

Education

University of Cape Town

Bachelor of Science in Engineering in Mechatronics

2020 - 2023

Final year GPA: 80.93%

- Awarded with First Class Honours, Dean's Merit List, and Golden Key Membership
- Class Medal: Energy Conversion & Power Electronics 2 (EEE4117F) - 92%
- Research Project: Intelligent energy management scheme of a hybrid microgrid using machine learning
- Winner of the Growthpoint Greenovate sustainable building research competition.

Rondebosch Boys' High School

2014 - 2018

Academic Distinction, National Senior Certificate average: 90.7%

Deputy Head Boy

Relevant Experience

Economic and Energy Security Optimisation of a Hybrid Microgrid Using Machine Learning

Primary Researcher

July 2023 - April 2024

- Used HOMER Pro and PVsyst to size a hybrid microgrid including PV, wind, diesel and battery storage.
- Employed Machine learning and Reinforcement learning to design an automated energy management system. The system increased energy security, decreased diesel generator usage, and reduced operating costs.
- The research paper has been submitted to IEEE Africa Power and is under peer review.

Centre for Renewable and Sustainable Energy Studies (CRSES)

Renewable research centre

Vacation work intern

July 2022

- Produced a site-specific technical and economic pre-feasibility report for PV installation.
- Trained in HOMER Pro & PVsyst to model available solar resources and production.

iLab - Oregon State University

Innovation and research engineering lab

Design Engineer and Machinist Intern

Jan - Mar 2024

- Developed complex problem-solving skills, innovation, design and prototyping skills.
- Participated in a 4-week business accelerator course for start-up founders.
- Trained in machine shop skills such as using a mill, lathe, CNC, plasma cutter, welding and 3D printing.
- Experience using Autodesk Inventor CAD software for design and prototyping.

ThingKing

Interactive electronic installations

Freelance Electronic Specialist

2022 - Present

- Assist with the design of interactive electronic installations, such as the Cape Town V&A sign.
- Aid in the construction, design and deployment of IoT custom electronics.

RocketHour

Live online coding classes

Code Tutor & Tutor Trainer

Aug 2020 - 2023

- Teaching the fundamentals of code to young children in a fun, interactive online class.
- Collaborated in the development and delivery of a 10-week training program for new tutors.
- Contributed to the startup's growth, supporting the increase in students from 150 to 600 and the expansion of staff from 5 to over 30 members.

Entrepreneurial Experience

Moths Incorporated

Event lighting solutions

Co-founder

2022 - Present

- Coordinating with my business partner, we designed, iterated, and created an events lighting system.
- Developed a unique brand based on our artistic lighting configurations and custom builds.

Jou Ma Se Soil

Co-founder & Web developer

Indoor plant potting soil

2020 - 2022

- Developed a nutrient-rich and completely sustainable product with bio-degradable packaging.
- The sole developer for our website, programmed using React and a Heroku database.

Gap Year and Sport

Gap Year - solo motorcycle trip through Africa

2019

Starting in Monaco, where I had been working as a Deckhand on super yachts, I travelled across Europe to Turkey. From Turkey, I navigated the complex bureaucracy of shipping and importing a bike to Egypt. I then drove down the East coast of Africa, exploring the vibrant and varied cultures in each country. The extreme poverty and wealth disparities that I experienced solidified my desire to contribute toward the just and sustainable development of Africa! I undertook the solo adventure at age 19, relying on my trusty Honda Transalp, perseverance, and unwavering belief that there is always a way forward (and a large dose of luck)!

Sport - Rowing

- Stroke of the UCT first eight at SA University's Boatrace 2021
- Winner of the Men's B pair at SA Senior Rowing Championships 2021
- Rondebosch Boys' High School Rowing Captain 2017 - 2018
- 5 times medallist at SA Schools Rowing Championships 2014 - 2018

Skills

Soft Skills

- Teamwork With 7 years of rowing experience, I've thrived in the collaborative environment of a crew, valuing the shared vision, close-knit relationships and teamwork.
- Feedback At RocketHour, I learned the importance of continuous feedback and growth, implementing a mentoring system focused on self-reflection and constructive criticism.
- Communication As Deputy Head Boy, I excelled in public speaking and presentations, winning first place in the Greenovate Competition and ranking 2nd for my thesis demonstration.
- Collaboration Growing up in South Africa exposed me to diverse cultures, fostering my ability to collaborate effectively with individuals from various backgrounds.
- Organisation Balancing an engineering degree, rowing for UCT's first crew, and work at RocketHour required precise time management. Tools like Trello and ClickUp kept me organised.

Technical Skills

- HOMER Pro Developed strong HOMER Pro skills during my research into the design of hybrid microgrids incorporating PV, wind, diesel, and battery storage, as well as during vacation work with CRSES to model and size residential PV systems.
- Renewable Tech Developed a keen interest in Renewable Technologies from a young age thanks to my father's work, reinforced through formal education in electrical engineering.
- MS Office Proficient in all MS Office tools through extensive use during schooling.
- Python Employed Stable-Baselines3 library in Google Colab to train an autonomous energy management agent within a Reinforcement Learning environment.
- MATLAB Proficient in MATLAB and Simulink, achieving 90% in my exit-level mechatronics course utilising these tools for dynamic systems modelling (UCT 2023).
- Electronics Experienced in embedded systems and electronics through projects with Moths Incorporated, ThingKing, and university projects.
- Machining Skilled in using various machine shop tools, including welding and CNC milling for diverse projects ranging from artistic sculptures to research tool fabrication.