

# AMOGELANG KOTU

## JUNIOR FULL-STACK DEVELOPER

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🌐 <https://agkotu.vercel.app/>

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### SUMMARY

Highly motivated BSc Computer Sciences student with a strong foundation in Software Engineering and Object-Oriented Design (OOD). Proven ability to design, implement, and optimize core data structures (trees, graphs, hash tables) and algorithms using C++ and Java. Experienced in full-stack application development, including designing relational database schemas and building multi-tier web applications. Seeking a challenging Software Development internship to apply robust problem-solving skills and technical expertise.

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### EDUCATION

**2020**

*Tsogo Secondary School*

**Grade 12 - National Senior Certificate**

- Mathematics
- Physical Sciences
- Life Sciences
- Accounting
- English
- Setswana
- Life Orientation

**2022 - 2025**

*University of Johannesburg*

**BSc IT in Computer Sciences & Informatics**

- Introduction to Algorithm Development (VB, C++)
- Introduction to Data Structures (VB, C++)
- Object-Oriented Programming (Java)
- Data Communications (Java)
- Database Design (SQL)
- Internet Electronic Commerce (HTML, CSS, JavaScript, C#, SQL)
- Advanced Data Structures and Algorithms (Java)
- Operating System Concepts (80x86 Assembly)
- Introduction to Software Engineering (Software Design)
- Advanced Software Engineering (Development, Testing, Deployment)

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# SKILLS

## Programming & Core Technologies

- *Languages:* Java, C++, TypeScript, C#, SQL, JavaScript, Visual Basic
- *Frameworks & Runtimes:* React, Node.js
- *DB Management:* MySQL, PostgreSQL, Supabase

## Development Tools & Practices

- *Version Control:* Git (GitHub, branching, merging)
- *IDEs:* Visual Studio Code, IntelliJ IDEA, Eclipse, Visual Studio, Code::Blocks
- *Design Modeling:* Figma (Wireframes), Draw.io (UML Diagrams), Canva

## Professional Skills

- *Project Management:* Led and managed the Third Year Project (Benchmark Trader) from concept to deployment.
- *Communication & Presentation:* Proficient in technical documentation, project presentations, and live demonstrations.

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# PROJECTS

Feb 2025 - Oct 2025

University of  
Johannesburg

**Recognition:**  
Ranked #14 in  
UJ ACSSE Top  
20 Projects of  
2025 (out of  
~50 projects)

## Benchmark Trader - Guided Demo Trading Platform

- Led the full-stack development and deployment of a comprehensive trading platform used for guided demo trading.
- Architected and implemented a robust system, starting with UML diagrams to model the complete trade lifecycle and user-broker interactions.
- Engineered the core business logic, including a smart matching algorithm that dynamically paired users with brokers based on a risk-assessment questionnaire, automating 100% of the trade process from proposal to profit withdrawal.
- Developed a real-time broker dashboard with integrated financial news and analytics, and a secure direct messaging system, enhancing client-broker communication and improving workflow efficiency.
- Designed and built a high-performance, normalized PostgreSQL database schema (via Prisma/Supabase) to manage user profiles, risk assessments, and extensive trade histories.
- Extended platform reach by developing a companion Flutter mobile app, providing users with on-the-go access to portfolios and market updates.
- Technologies Used: React, TypeScript, Tailwind CSS, Node.js, Prisma, Supabase, Flutter, Git.
- Marketing Website:  
<https://adam.uj.ac.za/projectsday/teamweb/Team32/index.html>

**Mar 2025 - May 2025**

*University of  
Johannesburg*

### **Graph-Based Traffic Sign Detection and Classification**

- Developed an intelligent, graph-based educational tool to detect and classify South African traffic signs, aiming to enhance road safety awareness through interactive visual learning.
- Designed and implemented a novel, scalable Graph Neural Network (GNN) classification model entirely in pure Java (without external ML libraries), demonstrating advanced algorithmic and core language proficiency.
- Engineered the system's core logic using image processing techniques to accurately detect signs based on Color, Shape (triangle, circle, octagon), Edge Density, and Aspect Ratio.
- Architected a k-Nearest Neighbors (k-NN) graph structure, connecting visually similar signs using Euclidean Distance and Cosine Similarity metrics to enhance learning and classification accuracy.
- Achieved robust classification of detected signs into South African categories (Regulatory, Warning, Informational) by leveraging feature normalization and feature propagation within the GNN model.
- Mitigated common limitations by designing the system to handle diverse learners and be easily expandable for new signs without requiring a full system re-training.
- Technologies Used: Java (Core Implementation), Graph Neural Networks (Custom), k-Nearest Neighbors, Image Processing, SQL/Database concepts (implied by classification data).

**Jul 2024 - Oct 2024**

*University of  
Johannesburg*

### **E-Thrifting Website [Academic Group Project]**

- A full stack e-commerce web application for second-hand clothing
- Engineered the database using SQL to handle user data, product listings, and transactions.
- Implemented core e-commerce functionalities including user registration, product catalog with search/filter, shopping cart, and a secure checkout process.
- Built a dynamic front-end using HTML, CSS, and JavaScript to create an intuitive user interface for product browsing and management.
- Developed the server-side logic using Visual Basic .NET to handle business rules, user authentication, and database communication.
- Utilized Git for version control and followed Agile principles through weekly sprints and team meetings to ensure project milestones were met.
- Technologies Used: Visual Basic .NET, SQL, HTML, CSS, JavaScript, Git, Agile.

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## INTERESTS & ACHIEVEMENTS

### Academic & Technical Achievements

- *Top Project Ranking:* Achieved a Top 20 ranking (specifically, #14) for the Benchmark Trader Guided Demo Trading Platform out of approximately 150 projects in the UJ ACSSE 2025 competition.
- *Research Publication:* Authored a research paper titled "Binary Translation in Modern Operating System: A Study of Performance, Compatibility, and Security," demonstrating advanced research and technical writing skills.
- *Core Algorithmic Development:* Successfully developed and implemented complex Graph Neural Network (GNN) and k-NN classification algorithms for the Traffic Sign project entirely in pure Java, showcasing deep proficiency in core data structures and algorithm design.
- *High School Excellence:* Received a Top 10 academic achievement award for the class of 2020 at Tsogo Secondary School.

### Leadership & Professional Development

- *Project Leadership:* Nominated as the Team Leader for the Final Year Web App Group Project (Benchmark Trader), responsible for managing workflows, setting milestones, and ensuring project delivery.
- *Continuous Learning:* Currently pursuing a certification in Amazon Web Services (AWS), demonstrating commitment to expanding knowledge in cloud computing and modern infrastructure.
- *School Leadership:* Nominated as the Vice Secretary of the 2020 Representative Council of Learners (RCL) at Tsogo Secondary School.

### Community & Personal Interests

- *Community Service:* Volunteered 50 hours at the Noma Old Age Home (Ga-Rankuwa), demonstrating empathy and community commitment.
- *Sports & Teamwork:* Played Basketball for both Tsogo Secondary School and the University of Johannesburg, highlighting dedication and teamwork.
- *Creative Pursuits:* Actively engages in creative activities, including playing the piano, writing, drawing, and designing graphics, showcasing versatility and creativity.