ENOCK ONKARABILE BUYS

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Date of Birth: 26 January 2001 | South African

LinkedIn | GitHub | Portfolio | ALX Progress | Facebook

EDUCATION

BSc Honours in Computer Science (Artificial Intelligence) *Jan 2025–Present*
University of Johannesburg, Gauteng
Relevant Coursework: Generative AI, Reinforcement Learning, Advanced Machine Learning, Linux System Administration

BSc Mathematical Sciences *Jan 2020–Sep 2024*
University of Limpopo, Limpopo
Majors: Computer Science, Statistics

ALX Data Science Bootcamp *May 2025–Present*

- *Completed:* Professional Foundations (May 2025, 12 weeks)
- *Current:* Data Analytics (Aug 2025–Nov 2025, 14 weeks)
- *Upcoming:* Python Programming, Machine Learning, AWS Cloud
- *Progress:* ALX Profile

Grade 12 Matric (Bachelor's Pass) *2018*
Gaopotlake Secondary School
Focus: STEM subjects (Mathematics, Physical Sciences)

ACADEMIC PROJECTS

Fraud Detection: Generative AI Research *2025–Present*
Honours Thesis Project

- Developed and compared three GAN pipelines for synthetic fraud transaction generation
- Implemented custom GAN, TensorFlow WGAN-GP, and CTGAN with XGBoost
- Addressed extreme class imbalance (0.17% fraud ratio) in financial datasets
- Achieved F1-score of 0.775 and PR-AUC of 0.786 with optimal configuration
- *Stack:* Python, TensorFlow, CTGAN, XGBoost, Scikit-learn
- *Code:* GitHub Repository
- *Demo:* YouTube Video

Reinforcement Learning Game Agent *2025*
Artificial Intelligence Course Project

- Created Deep Q-Network (DQN) agent for Dots & Boxes game using self-play training
- Designed environment properties: Stochastic, Sequential, Discrete (16x16 grid)
- Implemented reward system with experience replay for sparse environments
- *Stack:* Python, PyTorch, Reinforcement Learning algorithms
- *Code:* GitHub Repository
- *Demo:* YouTube Video

Knapsack Optimization Research *2025*
Algorithm Analysis Project

- Conducted comparative analysis of Genetic Algorithms vs Binary PSO for 0/1 knapsack problem
- Performed systematic parameter sensitivity analysis across four configurations
- Demonstrated GA's superior solution quality (6.9% better) vs BPSO's computational efficiency (39.6% faster)
- Tested on uncorrelated instances with problem sizes 50, 100, and 200 items
- *Stack:* Python, NumPy, Optimization Algorithms
- *Code:* GitHub Repository

Ballet Action Localization *2025*

Computer Vision Research Project

- Implemented and compared CNN-LSTM with attention vs pure CNN for temporal action localization
- Utilized I3D feature extraction and full-stack deployment with TorchServe
- Developed interactive Streamlit web application for real-time video analysis
- Achieved 72.1% frame-level accuracy with LSTM-attention model
- *Stack:* Python, PyTorch, OpenCV, Streamlit, TorchServe
- *Code:* GitHub Repository
- *Demo:* YouTube Video

Hierarchical VAE Face Generation *2025*

Generative AI Research

- Implemented four-layer hierarchical VAE for low-resolution (32×32) face generation
- Investigated performance under computational constraints using CelebA dataset
- Analyzed blurriness problem and quality-diversity trade-off in VAE architectures
- Provided empirical benchmarks with FID score analysis
- *Stack:* Python, NumPy, Pandas, PIL
- *Code:* GitHub Repository
- *Demo:* YouTube Video

Secure Linux Backup System *2025*

Data Communications & Linux Administration Project

- Built automated encrypted backup solution for small-medium businesses
- Implemented BorgBackup with client-server architecture on Ubuntu 22.04
- Integrated cloud sync (Rclone) and monitoring (Grafana/Prometheus)
- Developed web interface (Vorta) for backup management and restoration
- *Stack:* Ubuntu, Docker, BorgBackup, Nginx, Let's Encrypt

Dating Platform with Matching Algorithms *2024*

Undergraduate Capstone Project

- Led team in developing full-stack dating application
- Implemented JWT-based authentication and preference-based matching algorithm
- Designed Firebase database schema for user profiles and interactions
- *Stack:* React, Node.js, Express, Firebase, JavaScript
- *Live Demo:* mingle-sa.vercel.app
- *Code:* GitHub Repository

WORK EXPERIENCE

IT Tutor *Jan 2022–Dec 2024*

Polokwane Tutors Pty Ltd, Limpopo

- Taught Java OOP programming and Computer Applications Technology
- Mentored students on final programming projects (PAT)

- Developed personalized learning plans improving pass rates

TECHNICAL SKILLS

Programming Languages:	Python, Java, JavaScript, SQL
AI/ML Frameworks:	TensorFlow, PyTorch, Scikit-learn, Keras, CTGAN
Data Science:	Pandas, NumPy, Matplotlib, Statistical Analysis, Optimization
Computer Vision:	OpenCV, I3D, Temporal Action Localization
Generative AI:	GANs, VAEs, Diffusion Models, Synthetic Data Generation
Databases:	Firebase, SQLite, PostgreSQL
DevOps/Cloud:	Docker, Linux (Ubuntu), AWS Fundamentals, Git, TorchServe
Web Development:	React, Node.js, Express, HTML/CSS, Streamlit

CERTIFICATIONS

- **Microsoft 365 Certified: Fundamentals** *2025*
- **Microsoft Security, Compliance & Identity Fundamentals** *2024*
- **Administering Information Protection in Microsoft 365** *2024*
- **Cisco Python Essentials 1** *2024*

REFERENCES

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