- **Name:** Thato Thamsanqa Mabena
- **Location:** Pretoria, Gauteng (Open to Relocation)
- **Role:** BSc IT Final Year Student (CS Major) | AI & Systems Engineer
- **Links:** https://www.linkedin.com/in/thato-mabena-dev
- | https://github.com/PTA-Avenger | https://pta-avenger.github.io/thatomabena/

Professional Summary

"Final year Information Technology student (Majoring in Computer Science) with a strong focus on **Artificial Intelligence, Computer Vision, and Industrial IoT**. Proven track record of building production-grade systems, including an automated South African Smart ID verification pipeline and real-time vehicle telemetry dashboards. Author of research on ACE Tiny Reasoning Models. Passionate about solving complex local challenges in Fintech and Automation using **Python, Java, and Cloud (AWS/Azure).**"

Technical Skills (Grouped for readability)

- **Languages:** Python (Advanced), Java, C#, C++, SQL.
- **AI & Data:** PyTorch, TensorFlow, OpenCV, Pandas, Scikit-Learn.
- **Web & Backend:** Spring Boot, Django, FastAPI, .NET, Streamlit.
- **Cloud & DevOps:** AWS, Azure, Docker, MQTT, Grafana.

Featured Projects (The "Meat" of the CV)

Structure these exactly like this to hit the keywords.

1. Automated SA Smart ID Verification API (KYC Pipeline)

- *Tech:* Python, OpenCV, PyTorch (U-Net), EasyOCR, FastAPI, Docker.
- **Objective:** Built an end-to-end KYC solution to automate customer onboarding for South African financial institutions.
- **Key Actions:**
    - Trained a **U-Net segmentation model** to isolate ID cards from cluttered backgrounds. ○ Implemented a Deep Learning OCR pipeline (EasyOCR) to extract SA ID numbers and names with high accuracy.
    - Containerized the model using **Docker** and exposed it via a **FastAPI** endpoint for easy integration.

- *Result:* Reduced manual data entry time by simulating a 90% reduction in verification time.

2. Real-Time Vehicle Telemetry & Alert System (Industrial IoT)

- *Tech:* Python, MQTT, InfluxDB, Grafana.
- **Objective:** Developed a SCADA-like monitoring system for vehicle engine diagnostics (Targeting Automotive/Mining sectors).
- **Key Actions:**
  - Simulated vehicle sensors (Speed, Engine Temp) broadcasting data via **MQTT protocol**.
  - Built a real-time visualization dashboard using **Grafana** and **InfluxDB** time-series database. ○ Configured automated alerts (Slack/Email) for engine overheating events (>110°C).

3. Personal Finance Fraud Detection Engine

- *Tech:* Python, Pandas, Streamlit, Banking Logic.
- **Objective:** Designed a fraud detection algorithm for personal banking data.
- **Key Actions:**
  - Engineered a rule-based anomaly detection system to flag high-value suspicious transactions.
  - Visualized spending habits using **Streamlit**, providing instant user feedback.
  - Wrote comprehensive **Unit Tests** to ensure financial calculation accuracy.

Research & Publications

- **Paper:** "Development and Fine-Tuning of an ACE Tiny Reasoning Model."
- **Details:** Fine-tuned a Small Language Model (SLM) to improve reasoning capabilities on constrained hardware. Documented training methodology and performance benchmarks. **Education**

- ## BSc Information Technology (Computer Science Major) | North-West University | *Graduating 2027*
- *Relevant Modules:* Introduction to computing and programming, User Interface Programming I, Structured Programming I, Apps and Advanced User Interface Programming, Information Security, Object Oriented Programming, System Analysis And Design I, Data Analytics 2, Data Structures And Algorithms, System Analysis And Design 2, Cloud Computing, Data Structures & Algorithms.

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2. The Portfolio Website

Do not build this from scratch. Use a clean template (e.g., HTML5 UP or a GitHub Pages theme). The content matters more than the CSS. **The "Hero" Section**

- **Headline:** "Hello, I'm Thato. I build AI models that can see, and Industrial Systems that can speak."
- **Sub-headline:** "BSc IT Undergraduate | Computer Vision Specialist | IoT Developer."
- **Call to Action:** [Download CV] [View My Code]

The "Project Cards" (Crucial Detail)

You need a specific card for each project. Here is how the Smart ID card should look:

[Image: A GIF showing an ID card being scanned and text appearing]

Title: SA Smart ID Extractor

Tags: Computer Vision Docker FastAPI

Description: A KYC compliance tool that segments South African ID cards from images and extracts user data using Deep Learning.

Links: [View Source Code (GitHub)] | [Read the Case Study]

The "Research" Section

- Create a dedicated section for your **ACE Model paper**.
- Include an abstract of the paper.
- Provide a link to the PDF or the repository where the model weights are stored. *This impresses R&D teams (like CSIR or huge banks).*