

Mulugeta Solomon Abate

Software Engineer, Backend & System Design

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👤 Profile

Software engineer specializing in backend and system design, with 2+ years shipping production services on AWS and PostgreSQL. I own REST APIs, asynchronous task pipelines, and multi-tenant platforms end to end — from schema design to deploy — and move across the full stack when the product needs it. M.Sc. Robotics, MEXT scholar.

🔧 Technical Skills

Languages: Python, SQL, TypeScript, JavaScript, Go, C++, C

Backend & Full-Stack: FastAPI, NestJS, Node.js, Celery, SQLAlchemy, Prisma, REST APIs; React, Next.js, Tailwind CSS

Systems & Infrastructure: PostgreSQL, Redis, AWS (S3, RDS, Lambda, SQS, API Gateway, EC2), Docker, Linux, CI/CD; multi-tenancy, auth & RBAC, caching, rate limiting

Machine Learning & Computer Vision: PyTorch, TensorFlow, YOLO, OpenCV, Pandas; model evaluation (mAP, IoU, F1); ETL pipelines

🏠 Professional Experience

Sora Technology

Software Engineer — Backend & ML Systems

Oct 2024 – Present | Tokyo, Japan

- Designed and shipped the backend for the **SORA AI platform** — ingestion, transformation, and batch-upload services on AWS (S3, RDS/PostgreSQL, Lambda, SQS), cutting data iteration cycles by **40%** and improving upstream accuracy by **30%**.
- Built **FloodSight**, a full-stack flood-risk platform (FastAPI + Celery + PostgreSQL + Next.js) — asynchronous task queues generate depth maps and downloadable reports (PNG, GeoTIFF, GeoJSON) for cross-functional flood analysis in Mozambique.
- Added a **render-once caching layer** to FloodSight for report PDFs and terrain overlays — repeat loads run **15–30×** faster, skipping a **2.4 s** PDF render and **1 s** overlay render, with browser caching making tab switches instant.
- Implemented **data-integrity and reconciliation checks** across services — automated coordinate validation between source GeoJSON and processed TIFF, catching discrepancies before downstream use and raising annotation accuracy by **25%**.
- Engineered **audit-ready model-evaluation services** (mAP, IoU, F1, precision/recall) with clear definitions, lineage, and validation rules, driving a **20% accuracy improvement** in consistent model benchmarking.
- Automated **preprocessing and query workflows** exposing clean, structured data to product and field teams — eliminating **40+ hrs/month** of manual preparation.

Software / ML Intern

Jul 2024 – Oct 2024 | Tokyo, Japan

- Optimized the **data-acquisition pipeline** for aerial drone surveys, reducing total collection time by **33%** through improved path-planning algorithms.
- Migrated the **detection service from YOLOv5 to YOLOv8**, benchmarking accuracy across multiple datasets for a **22% precision boost**.

🎓 Education

Ritsumeikan University: CGPA 4.3/5.0 | Teaching Assistant

Sep 2022 – Sep 2024 | Kyoto, Japan

M.Sc. in Robotics

- Advanced Mathematics, AI, Cryptography & Security, Analytical Mechanics, Advanced Robotics.

Addis Ababa Science & Technology University: CGPA 3.81/4.00

Sep 2016 – Nov 2021 | Addis Ababa, Ethiopia

B.Sc. in Electromechanical Engineering

- OOP, Database Systems, Computer Architectures, Data Structures, Network Security, Robotics and Computer Vision.

Africa to Silicon Valley (Backed by Google)

Feb 2024 – Feb 2025 | Addis Ababa, Ethiopia

Competitive Programming and Software Development

- 1,500+ hours of competitive programming (algorithms, data structures). 80+ alumni placed at Google, Bloomberg, Amazon.

</> Projects and Publications

Karamu — Multi-tenant Restaurant SaaS

2025 – Present

- Designed and built a **multi-tenant SaaS backend** (NestJS + Prisma + PostgreSQL + Redis) with **role-based access control, rate limiting, and CI-gated staging/production deploys** — QR ordering, a real-time kitchen display system, and payments for the East African market.

Integrating Semantic Line Detection and Scene-Awareness, RSJ2024

Sep 2024

- Co-authored a paper (RSJ2024AC1G1-02) on semantic line detection with novel dataset creation and statistical analysis.

Robo-Line Annotator

May 2024

- Desktop + web tool that labeled **5,462 images (600K+ line segments)** for wireframe detection research, with structured data exports for downstream ML training.