

CHRISTOPHER CONROY

Masters Student in Electrical and Computer Engineering (Machine Learning and Data Science)

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EXPERIENCE

Machine Learning Engineer

Rhoman Aerospace

May 2023 – August 2023

Los Angeles, USA

- Developed drone **simulation data generation**, collection and management scripts.
- Implemented **visual odometry (VO)** for drone **pose estimation** using OpenCV.
- Researched and summarized **deep learning** literature for VO drift reduction.
- Designed, implemented and trained **linear models** and **neural networks (MLP and LSTM)** for VO drift reduction. Performed **feature engineering and selection**.
- Technologies: Python, PyTorch, Scikit-Learn, Pandas, AirSim, Unreal Engine, PX4.

Part-Time Software Engineer

Graphene Economics

May 2018 – August 2022

Johannesburg, South Africa

- Developed in-house desktop **software platform** with **cloud database** for management of **sensitive financial data** for several multinational companies.
- Designed **system architecture**, **database structure** and **GUI**.
- Implemented business logic and **CI/CD pipeline**. Managed **cloud** resources.
- Technologies: Java, MySQL, Azure, HTML, CSS, JavaScript, Node.js, OOXML.

PROJECTS

Sign Language Recognition using Deep Learning

University of Southern California Project

November 2022 – December 2022

- Developed custom **CNN model** for American Sign Language to text translation.
- Utilized **transfer learning** using **GoogleNet** and **ResNet18** architectures.

Autonomous Underwater Vehicle (AUV)

University of Southern California AUV Design Team

August 2022 – Present

- Underwater vehicle developed to compete in the annual RoboSub competition.
- Developing the vehicle's **computer vision** system to perform **object detection** using **deep learning** as well as the vehicle's **simulation** environment.
- Technologies: C/C++, Python, Linux, ROS, Gazebo, YOLO, PyTorch, Jetson Xavier.

3D Cube Construction Robot

Individual Capstone Design Project

March 2021 – December 2021

- 4 DoF **gantry robot** to construct arbitrary 3D shapes using small cubes.
- Developed **traditional computer vision** system from **first principles** to detect and **localize cubes in 3D space** and facilitate closed-loop construction.
- Developed **desktop interface** with a **real-time render** of 3D construction model.
- Engineered **embedded robot controller** with a **custom PCB** and drivers.
- Designed and **constructed robot** with custom machined and **3D-printed** parts.
- Won EECE capstone project competition** at the University of Pretoria.
- Technologies: C/C++, Python, OpenCV, OpenGL, Qt, STM32, KiCAD, Fusion 360.

EDUCATION

MS Electrical and Computer Engineering (Machine Learning and Data Science)

University of Southern California

Aug 2022 – May 2024

Los Angeles

- GPA: 3.93
- Fulbright Foreign Student Program
- Frederick Angus Gross Scholarship Award
- Best student in Machine Learning, Probability and Digital Image Processing Courses

BEng Computer Engineering

University of Pretoria

Feb 2018 – Dec 2021

South Africa

- CGPA: 89.52% (>75% is an A in South Africa)
- Best Electrical, Electronic and Computer Engineering Capstone Project
- Best Computer Engineering Student
- Vice-Chancellor's Distinguished Merit Award
- Golden Key Chapter Award - Top 6 Member
- Second Highest GPA in TuksRes Award - 97% (2nd best out of ± 10 000 students)
- TuksVillage Top Scholar Award
- Dean's Merit List: 2018-2021
- Golden Key International Honor Society

SKILLS



INVOLVEMENT

- USC Autonomous Underwater Vehicle Team
- USC Liquid Propulsion Lab
- USC Spikeball Club Member
- New Student Mentor, University of Pretoria
- Mathematics Tutor for underprivileged students, Eersterust Highschool
- Common Purpose Leadership Program