

Education

Pretoria **University of Pretoria** **Feb 2019 – Dec 2025**

- **MEng Computer Engineering**, Intelligence Systems Research Group, Nov 2023 – Dec 2025.
- **BEng Computer Engineering**, Jan 2019 – Dec 2022.
- Cisco Certified Network Associate (CCNA) - Advanced Routing and Switching, 2021.
- Graduate Modules:
 - Pattern Recognition and Signal Processing (EAI732/733), Artificial Intelligence, Computer Vision, Machine Learning, Embedded Systems, Data Fusion, Computer Architecture and Systems (EAS410), DSP Programming and Application (ESP411), e-Business and Network Security (EHN410).
- Major Undergraduate Modules:
 - Intelligent Systems (EAI320), Software Engineering (EPE321), System Engineering (ERD320), Control Systems (EBB320), Analogue Electronics (ENE310), Microprocessors (EMK310), Digital Communication (EDC310), Electromagnetic Compatibility (EME310), Differential Equations (WTW 256), Calculus (WTW258), Data Structures and Algorithms (COS 212).

Project Experience

- **3D Object Detection in Radiance Fields** (2024–2025 MEng Dissertation): Design and implementation of a convolutional neural network-based 3D object detection pipeline operating directly in 3D reconstructed radiance fields (NeRF, 3DGS) in Python, CUDA. [Interactive Viewer](#)
- **Object Detection Evaluation Framework** (2023): 3D object detection evaluation framework designed to automate algorithm configuration, dataset pre-processing, and comparison reports in Python, PyTorch.
- **Autonomous Lecture Smart Camera** (2022): Design and implementation of an embedded system featuring 2D object detection, tracking, action detection, and PWM-controlled PTZ camera for virtual classrooms in Python, C, C++.
- **Digital Online Cluedo Board Game** (2021): Design and implementation of a cross-platform digital Cluedo board game in C++ via Qt5 and OpenGL. The application features a client-server architecture (TCP/IP), GUI, AI, and chat functionality.
- **Microcontroller-based Autonomous Robotic Vehicle** (2021): Design and implementation of a line-following vehicle consisting of DC motor drivers, photodiode sensors, and navigation algorithms in ASM.

Work Experience

Vacation work **MultiChoice Group** **Jan 2022 – Feb 2022**

- **Innovation Team**: Gained hands-on experience and exposure to the company's media software stack, video distribution, fibre technology, and internet and security protocols.
- **Data Science Team**: Worked on a data analysis project to identify and visualise trends in customer data captured on deployed DSTV Explora decoders using Python, SQL.

Additional Experience

Community Work **TuksNovation** **Jul 2020**

- **Researcher**: Participated in a research project to identify and analyse valid sources of funding for small businesses and startups, including venture capitalists, angel investors, and other business incubators.

Languages, hardware and technology experience

Languages

- Python, C/C++, Java, Delphi, Matlab, JS, HTML/CSS, Swift, Flutter, ASM, VHDL, Verilog, SQL

Hardware

- Microcontrollers, FPGA, sensors (LIDAR, IMU, camera), actuators (DC motors, servos)

Technologies

- VSCode, PyTorch, Git, Bash, Docker, XCode, ROS2, QT, Firebase, Fusion 360