

Mohsin Shah

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Programming Languages: Python, Java, JavaScript, TypeScript, Julia, C, C++, C#, SQL, HTML, CSS

Frameworks: React, PyTorch, Tensorflow, Keras, spaCy, Next.js, Node.js, Express.js, Sequelize, Scikit-learn, Pandas, NumPy, Bootstrap

Tools: AWS RDS, AWS S3, Git, Hugging Face, Unity, PyGame, Matplotlib, Jupyter, Linux, Unix, GPU, Excel, Agile, Scrum, CI/CD

Education

University of Massachusetts Amherst

GPA 3.97

Expected Graduation: Dec 2024

• **BS Computer Science and BS Mathematics** - Artificial Intelligence, Data Science, and Statistics concentrations

Experience

Fidelity Investments

June 2024 – Aug 2024

Incoming Data Science Intern

Smithfield, RI

• TBD

Microsoft

Jan 2024 – Feb 2024

Data Science Intern

Cambridge, MA

- Extended Azure ML's Responsible AI Toolbox & Interpret Text for LLMs like GPT-4 & Llama, aiding 200,000+ users in model evaluation.
- Implemented LIME explainers, customizable benchmarking metrics, and error analysis modules in the comprehensive UI dashboard.
- Developed 5 tutorial notebooks showcasing model analysis with HuggingFace (GPT-Neo, RoBERTa) and OpenAI API (GPT-4, 3.5, 3).

ML & NLP Research Intern

May 2023 – Sep 2023

Professor Jaime J. Dávila | University of Massachusetts Amherst | [GitHub Code](#)

Amherst, MA

- Analyzed multimodal transformer models: BLIP, GIT, CLIP, and custom vision language model (VLM) with BERT (LLM) encodings, EfficientNet (CNN), and LSTMs with PyTorch (CUDA) to generate prompts of AI generated images, achieving a BLEU score of 68%.
- Created training and validation datasets for R&D using Python & Selenium, web scraping 1000+ AI generated images and prompts.

AI & RNN Research Intern

Feb 2023 – Dec 2023

Professor Edward A. Rietman | Biologically Inspired Neural and Dynamical Systems Lab

Amherst, MA

- Built simulations in Julia to study the applications and dynamics of oscillatory neural networks and increased efficiency by 60%.
- Designed algorithms to solve the ongoing challenge of recurrent neural network oversaturation; potentially applicable in robotics.
- Enhanced data visualization with 1000+ raster plots and video heatmaps, integrating clustering algorithms for data segmentation.

Computer Science, Residential, & Academic Peer Mentor

Sep 2022 – Present

University of Massachusetts Amherst

Amherst, MA

- Devised tailored academic success strategies for 200+ students in their transition to college through academic success mentoring.
- Collaborated with campus organizations to plan and execute events to foster a sense of community and boost engagement by 75%.

Projects

Hack(H)er413 Hackathon Winner: Sign Language AI | signdecoder.com | (Python, OpenCV, Tensorflow, Google Teachable Machine)

- Awarded "Best Use of AI" by Travelers Insurance for developing an American Sign Language translator via DL & computer vision (CV).
- Led the creation of a custom dataset of 10,000+ images using computer vision algorithms to track and capture our hand gestures.
- Generated a supervised learning ML model and then optimized it to classify various signs with over 83% accuracy.

eBay: Machine Learning & Name Entity Recognition (NER) Competition | (Python, spaCy, Pandas, NumPy, LLMs)

- Developed a 94% accurate NER model using 10 million raw eBay listings in German; effectively classifying each word.
- Enhanced quality and searchability of listings using data processing, data analytics, and natural language processing with spaCy.
- Conducted data analysis & data cleaning on raw, non-English dataset; streamlining feature extraction & validity for a F1 score of 87%.

Roommate Finder Web App | [GitHub Code](#) | (JavaScript, React, Node, Express, MySQL, AWS cloud (RDS, S3), MUI, Tailwind)

- Deployed and deployed a full stack web app & API while enhancing the UI/UX with over 30 animations; creating a dynamic product architecture to match roommates based on preferences, allowing matched users to go chat and customize their profiles.
- Incorporated Amazon web services to store 1000+ images & MySQL database; optimizing data management & security.
- Implemented software testing to make over 45 routes & queries for frontend and backend to seamlessly interact with the database.

Deep Learning & Reinforcement Learning Flappy Bird AI Game | [GitHub Demo](#) | (Python, NEAT, PyGame)

- Created Flappy Bird (60 FPS) via OOP, simulated physics and collisions, and trained AI birds to be unbeatable by the 11th generation.
- Implemented the NEAT genetic algorithm with an evolving artificial neural network design, resulting AI outperforms 99% of humans.

Leadership, Communication, & Courses

- Activities: Vice President of UMass Brazilian Jiu Jitsu club; Member of UMass Machine Learning Club and UMass Wrestling Club.
- Languages: English, Urdu, Pashto, Hindi
- Courses: Machine Learning, Artificial Intelligence, Software Engineering, Data Structures and Algorithms, Computer Systems, Statistics, Linear Algebra, Discrete Math, Multivariable Calculus, Differential Equations, Ethics & Social Issues in Computing, Software Developer Project Management
- Coursera: Stanford University - Machine Learning Specialization by Andrew Ng