

UNARINE DZIVHANI

MACHINE LEARNING & MOBILE ENGINEER

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SUMMARY

Machine learning and mobile engineer focused on computer vision on mobile. I work across the full path an image takes on a phone: image processing and preprocessing, model integration, the APIs behind them, and the Flutter app on top. I built a face-detection pipeline in Python with MTCNN and OpenCV that detects and normalises faces from raw images for model training, and shipped a production Android app in Flutter and Kotlin running an on-device machine learning model with a Gemini AI integration. I also teach AI and programming online and at university, which keeps my fundamentals sharp. Computer Science graduate with distinctions in software engineering.

TECHNICAL SKILLS

Machine Learning & Vision Python, TensorFlow, OpenCV, MTCNN, on-device ML, image preprocessing, NumPy

Mobile Flutter, Dart, Kotlin, Android SDK, Firebase, SQLite, background services, MethodChannels

Web & Backend TypeScript, Java, Next.js, Node.js, PostgreSQL, REST APIs

Tools Git, GitHub, Android Studio, VS Code, Google Colab, Figma

PROJECTS

Face Detection & Preprocessing Pipeline Python, TensorFlow, OpenCV, MTCNN, NumPy

[GitHub](#)

- Built an automated pipeline that detects, crops, and normalises faces from raw images for model training, with graceful handling of images where no face is found.
- Wrote a loader that runs MTCNN detection, resizes to 160x160, converts BGR to RGB, and outputs structured NumPy arrays ready for a FaceNet-style model.

PhaseOut - Production Android App Flutter, Dart, Kotlin, SQLite, Gemini API

[phaseout.unarine.com](#)

- Shipped a phone-automation app with a Kotlin foreground service that runs user schedules overnight and survives reboots, iterated through two public betas on real user feedback.
- Added an on-device battery model that learns per-day usage with a reinforcement-learning correction, and a Gemini integration that writes wellness reports from on-device statistics.

Retail Commerce Platform Flutter, Firebase, Riverpod, Firestore

[shop.unarine.com](#)

- Built a white-label shopping app and admin dashboard with Yoco payments, order tracking, and push notifications, using role-based Firebase Auth and deployable per business through environment variables.
- Structured the app on clean architecture with Riverpod state management and a real-time Firestore backend, running on Android and web from a single codebase.

SimpleVTube - Open-Source Desktop App Tauri (Rust), TypeScript, Web Audio API

[vtube.unarine.com](#)

- Built a cross-platform desktop app that animates a 2D character in real time from microphone input, with voice-activity detection, noise gating, and global hotkeys for streaming.

EXPERIENCE

Programming & AI Tutor University of Venda and Online

2025

- Teach programming, data structures and algorithms, and AI fundamentals to more than 60 students a month, in person at the university and online to learners anywhere, across second- and third-year and independent levels.
- Break down machine learning and AI concepts, from models to training data and evaluation, for students at mixed levels, with a 100% pass rate in every module I have supported.
- Run the tutoring both through the university and independently, building and keeping my own base of paying students, which keeps me sharp at explaining technical ideas simply.

Hackathons Mintek (Randburg), LVH, & More

2024 - 2025

- LVH, 3rd place: a Chrome extension that flags phishing through real-time analysis of malformed URLs. Mintek, 4th place: an automated pothole-patching concept taken from idea to pitch.

EDUCATION

BSc Computer Science University of Venda

2023 - 2025

Distinctions: Software Engineering, Distributed Operating Systems, Systems Analysis and Design, Evaluation of Information Systems.

REFERENCES

Dr Benson Moyo, Lecturer, University of Venda, benson.moyo@univen.ac.za · Dr T.B. Mphaphuli, Mentor, Grace Fellowship Bible Church, (+27) 72 067 1777.