Samuel Bogale Worku

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Summary

Early career AI Engineer with dual MSc in Artificial Intelligence and Astrophysics, experienced in machine learning and full-stack web development. Developed scalable ML pipelines for healthcare diagnostics and exoplanet detection while integrating deep learning models with robust web applications. Demonstrated strong proficiency in Python and complex data processing, with a commitment to delivering innovative AI solutions in multicultural, distributed environments.

Technical Skills

- **Languages**: Python, SQL, R, Julia, LaTeX, JavaScript/TypeScript
- **ML Tools**: TensorFlow, PyTorch, Scikit-learn, UMAP, TOPCAT, AstroPy, Matplotlib, Generative AI
- **Frameworks**: LSTM, CNN, PINN, Supervised/Unsupervised ML, Dimensionality Reduction
- **Other**: Git, Docker, Scientific Research, Data Visualization, Experiment Design

Professional Experience

Ural Federal University **Jan 2025 - Jul 2025**
Data Science Intern *Yekaterinburg, Russia*

- Developed ML models using Python for heart failure prediction from biomedical clinical datasets, demonstrating strong analytical and coding abilities.
- Engineered a deep learning pipeline with CNN architectures to support feature integration, aligning with scalable AI product development practices.
- Achieved 95% accuracy in detecting exoplanets from light curve data through rigorous model training and data schema design, emphasizing reliability in AI applications.
- Applied microlensing detection and planetary habitability analysis using ML techniques, showcasing adaptability in applying advanced models to diverse research areas.

Ethiopian Space Science and Technology Institute **Nov 2021 - Jul 2023**
Researcher in Astronomy *Addis Ababa, Ethiopia*

- Developed machine learning pipelines for galaxy classification and multiwavelength data analysis, utilizing Python and ML frameworks to drive data-driven insights.
- Used TOPCAT and AstroPy for galaxy clustering and feature extraction, contributing to robust data management and analysis in research projects.
- Supported national astronomy outreach and science communication efforts, collaborating with multidisciplinary teams to enhance scientific information dissemination.

Ethiopian Pediatric Society **Jul 2018 - Sep 2020**
Web Developer *Addis Ababa, Ethiopia*

- Designed and developed HIPAA-compliant medical platforms for encrypted health data.
- Implemented cryptographic protocols and interactive dashboards for healthcare analytics.
- Collaborated with physicians to optimize usability and clinical workflows.

Education

Ural Federal University, Russia **2025**
MSc, Applied Artificial Intelligence

- **GPA:** 4.9/5.0 (US equiv: 3.92/4.0)

Addis Ababa University, Ethiopia **2023**
MSc, Astrophysics

- **GPA:** 3.48/4.0

Unity University, Ethiopia **2018**
BSc, Computer Science

- **GPA:** 3.23/4.0

Selected Projects

AI-Driven Space Weather Forecasting **2025**

- Developed LSTM and PINN-based ML models to predict solar radiation and geomagnetic storms using NASA/NOAA datasets.

Exoplanet Habitability Analysis Using ML **2024 - 2025**

- Used UMAP dimensionality reduction with clustering (KMeans, GMM) to classify potentially habitable exoplanets.

Microlensing Exoplanet Detection **2023 - 2024**

- Simulated and classified microlensing events in noisy light curves using supervised ML techniques.

X-ray and Radio Analysis of Green Valley Galaxies **2022 - 2023**

- Conducted multiwavelength analysis of AGNs using AstroPy and cross-matched catalogs for galaxy evolution studies.

Publications

- Mahoro, A., Väisänen, P., Povi, M., Worku, S.B., et al. (2023). The [OIII] profiles of far-infrared active and non-active optically-selected green valley galaxies. Monthly Notices of the Royal Astronomical Society.
- Rahman, S.T., Saha, S., Worku, S.B., et al. (2024). A Resource-Based Assessment of Renewable Energy Potential in Bangladesh. Open Access Library Journal.

Awards and Recognitions

- Top 10% Academic Achievement, Ural Federal University (2024, 2025)
- Selected Participant, African School of Physics and AI (2023)

Languages

- English (Fluent)
- Amharic (Native)
- Russian (Basic)