

AMOGELANG GIFT KOTU

Computer Science & Informatics Graduate

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ABOUT ME

Highly motivated BSc IT graduate with a specialization in Artificial Intelligence and Data Science. Proven expertise in designing and implementing complex, custom Graph Neural Networks (GNN) and k-NN algorithms in pure Java. Demonstrated leadership in full-stack development, having architected high-performance database systems and smart-matching algorithms for award-winning projects. Published researcher in Modern Operating Systems and actively expanding technical expertise through AWS Certification.

TECHNICAL SKILLS

- **AI & Data Science:** Graph Neural Networks (GNN), k-Nearest Neighbors (k-NN), Image Processing, Euclidean Distance/Cosine Similarity metrics.
 - **Languages:** Java, TypeScript, C++, C#, SQL, JavaScript, Visual Basic.
 - **Web & Frameworks:** React, Node.js, Tailwind CSS, Prisma, HTML, CSS.
 - **Databases:** PostgreSQL, MySQL, Supabase.
 - **Tools & Mobile:** Git, GitHub, Figma, Draw.io, Flutter (Mobile).
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PROJECTS

Mar 2025 - May 2025

Graph-Based Traffic Sign Detection & Classification

Developed an intelligent educational tool designed to detect and classify South African traffic signs to improve road safety awareness. I engineered a custom, scalable Graph Neural Network (GNN) and k-Nearest Neighbors (k-NN) architecture entirely in pure Java without relying on external machine learning libraries. The system utilizes image processing to detect signs based on color, shape, and edge density, applying Euclidean Distance and Cosine Similarity metrics to connect visually similar signs within a graph structure. Through feature propagation, the model achieves robust classification of signs into Regulatory, Warning, and Informational categories.

Feb 2025 - Oct 2025

Benchmark Trader - Guided Demo Trading Platform

Led the full-stack development and deployment of a comprehensive trading platform that ranked #14 in the UJ ACSSE Top 20 Projects of 2025. As Team Leader, I managed the complete trade lifecycle from UML modeling to final deployment, overseeing team workflows and milestones. I engineered a smart matching algorithm that uses risk-assessment data to automate 100% of user-broker pairings and trade processes. Additionally, I designed a high-performance, normalized PostgreSQL database schema using Prisma and Supabase to manage complex trade histories and user profiles.

Jul 2024 - Oct 2024

E-Thrifting Website

Developed a full-stack e-commerce web application for second-hand clothing as part of an academic group project. I implemented core functionalities including a product catalog with search filters, a shopping cart, and a secure checkout process. On the backend, I built the server-side logic and user authentication using Visual Basic .NET and engineered the SQL database to handle transactions and user data. The project was delivered using Agile principles, involving weekly sprints and Git for version control.

EDUCATION

Tsogo Secondary School | 2020

National Senior Certificate

- **Core Subjects:** Mathematics, Physical Sciences, Life Sciences, Accounting
- **Achievements:** Top 10 Academic Achievement Award (Class of 2020).
- **Leadership:** Vice Secretary of the Representative Council of Learners (RCL).

University of Johannesburg | 2022-2025

BSc IT in Computer Sciences & Informatics

- **Core Coursework:** Object Oriented Programming (Visual Basic, C++ and Java), Advanced Data Structures & Algorithms (Java), Software Engineering, Database Design (SQL), Data Communications, Operating System Concepts (80x86 Assembly)

LEADERSHIP & INTERESTS

- **Leadership:** Team Leader for Benchmark Trader Project; managed full-stack workflows and milestones.
- **Research:** Authored "Binary Translation in Modern Operating System: A Study of Performance, Compatibility, and Security".
- **Community:** 50 hours of volunteer service at Noma Old Age Home.
- **Creative & Athletic:** Played Basketball for UJ and Tsogo Secondary; pianist and graphic designer.