

# THEMBA MARTIN MTSHELWANE

Bachelor of Science in (Electrical) Information Engineering,

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## SUMMARY

Electrical Information Engineering graduate from the University of the Witwatersrand with expertise in system design, signal processing, and circuit simulation. Proficient in leveraging computational tools to simulate real-world phenomena, and applying mathematical and engineering rigor to solve complex challenges. Key projects include digitally modeling an ancient acoustic phenomenon. I excel at communicating complex technical concepts and have demonstrated a self-starter attitude through my experience as a software developer.

## EDUCATION

Bachelor of Science (Hons) in Electrical Engineering

[University of the Witwatersrand](#)

📅 2023

📍 Braamfontein, Johannesburg

**Main Courses:**

- Electronics I and II , Control Systems I and II
- Signals & Systems I and II
- Computational Mathematics and Engineering Mathematics I and II
- Software Development I, II and III
- Data and Information Management

## WORK EXPERIENCE

Software Developer Intern

[Tshimologong - Digital Innovation Precinct.](#)

📅 July 2024 – Present

📍 Johannesburg

- Currently working as a fullstack developer, focusing on building responsive and dynamic websites using the MERN Stack with TypeScript, Tailwind CSS, and Redux Toolkit.
- I utilize engineering principles in my websites to optimize performance and code maintainability.
- I am responsible for planning, managing, and implementing front-end and full-stack web projects.
- I have gained experience in UI./UX design through designing frontend websites on Figma.

Freelance Web Developer

[University of the Witwatersrand](#)

📅 Feb 2023 - Feb 2024

📍 Online

- I independently developed and deployed two full-stack Learning Management Systems demos for a client. I leveraged React, NextJS, Chakra UI, and Firebase for these applications.
- The main feature is the Binary Tree format of the quizzes, which allows lecturers to pinpoint students' problem areas.
- I improved my communication skills through in-depth and detailed project specification meetings with my client.

Teaching Assistant

[University of the Witwatersrand](#)

📅 Sep 2023 - Nov 2023

📍 University of the Witwatersrand, Johannesburg

- I assisted in marking and reviewing student labs and projects. Labs and projects were written in C++ and used SFML for graphics and Doctest for unit testing.
- I developed effective communication skills in conveying technical concepts to students.

## PROJECT EXPERIENCE

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### Digital Acoustic Model

#### Investigation Project

📅 July 2023 - Nov 2023

📍 University of the Witwatersrand, Johannesburg

- My team digitally modeled the ancient clap-echo acoustic phenomenon of the Temple of Kukulkan in Mexico, achieving 92% accuracy.
- We utilized signal and system concepts such as convolution, deconvolution, and filtering.
- The project required data collection, audio analysis, and data augmentation.
- We demonstrated successful collaboration in a small team.

### Aircraft Fuel Measurement System

#### Measurement Systems

📅 Jul 2022 - Nov 2022

📍 University of the Witwatersrand, Johannesburg

- I designed a fuel level measurement system for a Skyhawk Piper Seneca fuel tank.
- The system measures fuel levels between 13 litres to 65 litres with a resolution of 1.22 litres/mV.cm and has a bandwidth of 1kHz.
- I demonstrated proficiency in system design, simulation, and analysis using tools like MultiSim online.
- The design was deemed viable.

## SKILLS

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### Technical Skills:

- Engineering: Circuit Design, Circuit Analysis, System Modelling, MultiSim, MATLAB, and Simulink
- Front-end Development: HTML, CSS, JavaScript, TypeScript, React, Next.js, TailwindCSS, Redux Toolkit, and Zustand.
- Back-end Development: Express, NodeJS, REST-full APIs, JSON Web Token (JWT) and Zod.
- Database: Firebase and MongoDB.
- Programming Languages: JavaScript, Typescript, and C++
- Version control: GitHub
- Other: Figma and Trello.

### Soft Skills:

- Communication, Problem-solving, Adaptability, Time Management.
- Attention to Detail, Team Collaboration, Creativity, Critical Thinking.

## REFERENCES

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### Katlego Molala

**Company:** Tshimologong - Digital Innovation Precinct

**Position:** Supervisor

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### Philippe Ferrer

**Company:** University of the Witwatersrand

**Position:** Supervisor

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### Stephen Levitt

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**Position:** Senior Lecturer

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