

Aphiwe Elihle Mthembu

aphiwelihle201@gmail.com | +27 61 914 5456 | Johannesburg, South Africa
[linkedin.com/in/appelirhsa](https://www.linkedin.com/in/appelirhsa) | github.com/appelirhsa

Professional Summary

Innovative and driven Electrical and Electronic Engineering student with a strong foundation in Math, Science, Coding, and Systems Thinking. Awarded the Eskom Bursary and experienced in hands-on engineering projects, statistical programming, and blockchain-based development. Adept in C, C++, and web technologies with a growing portfolio of work in simulation, analytics, and embedded systems. Strong communicator with experience in public speaking, teaching, and leadership.

Education

BEng in Electrical and Electronic Engineering 2023–Present
University of Johannesburg, South Africa.

- Eskom Bursary Recipient (2023–2026)
- Accepted at UJ, Wits, and UCT with bursary offers
- Key Courses: Electromagnetics 3A, Systems and Signals 3A, Digital Systems, Modeling and Simulation, Statistics for Engineers

National Senior Certificate (Matric) Completed 2022
Thornhill Christian College, South Africa

- Aggregate - Level 7
- Achieved 94% in isiZulu and strong performance across STEM subjects
- Taught Agricultural Sciences to fellow matric students — 100% pass rate
- Delivered motivational talks and exam preparation strategies to peers

Certifications

- Artificial Intelligence in the 4IR (SLP) – UJ
- AFRICAN INSIGHTS-15 CRED NQF5 – UJ
- ADVANCED INFORMATION LITERACY – UJ
- BUILDING BLOCKS OF INFORMATION LITERACY – UJ

Technical Skills

Languages: C, C++, MATLAB/Octave, JavaScript, HTML, CSS, MS Excel, MS Word, MS PowerPoint, MS Teams

Tools: Git, MPLab, LTSpice, TradingView API

Specialities: Electric circuit simulation, data visualisation, blockchain web dev, circuit building, report writing

Analytical Thinking: Skilled at identifying patterns, causes, and solutions through observation and structured reasoning.

Communication: Strong in verbal and written expression, from technical reports to public speaking and peer education.

Team Collaboration: Effective in group environments, balancing responsibilities, listening actively,

and contributing ideas.

Leadership: Proven ability to guide peers, manage projects, and motivate others (e.g., tutoring, public talks).

Adaptability: Quick to learn new tools, tackle unfamiliar problems, and navigate changing academic or technical environments.

Projects & Research

Diagnosing Water Shortages in Johannesburg

Mapped interdependencies between electricity outages and water crises. Presented analytical findings to university stakeholders.

UJ Bus Delay Optimization

Recorded transport inefficiencies and proposed data-driven route improvements using basic algorithms.

C++ Jupiter Gravity Data Analysis

Built a parallelised program to compute mean, median, mode, min/max, and histogram using OpenMP.

Custom CPU Simulator (C)

Designed a CPU simulator with registers, memory, and instruction set, emulating fetch-decode-execute cycles.

Synchronous Generators Report

Analysed phasor diagrams, voltage regulation, machine operation modes—submitted structured engineering report.

Industry Interviews & Reflection

Mr. Mhlengi Gazu – Civil Engineer, Dept. of Transport

Learned about project workflows, geotechnical operations, ethical practice, and interdepartmental coordination.

Mr. Sikelela Motha – Maintenance Trainee, Engen

Explored industrial asset maintenance, time management, and teamwork within petroleum infrastructure.

Reflective Report (60 pages)

Compared engineering cultures, tools, roles, ethics, and multidisciplinary teamwork in public vs private sector.

Autism Sensory Tent – LED Strip Programming

Group Project, University of Johannesburg March 2025

Designed and programmed an RGB LED strip to create a calming and responsive lighting system tailored for learners with autism and sensory processing challenges.

Integrated basic microcontroller logic to adjust lighting modes for different sensory needs.

Collaborated with education specialists and a therapist to align technical solutions with behavioural feedback and ergonomic principles.

Leadership & Engagement

- **Agricultural Science Peer Tutor (Matric)** – 100% pass rate among peers
- **Motivational Speaker** – Addressed matric learners on exam strategies, engineering careers, and bursary applications
- **Project Lead** – Facilitated group Zoom sessions, managed deadlines, and compiled collaborative reports
- **Bible Study Facilitator** – Conducted sessions virtually and in person

Languages

isiZulu: Native (94% Matric)

English: Fluent-C2 (Academic and Professional)

Extracurricular Interests

- Cryptocurrency and forex trading
- Data visualisation and algorithmic thinking
- Peer education and youth outreach

References

Academic mentors - Prof. Johan Meyer Tel: +27 (0) 11 559 3845
Industry contacts, Mr. Mhlengi Gazu and Mr. Sikelela Motha