Brian Temu

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EDUCATION

University of Colorado Denver **Aug 2026 - Current**
PhD. Computer Science *Colorado*

University of Maryland Baltimore County **Aug 2023 - May 2025**
Master's in Data Science *Maryland*

WORK EXPERIENCE

University of Colorado Denver **Aug 2026 – Current**
Research Assistant *Colorado*

- Designing and evaluating **membership inference attacks** using token likelihood analysis, masked text reconstruction, and speech model adaptation to investigate training data memorization and privacy leakage in LLMs and TTS models.
- **Conducting research on training data privacy and model interpretability**, examining memorization patterns, internal representations, and membership inference vulnerabilities in pretrained language and speech models.
- Investigating **membership inference attacks (MIA) on LLMs and TTS systems** to assess whether text or speech samples were included in model training data.

WikiCharities **Sept 2025 – June 2026**
Software Engineer *Colorado*

- Developed **Python web scraping pipelines to collect raw organizational data from public sources**, integrating spaCy and NLTK for text normalization and entity extraction prior to LLM processing.
- Developed and maintained **data definitions and schema documentation** for nonprofit organizations using **Python, SQL, and LLMs**, establishing consistent taxonomy across datasets to support data governance.
- Applied **AI and Natural Language Processing** techniques to extract, validate, and transform unstructured web data into structured, analysis-ready datasets.

Institute of Genome Science, University of Maryland Baltimore **June 2025 – Sept 2025**
Machine Learning/Software Engineer Intern *Maryland*

- Developed and implemented forecasting algorithms to accurately predict future trends in **time series data** using statistical and **machine learning models**
- **Collaborated with research and engineering teams** to prototype and deploy predictive analytics tools, enhancing data-driven decision-making within the institution.
- Designed and optimized a **scalable time series** data platform, improving data ingestion and processing speed for large-scale scientific datasets using influxDB.

Milestones, Inc **Apr 2025 – Aug 2025**
Conversational AI Engineer *California*

- **Developed scalable** FastAPI microservice architecture with **PostgreSQL backend**, handling concurrent voice sessions, automated call recording, transcription workflows, and comprehensive analytics tracking.
- Architected and deployed a **hybrid conversational AI system** integrating OpenAI Realtime API, ElevenLabs TTS, and Twilio Voice for real-time phone-based customer interactions.
- Implemented **intelligent conversation flows** with dynamic system prompting, customer data integration, human agent transfer capabilities, and multi-modal feedback collection via SMS.

Institute of Genome Science, University of Maryland Baltimore **May 2024 – Aug 2024**
Data Science Intern *Maryland*

- **Automated** large-scale **antiSMASH** analyses using **Python scripts** and **shell automation**, identifying biosynthetic patterns in Bacterial Vaginosis **gene clusters**.
- Leveraged **HPC/grid computing** to run parallelized bioinformatics workflows, accelerating genetic marker discovery for targeted Bacteria Vaginosis research.
- **Collaborated with researchers**, aligning computational results with study objectives to refine Bacteria Vaginosis genetic investigations.

Softnet Technologies Ltd **Apr 2022 – Aug 2023**
Software Engineer *Dar es salaam*

- Developed performance critical backend utilities in **C and C++** to support internal tooling and data processing workflows, focusing on memory efficiency and low latency execution.
- Developed and optimized new features using **React** and **TypeScript**, improving user engagement by **15%**.
- **Debugged and refactored** front-end code, reducing production bugs by **25%**, enhancing app stability.
- Led workshops on **TailwindCSS** and Figma, achieving **90%** adoption, reducing reliance on third-party templates.
- Implemented **Agile/Scrum** workflow, achieving **20%** more on-time project deliveries with **95%** sprint goal success.

Tanzania Data Lab (dLab) **July 2021 – Sept 2021**
Machine Learning Engineer Intern *Dar es salaam*

- Used **C++ with OpenCV to optimize** image loading, resizing, and augmentation for large scale datasets, reducing preprocessing time.
- **Engineered** high-quality image datasets through data collection, preprocessing, and augmentation using **Python, OpenCV, and PIL**, ensuring optimal deep learning model performance.
- Developed and fine-tuned deep learning models with **PyTorch**, leveraging **CNN architectures** to improve feature extraction and classification.
- Combined **SQL extracted data** with Python and C or C++ pipelines to support reproducible machine learning workflows

Technical Skills

Programming: Python, Go, JavaScript (TypeScript), C/C++, and SQL
Cloud/DevOps: Kubernetes, Azure, Google Cloud, Prometheus, Docker, and Linux
Machine Learning: Deep Learning, Transformers (LLMs),NLP, and, Retrieval-Augmented Generation (RAG)
Frameworks/Libraries: PyTorch, TensorFlow, JAX, MLX, Hugging Face Transformers
Web/Software Engineering: FastAPI, React (Next.js), PostgreSQL, REST APIs, VS Code

PROJECTS

FoodScout | *Smart Food Discovery* **March 2026**

- Engineered FoodScout using **React, implementing an interactive 3D globe** interface with modular components for geospatial rendering and dynamic location based exploration.
- Integrated **LLM APIs with web search pipelines**, building backend logic for **real-time data retrieval, prompt orchestration, and context-aware recommendation generation.**

Vision Transformer | *Paper Replication* **December 2023**

- Reproduced and implemented key components of **Transformer architecture and attention mechanisms** in **PyTorch**, ensuring modularity and scalability.
- **Developed custom PyTorch modules** for multi-head self-attention, positional encoding, and feedforward layers, aligning with research paper specifications.

Real-Time Face-mask Detection System | *Computer Vision* **July 2022**

- Developed a **YOLOv5-based object detection system**, achieving **97%** accuracy on a curated dataset through extensive **model fine-tuning and augmentation**.
- **Built an interactive UI with Streamlit**, enabling real-time visualization and user interaction with detected objects across different scenes.

Awards & Scholarships

Barbados Traffic Analysis Challenge — 2nd Place (2/184), Zindi **January 2026**
Built a deep learning pipeline for traffic flow prediction and congestion analysis using Machine Learning.

Clark-Winchcole Foundation Scholarship **September 2024**
Awarded by the Universities at Shady Grove in recognition of academic excellence within a USG program.

CERTIFICATION

DeepLearning.AI TensorFlow Developer Professional Certificate, Coursera **March 2023**