Haamed Rahman

413-315-1962 | hrahman@umass.edu | linkedin.com/in/haamedr | https://github.com/hdrahman

Programming Languages: Python, Java, JavaScript, TypeScript, C, C++, HTML, CSS
Frameworks/Technologies: XGBoost, Optuna, SpringBoot, Tensorflow, Keras, PyTorch, scikit-learn, NumPy, Pandas, Polars, NodeJS, Git, Matplotlib, Jupyter, Linux, AWS, Arduino, React Native, LangChain, FastAPI, PostgreSQL, MongoDB

EDUCATION

University of Massachusetts Amherst **May 2026**

- **BS Computer Science | Minor in Business** | Chancellor's Merit Scholarship (65% total tuition) | Deans List
- **Coursework:** Data Structures and Algorithms, Multivariate Calculus, Linear Algebra, Robotics, Software Engineering, OS

WORK EXPERIENCE

Software Developer **February 2025 - Present**
BUILD Amherst, MA

- Developed **full-stack applications** for Aarti Home, an **educational nonprofit** empowering women's education in rural areas, using **React Native, Node.js, Express, PostgreSQL, and Firebase** to build scalable solutions in an **Agile/Scrum** environment.
- Implemented an **AI chatbot** using a **RAG model**, enhancing educational resource accessibility for underserved communities.
- Engineered **backend infrastructure** with **RESTful APIs and offline functionality**, ensuring **reliable data access**.

Lead Software Engineer **October 2024 - Present**
UMass Mechatronics Amherst, MA

- Developed an **Arduino**-based sorting system by replicating **Scikit-learn's decision tree** models in **C++**, improving sorting accuracy by **25%** and reducing assembly complexity by **60%.**
- Accelerated system performance by **89%** by optimizing hardware-software protocols and tuning decision thresholds.
- Led a team of 5 engineers to develop **embedded software** in an **Agile environment**, completing the project 2 weeks early.

SWE Intern **May 2024 - August 2024**
Workabble Space Remote

- Developed a user management system with **Flask** and **MongoDB**, improving uptime to **99%** and query speed by **7%.**
- Built **Flask**-based **RESTful APIs** for pod control automation with **asyncio,** cutting request latency by **15%.**
- Built an interactive control panel with **React**, boosting user engagement by **18%** through a responsive UI.

Research Assistant | Research Paper **May 2022 - August 2022**
Professor Ken Khan - Oxford University Remote

- Researched AI applications in real-world safety and ethics, authoring a research paper on leveraging **LLMs** to **identify and mitigate unethical business practices**, emphasizing **AI's role** in **ethical decision-making** and **business accountability**.
- Designed a **GPT-based AI framework** to autonomously flag unethical workplace violations, reducing **violations by 40%** and influencing **74% of users** to prioritize worker welfare.
- Engineered a CNN-based fire detection model achieving **85% accuracy**, optimizing preprocessing and network architecture to boost detection speed by **13%** on real-world datasets.

PROJECTS

Platemate – AI-Powered Nutrition & Fitness Tracker | *In Development* | GitHub

- Developed an intelligent nutrition tracking app **(React Native, Node.js)**, leveraging **async processing** for real-time performance.
- Integrated **AI-powered food recognition** with computer vision and **ChatGPT-driven image analysis**, automating calorie/macro tracking while enriching data via USDA, OpenAI, and Firebase APIs.
- **Built an AI Nutritionist l**everaging a **RAG system** to provide meal recommendations and dietary insights.
- Implemented a **RESTful API (FastApi)** for data retrieval and chatbot interactions, with **PostgreSQL** for structured storage and serverless functions for real-time classification and authentication.

Jane Street Real-Time Market Data Forecasting Competition | R^2 : 0.0082 (95th Percentile) | GitHub

- Designed a **supervised autoencoder model** with a **multi-layer perceptron**, alongside advanced **Temporal Fusion Transformer** models, combining deep learning techniques, ensemble methods, and **XGBoost** to capture intricate **time-series market patterns** and make predictions. Executed on UMass **Linux** servers and **Google Cloud Platform.**
- Implemented a robust **5-fold purged** time-series split pipeline utilizing **Optuna-based hyperparameter optimization**, combining predictions from all three models to improve forecasting accuracy, enhance stability, and generalization.
- Processed **130GB** of financial data using interpolation, outlier removal, and feature selection to enhance model quality.

Sentuino - Automated Nerf Turret:

- Engineered an ML-powered facial tracking system using **OpenCV and Haar Cascade classifiers** to achieve **95%** accuracy in real-time target detection and tracking while maintaining **sub-100ms latency** for dynamic control.
- Developed a **C++ embedded system** for **Arduino**, enabling precise targeting via Wi-Fi; optimized memory and computational performance for hardware efficiency.

CERTIFICATIONS

Introduction to Data Science (University of Michigan) | Linux (Linux Foundation) | Python Crash Course (Google)