

Melaku Tafere

Los Angeles, CA · LinkedIn Website: <https://melaku23.github.io>

SKILLS SUMMARY

- **Programming & Tools:** Python programming, FastAPI, Streamlit, MCP, SQL/MS Access/R, Linux, Tableau software.
 - **Data & Analysis:** Machine learning, Predictive modeling, A/B testing, Data visualization, Explanatory data analysis (EDA), Statistical analysis.
 - **Cybersecurity:** Network security, Information security, Vulnerability management, NIST Cybersecurity Framework, SIEM tools.
 - **Scientific Research:** Solid state synthesis, X-ray powder diffraction analysis and Rietveld refinement, Neutron powder diffraction analysis, Pair distribution analysis (PDF).
 - **Soft Skills:** Communication.
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TECHNICAL PROJECTS

Metric Agent: High-Fidelity Physics MCP

- Built a custom Model Context Protocol (MCP) server that connects Google Gemini to a deterministic physics engine, solving "hallucination" issues for scientific queries.
 - Integrated NIST-standard material databases (JSON) to enable high-accuracy RAG (Retrieval-Augmented Generation) for thermodynamic and stress-analysis tasks.
 - **Project Link:** <https://github.com/Melaku23/Metric-Agent>
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EDUCATION

- Masters in physics, University of Texas at El Paso, USA.
- Master of Science - Astrophysics and Space Science, University of Cape Town, South Africa.
- Bachelor's Degree, University of Wolaita Sodo, Ethiopia.

Google Advanced Data Analytics Certificate

- Prepared, processed, and analyzed data to inform business decisions. Worked effectively to create visualizations to share findings with stakeholders and provide recommendations driven by data. This certificate covered the seven grounds of data science, worked with Python, translated data into insights, worked on the power of statistics, simplified complex data relationships, and studied the nuts and bolts of machine learning.

Google Cybersecurity Certificate

- Studied how to identify common cybersecurity risks, threats, and vulnerabilities, and the techniques to mitigate them. Gained hands-on experience with Python, Linux, and SQL. Learned how to protect networks, devices, people, and data from unauthorized access and cyber attacks using Security Information Event Management (SIEM) tools, Intrusion Detection Systems (IDS), and network protocol analyzers (packet sniffing).

PROFESSIONAL EXPERIENCE

Expert Contributor - AI Reasoning & Data Annotation, Snorkel AI

- AI Model Evaluation & Theoretical Reasoning Validation.
- Logical Error Detection & Self-Correction Mechanisms in AI.
- Data Annotation.
- LLM Prompt Engineering for Reasoning and/or Graduate-level Knowledge Tasks.

Graduate Teaching Assistant, University of Texas at El Paso, USA

- Taught Physics and Astronomy to undergraduate students.
- Organized and led labs for undergraduates.
- Graded tests and assignments.
- Wrote proposals for national laboratories.
- Published a research paper on magnetism for master's program.

PUBLICATIONS AND CONFERENCES

- **Magnetic structures and excitations in sawtooth olivine chalcogenides Mn_2SiX_4 (X=S,Se).**

Hector C Mandujano, Melaku Sisay Tafere, Naveen Kumar Chogondahalli Muniraju, Tielyr D Creason, Timothy M McWhorter, Krzysztof Gofryk, Thomas W Heitmann, Qiang Zhang, Bayram Saparov, Harikrishnan S Nair.

Doi: 10.1039/d3dt00052d. PMID: 37017307.

- **Texas Academy of Science 125th Annual Meeting at University of Houston-Clear Lake.**

“Magnetic structures of sawtooth olivines Mn_2SiX_4 (X=S,Se) determined through neutron powder diffraction.”

Melaku Sisay Tafere, K. Gofryk, B. Saparov, Q. Zhang, H. Nair. (February 25th, 2022).