SAMUEL MBIYA

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PROFILE

- Working as an engineer, in the Digital Electronic Warfare research group at the Council for Scientific and Industrial Research (CSIR), on exciting problems in Electronic Support Measures (ESM) and Electronic Intelligence (ELINT)

- Qualifications: Bachelor's degree in Electrical and Computer Engineering from the University of Cape Town.

- Interested in research and development (R&D) work in Embedded Systems, Artificial Intelligence, Radar, Electronic Defence, and Sensor and Data Fusion.

- Passionate about engineering, technology and entrepreneurship.

SKILLS

Personal:
Self-motivation, Problem-solving and resourcefulness, Teamwork, Leadership, Communication, Fast-learner
Technical:
Programming Languages - Python, Matlab, Julia
Software development tools - Git, Github, VS Code, Jupyter Lab/Notebook, Linux CLI
Electronics - Soldering, Breadboard prototyping, Circuit design (with LTSpice), Microcontroller programming
Spoken Languages:
English (Fluent), French (Professional working proficiency)

EDUCATION

BEngHons in Electronic Engineering Feb. 2024 – present
University of Pretoria *Pretoria, South Africa*

- Coursework portion for a Masters Degree in Electronic Engineering (specializing in Electronic Defence)
- Focus areas of coursework: Electronic Defence (Electronic Countermeasures and Electronic Support)

BScEng in Electrical and Computer Engineering Feb. 2018 – Dec. 2022
University of Cape Town *Cape Town, South Africa*

- Focus areas of coursework: Embedded Systems, Signal Processing, Computer Science, Electronics, Engineering design

PROFESSIONAL REGISTRATION

Candidate Engineer (Reg. No: 2023206402) Jun. 2023 – present
Engineering Council of South Africa (ECSA) *South Africa*

WORK EXPERIENCE

Candidate Signal Analyst Jul. 2023 – present
Council for Scientific and Industrial Research (CSIR) *Pretoria, South Africa*

- Working on Electronic Warfare Support Measures (ESM) research and software development in the Digital Electronic Warfare Research Group at the CSIR.
- Prototyping and development of ESM signal processing algorithms using Matlab
- Guiding vacation work student projects

Graduate (Signal Analyst) in Training Nov. 2022 – Jul. 2023
Council for Scientific and Industrial Research (CSIR) *Pretoria, South Africa*

- Working on Electronic Warfare Support Measures (ESM) research and software development in the Digital Electronic Warfare Research Group at the CSIR.
- Prototyping and development of ESM signal processing algorithms using Matlab

Tutor: Electrical Engineering Design Principles (EEE3088F) Feb. 2022 – Nov. 2022
University of Cape Town - Department of Electrical Engineering *Cape Town, South Africa*

- Involved marking tests, assignments and project submissions

- Involved mentoring 4 teams throughout their course project, which involved designing and fabricating an environment sensing expansion board (HAT) for the STM32 discovery board.
- Students were exposed to circuit board design using KiCAD 6.0 and collaborative tools for version control and documentation such as Git and Github

Vacation work student
Council for Scientific and Industrial Research (CSIR)

Nov. 2021 – Feb. 2022
Pretoria, South Africa

- Worked in the Defense and Security Unit: Digital Electronic Warfare Research Group
- Involved benchmarking the performance of deep learning models for a classification problem in Electronic Warfare Support Measures (ESM), using Python (together with TensorFlow and PyTorch) and Julia (together with MLJFLux and Flux)
- Gained practical experience in applied Machine Learning (Deep Learning)

Vacation work student
Council for Scientific and Industrial Research (CSIR)

Jul. 2021
Pretoria, South Africa

- Worked in the Defense and Security Unit: Digital Electronic Warfare Research Group
- Involved an investigation on the use of deep learning models for a classification problem in Electronic Warfare Support Measures (ESM), using Julia and Julia ML packages (MLJFLux and Flux)
- Gained practical experience in applied Machine Learning (Deep Learning)

Vacation work student
Council for Scientific and Industrial Research (CSIR)

Dec. 2019
Pretoria, South Africa

- Worked in the Defense and Security Unit: Digital Electronic Warfare Research Group
- Involved writing a script using Python and OpenCV for the segmentation and extraction of spectrogram images
- Gained practical experience and was exposed to concepts in Radar, Electronic Warfare and Computer Vision

Vacation work student
Council for Scientific and Industrial Research (CSIR)

Jun. 2019 – Jul. 2019
Pretoria, South Africa

- Worked in the Next Gen. Enterprises and Institutions Unit: e-Government
- Involved working in a team on the design and development of workplace peer review web application using a modern web development stack and collaboration tools, such as ReactJS, SQL, Github and Trello
- Exposed to web development and agile software development; performed the role of scrum master, facilitating weekly stand-up meetings

VOLUNTEER EXPERIENCE

Faculty Mentor
University of Cape Town - Department of Electrical Engineering

Mar. 2021 – Dec. 2021
Cape Town, South Africa

- Part of the Dept. of Electrical Engineering First Years Mentorship Team
- Involved providing mentorship to a group of 3 first-year Electrical Engineering students, through advice and resources to enable them to successfully navigate through their first year of engineering studies at university

Technical Mentor
Google Developers Student Club UCT

Oct. 2020 – Oct. 2021
Cape Town, South Africa

- Ideation and planning of hackathons, together with the Core DSC-UCT Commitee
- Providing technical support for DSC-UCT hosted hackathons
- Facilitated a progress report session, during the 2021 DSC-UCTxYOCO Hackathon

Residence Mentor
University of Cape Town - Leo Marquard Hall

Oct. 2018 – Oct. 2019
Cape Town, South Africa

- Part of the 2019 Leo Marquard Hall Mentorship Team
- Helped incoming first year students, through advice and guidance to enable them to easily navigate through their first year of university

Logistics Coordinator
TeachOut

Oct. 2018 – May 2019
Cape Town, South Africa

- Communicated with teachers and educators to set up tutoring sessions at different schools and youth centres
- Organised transport for tutors to go to tutoring sessions

Tutor
TeachOut

Aug. 2018 – Oct. 2018
Cape Town, South Africa

- Tutored highschool learners, Maths and Science, in learning centres and schools in and around Phillipi community in Cape Town, South Africa