific and AI applications to an ARM-based architecture and bench-marked the relevant differences in performance between the ARM architecture and the native one.

AWARDS & ACHIEVEMENTS

- Dean's honour roll for Faculties of Engineering and Science (2020-2022).
- School Captain of Scotch College, conducted post-graduation in a full-time capacity (2019).
- Graduated high school with ATAR of 99.95 (top 0.05% of country). Co-Dux of School, Dux of Literature (2018).
- Recipient of SAGSE Scholarship for German Language Exchange (2018).