NIGUS BEZABH HAILE

MSc. in AI4ST Student | Data Analyst and Software Engineer Background

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PROFESSIONAL SUMMARY

MSc student in Artificial Intelligence for Science and Technology, specializing in Sensing and Signal/Image Processing for Healthcare and Environment at the University of Milan-Bicocca, BSc. graduate in Computer Science and Engineering from Mekelle University, ranked in the top 1% of engineering students. 4+ years of experience in software engineering, data analytics, and machine learning, developing and evaluating data-driven solutions across healthcare, environmental applications, computer vision, and NLP.

EDUCATION

MSc. in Artificial Intelligence for Science and Technology
University of Milan-Bicocca, Milan, Italy — Sep 2025 – Jul 2027

- Specialization in Sensing and Signal/Imaging for Healthcare and Environment, with coursework in machine learning, deep learning, computer vision, medical imaging, and environmental sensing.

BSc in Computer Science and Engineering — Sep 2016 – Oct 2021
Mekelle Institute of Technology, Mekelle University · Mekelle, Ethiopia

- Very Great Distinction (CGPA 3.96/4.00), top 1% of 800+ engineering students, perfect 4.00 in 6 of 10 semesters.

A2SV Community Education
A2SV (Africa to Silicon Valley), Addis Ababa, Ethiopia — Jun 2024 – Jun 2025

- Selected for training in Python, data structures, and algorithm design and analysis.

PROFESSIONAL EXPERIENCE

Data Analyst — Apr 2023 – Sep 2026
Kabana Design PLC · Full-time & Hybrid

- Track KPIs across sales, customer, website, and marketing data and turn the findings into reports for management; recommendations contributed to 40% more web traffic and a 25% rise in conversion.
- Automated recurring reports, cutting manual processing by 30%, and maintained the underlying databases for quality, integrity, and security.

Data Scientist Intern — Jun – Oct 2024
Prodigy InfoTech, Remote (Mumbai, India)

- Applied statistical and machine learning methods to large datasets, producing 10+ predictive models and analytical insights.
- Built interactive visualizations in Python that sped up data interpretation and reporting by 40%.

Software Engineer — Jun 2022 – Mar 2023
Kabana Design PLC · Remote

- Built Django and React.js applications; API integrations cut integration time by 35%, and refactored and monitored page load time by 26% at 99% uptime.

Full-Stack Developer — Dec 2021 – Jun 2022
Convex ICT Technology, Remote

- Reduced slow database queries from ~3 s to under 500ms and average API response time by 30%; shipped 20+ REST endpoints in Java (Spring Boot).

TECHNICAL SKILLS AND TOOLS

Programming & Databases
Python, Git, GitHub, SQL, Java, PostgreSQL, MySQL.

Statistics & Data Mining
NumPy, Pandas, SciPy, Statistical Analysis, Exploratory Data Analysis, Feature Engineering, Regression, Hypothesis Testing, Clustering, Data Visualization.

Machine Learning & Deep Learning
PyTorch, TensorFlow, CNNs, Supervised & Unsupervised Learning, Classification, Vision Transformers, Model Evaluation, Transformers, Hyperparameter Optimization.

AI Engineering & Software Development
FastAPI, Django, Flask, REST APIs, React.js, Node.js, Docker, Linux, Swagger/OpenAPI.

LEADERSHIP & SERVICES

Volunteer Career Mentor Sep 2026 – now
Global Mentorship Initiative, Remote

- Mentor first-generation, low-income, and refugee graduates one-to-one through interviews and career planning, after completing the program as a mentee.

Career Mentor (Volunteer) Sep 2026 – now
YESSEthiopia, Ethiopia, Remote

- Supported career guidance and mentorship activities for approximately 100 students, helping them explore academic and career opportunities and professional development.

Volunteer Tutor & Mentor 2016 –2019
GSTS & Mekelle University

- Tutored Grade 10 and 12 students from across Tigray in GSTS summer programs at Mekelle Institute of Technology (2018, 2019).

