Bethel Hall

Hoboken, NJ 07030
bhall2@stevens.edu
908-880-4895

SUMMARY OF QUALIFICATIONS

- **Machine Learning & Deep Learning:** Extensive experience in developing and applying machine learning models to real-world problems using large, complex datasets (MIMIC-III, MIMIC-IV, Claims Data, Physiological Data), including food recognition from body-worn sensors and causal inference from time series data. Proficient in frameworks such as TensorFlow, PyTorch, and Scikit-learn.
- **Software Engineering & Programming:** Strong foundation in software development with proficiency in Python, Java, and R. Hands-on experience with data structures, algorithms, and Microsoft Azure.
- **Research & Data Analysis:** Conducted cutting-edge research in ML for healthcare, aviation, and bias detection and experienced in data visualization, statistical modeling, and synthetic data generation using GANs.
- **Teaching:** Graduate Teaching Assistant for Java programming, assisting M.Sc. students in learning programming languages and algorithms.

EDUCATION

Doctor of Philosophy, Computer Science   **09/2022 - 07/2025**
Stevens Institute of Technology   *Hoboken, NJ*
GPA: 3.92
Bachelor of Science; Software Engineering   **10/2017 - 2022**
Addis Ababa University   *Addis Ababa, Ethiopia*

RESEARCH EXPERIENCE

Graduate Research Assistant, Dr. Samantha Kleinberg   **09/2022 - Present**
Stevens Institute of Technology, Computer Science   *Hoboken, NJ*
- Designed and implemented a zero-shot learning approach for food recognition from body-wearable sensors, enabling accurate classification of previously unseen foods. Engineered an efficient feature extraction pipeline using Empatica E4 sensor data, optimizing performance and scalability.
- Developed an algorithm to infer temporal causal relationships from time series data. Simulated real-world medical data to validate the approach, improving model accuracy and robustness.

Undergraduate Research Assistant, Dr. Jean-Baptiste Jeannin   **06/2021 - 08/2021**
University of Michigan, Computer Science   *Ann-Arbor, MI*
- Developed and trained a neural network in a simulated aviation environment, demonstrating the feasibility of a correct-by-construction approach to ensure safety-critical behavior.
- Implemented a safety-augmented loss function, integrating formal safety constraints into training to enhance model reliability and adherence to desired safety properties.

Undergraduate Research Assistant, Dr. Doug Talbert   **08/2021 - 12/2021**
Tennessee Tech University, Computer Science   *Cookeville, TN*
- Conducted bias detection analysis in trauma triage datasets using statistical techniques and machine learning, identifying key disparities in model predictions.
- Trained GAN models for synthetic data augmentation, enhancing dataset diversity, and improving model generalization for trauma triage applications.

Teaching Experience

Teaching Assistant, Introduction to Java Programming   **01/2025 - present**
Stevens Institute of Technology, Computer Science   *Hoboken, NJ*

Open-source Contribution

Contributor – Ivy: Convert Machine Learning Code Between Frameworks

Awards & Honors

2nd Place Winner, Innovation Time Award – Rebranding Africa Forum, Brussels, Belgium (August 2019)
Palantir Global Impact Scholar – Palantir Technologies Inc., NYC, USA (July 2020)
Global UGRAD Scholar – U.S. Department of State, Washington D.C. (Aug 2021 - Dec 2021)

SKILLS: Machine Learning, Deep Learning, Explainable Large Language Models, Retrieval-Augmented Generation (RAG), Agentic AI, Zero-Shot/Few Shot Learning, Causal Inference, Time Series Analysis, Signal Processing, Synthetic Data Generation, Statistical Modeling, Natural Language Processing Data Visualization, Multivariate Analysis, Bias Detection, Feature Engineering, Predictive modeling, Microsoft Azure, A/B Testing.