CV for Fraser Montandon

Contact Information

Cape Town
South Africa
fraser.montandon@gmail.com
www.frasermontandon.com

Demographics

Gender: **Male** Nationality: **Swiss and South African**

Education

University of Cape Town (UCT)
P.hD. Student – Electrical Engineering 2024 – Present
Advanced Digital Holographic Imaging for Resource-Limited Settings
- Member of the Digital Image Processing Research Group
- Member of the Marine Robotics Research Group

University of Cape Town (UCT)
M.Sc. Engineering – Electrical by Dissertation (with Distinction) 2022 – 2024
My research involves computer vision, digital holography, optoelectronics, polarisation microscopy, and machine learning to provide insight into detecting and classifying microplastics within a fluid stream and in ocean environments. Dissertation title: "Imaging-based lensless polarisation-sensitive fluid stream analyser for automated, label-free, and cost-effective microplastic classification"
- Member of the Digital Image Processing Research Group
- Member of the Marine Robotics Research Group

University of Cape Town (UCT)
B.Sc. Engineering - Electrical and Computer Engineering (with Honours II) 2018 – 2021
- Subjects: High Performance Embedded Systems, DSP, RF and Microwave Devices, Communication and Control Engineering
- Graduated with Honours
- Fourth year research project: "Lock-in amplifier for sensitive measurement of optical intensity"

University of South Africa (UNISA)
B.Com. Financial Management 2017

Academic Appointments / Teaching Experience

University of Cape Town (UCT)
Assistant Lecturer
- EEE3090F - Electronic Devices and Circuits 2024 – 2025
- EEE2042S - Introduction to Analogue and Digital Electronics 2024

Teaching Assistant
- EEE3089F - Electromagnetic Engineering 2023
- EEE4122C - Communication Engineering 2022

Course Tutor
- EEE3097S - Engineering Design: Electrical and Computer Engineering 2021

Work Experience

Direct Data Digital CC
Owner and Automotive Electronic Engineer 2022 – Present

- Design and provide automotive electronic sensing and diagnostic equipment, along with electronic control unit services, across Southern Africa

Electronics Specific Skills

- Expert computer vision and digital image processing skills with a focus on in-line holography, lensless imaging, polarimetry, and microscopy
- Design of custom machine learning implementations including traditional and deep learning architectures
- Strong optoelectronics competency including design and implementation of solutions
- Expert knowledge and application of electrical components, including: analogue devices, semiconductors, and digital electronics
- Expert knowledge and application of several electrical communication topologies, including: SPI, I^2C, CAN, LIN, and Ethernet
- Strong coding and software development skills
- Design and implementation of microcontroller-based embedded systems and electrical circuitry including PCB design
- Software coding and calibration for automobile control modules
- Fault-finding on automobile electronic control units

Software knowledge

- Computer languages: C, C++, Java, Python, Julia, ARM assembly
- Software competencies: Matlab, KiCad, Autodesk Fusion 360, Feko, SQL, LaTex, Office – Word, Access, PowerPoint, Excel

Awards

- Marine Robotics Electrical Engineering PG Scholarship 2022 – 2024
- Vice-Chancellor's Research Scholarship 2023
- Masters Research Scholarship 2023

Publications

Fraser Montandon and Fred Nicolls. "Imaging-based Lensless Polarization-Sensitive Fluid Stream Analyzer for Automated, Label-Free, and Cost-Effective Microplastic Classification". In: *Advanced Intelligent Systems* (Nov. 2024). DOI: 10.1002/aisy.202400235