RELEVANT COURSEWORK

MSc. Courses: Advanced Mathematics, Statistics and Artificial Intelligence; AI for Signal and Image Processing; Machine Learning (Supervised and Unsupervised Learning); Signal and Imaging Modelling for Healthcare and the Environment; Advanced Computational Techniques for Big Imaging and Signal Data; Physical Sensors and Systems for Biomedical Imaging, Biomedical Signals, and Environmental Imaging; Data Privacy and Protection.

RESEARCH PROJECTS

VisionCare AI — Retinal OCT Disease Classification
PyTorch, VGG16, InceptionV3, ConvNeXt-Tiny, EfficientNetV2-S, XGBoost

- Fine-tuned four CNN architectures on 83,605 OCT scans in four classes (CNV, DME, drusen, normal); individual accuracy 94.75–96.05%.
- Ensembled them with soft voting and XGBoost stacking to reach 97.08% accuracy and F1; reported per-class F1 (90% for drusen, 97%–98% elsewhere) rather than accuracy alone.
- Addressed class imbalance with class-weighted loss, weighted sampling, and label smoothing; trained with differential learning rates, OneCycleLR, and mixed precision.

MindX AI — Depression Data Analysis & Explainable AI
Python, scikit-learn, Bayesian Networks, SHAP, PCA, t-SNE

- Compared six clustering methods (K-Means++, K-Prototypes, K-Modes, agglomerative, DBSCAN, Gaussian mixture) on a 413K-record, 16-variable dataset, reaching 69.6–73.6% cluster purity.
- Handled mixed categorical and numeric features with Gower distance; visualized structure with PCA and t-SNE.
- Learned three Bayesian network structures using BIC, AIC, and domain constraints (68.8% held-out accuracy), then explained the model with SHAP and a decision-tree surrogate across 10+ metrics.

Aerial Scene AI — Land-Use Classification
demo

PyTorch, ViT-B/16 + LoRA, DenseNet-121, Optuna, Grad-CAM, Streamlit

- Classified 2,100 UC Merced aerial images into 21 land-use categories, comparing a custom residual-attention CNN, DenseNet-121 (96.67%), and a ViT-B/16 with LoRA adapters (**99.05%** test accuracy).
- Guarded against leakage with perceptual-hash deduplication and stratified splits; tuned with Optuna, scored with macro-F1, and inspected predictions with Grad-CAM.
- Published a Streamlit dashboard for single-image and batch inference.

APPLIED PROJECTS

Afya — Multiple Disease Prediction System
Python, scikit-learn, Flask, Django

- Built risk-prediction models for diabetes, malaria, and heart disease from patient histories, covering preprocessing, feature selection, training, and evaluation.
- Tested on 1,000 patient records and delivered a web-based decision-support prototype for settings where specialist care is scarce.

Ethiopian Manuscript OCR — Handwritten Ge'ez, Amharic & Tigrigna
Python, OpenCV, TensorFlow

- Trained an OCR pipeline on 150+ manuscript pages (religious, scientific, and medical texts from the Aksumite and Zagwe periods), reaching 87% accuracy.
- Supported digitization of fragile manuscripts so researchers and communities can search and read them.

TechWise Africa — AI Learning Platform
techwiseafrica.com

- Co-built an EdTech platform (Fidel AI) linking African learners to personalized study paths, assessments, certifications, career guidance, and jobs.

BSc. Courses:

Mathematics & Statistics

- Calculus I&II, Algebra, Discrete Mathematics Probability & Statistics, Computational Methods.

Computing & AI

- Data Structures & Algorithms, Design & Analysis of Algorithms, Database Management Systems · Distributed Systems, Machine Learning, Image Processing & Computer Vision, AI & Expert Systems, Software Engineering.

HONORS & LEADERSHIP PROGRAMS

- Selected, **Emerging Leaders in AI (ELAI) Graduate Program**, Black in AI (2026), Black in AI member.
- **AI-Integrated Leadership Program**, Aspire Institute (Oct–Dec 2025).

CONFERENCES & EVENTS

- Pan-African AI Conference, Addis Ababa (2024)
- A2SV AI for Impact Hackathon Grand Finale, Addis Ababa (2024)

LANGUAGES

- Amharic (fluent) · Tigrigna (native) · English (fluent).