

Shobhit Mehrotra

469-318-9363 | shobhitmehro@umass.edu | www.linkedin.com/in/shobhit-m/ | www.shobhitm.tech

EDUCATION

University of Massachusetts Amherst

Amherst, MA

B.S. Computer Science — GPA: 3.971

May 2026

- Relevant Coursework: Object Oriented Programming, Data Structures and Algorithms, Statistics, Discrete Math, Linear Algebra, Calculus, Quantum Information Science, Information Retrieval

EXPERIENCE

UMass Theory Group

Amherst, MA

Undergraduate Researcher

June 2024 – Present

- Implemented advanced algorithms to solve NP-complete problems, achieving a **60% increase** in computational efficiency for linear separability and Boolean satisfiability (SAT) problems
- Conducted in-depth research on the geometric properties of linear separability, analyzing datasets to determine their separability
- Integrated machine learning techniques, specifically using SVM, achieving a **95% accuracy rate** in linear separability analysis on benchmark datasets

National Center for Technology and Dispute Resolution

Amherst, MA

Software Engineer

February 2024 – Present

- Designing a mobile disaster relief app intended for over **100,000** first responders, utilizing **Firestore** and **Flutter**, enabling **offline first** capabilities and seamless communication during emergencies
- Optimizing cloud based infrastructure on **Google Cloud Platform** (GCP), leveraging services like Cloud Firestore and user authentication to ensure scalability
- Implemented **Agile** methodologies within a collaborative team, completing biweekly sprint goals and achieving a **20%** reduction in development time through efficient project management and continuous integration practices

PROJECTS

ImprovAI | TensorFlow, Python, React.js, Flask, Music21, SQL

- Developed a jazz improvisation platform utilizing a **TensorFlow Keras LSTM** model with time-series note sequence prediction at **90%** accuracy, achieved through hyperparameter optimization, including **learning rate decay** and **temperature scaling**
- Constructed a data pipeline using Music21 to process **50,000+** musical lines, leveraging note tokenization, sequence encoding, and batched data augmentation, resulting in a **45%** improvement in model training and generation

RetrieveIt | Python, Matplotlib, Numpy

- Engineered a search engine by optimizing web crawling, tokenization, and indexing strategies, achieving a **30%** improvement in document retrieval and ranking precision
- Implemented and evaluated retrieval models (**BM25**, various language models), optimizing performance by **45%**, while employing metrics such as **IDCG**, **F1 score**, and **Zipf's law** to assess model efficacy using **Matplotlib**

BetIt | Python, React, Flask, OpenAI, AWS, Firebase

- Built a full stack productivity platform, integrating **OpenAI API** for high-efficiency text summarization, optimizing response times by **40%** through advanced backend architecture and API call optimization
- Integrated **AWS Rekognition** to label and categorize images with **95%** accuracy, while leveraging Firebase for real time data synchronization and seamless user authentication

TECHNICAL SKILLS

Languages: Python, Java, C, JavaScript, SQL, HTML/CSS

Frameworks: React, Flask, Firebase, TensorFlow, Keras

Developer Tools: Git, Linux, OpenAI API, Google Cloud Platform, AWS

Libraries: Pandas, NumPy, Scikit-learn, Music21, Matplotlib, TensorFlow

Awards: Chancellor's Scholar, Best Sustainability Hack, Wolfram Alpha Letter Award, AP Scholar with Distinction

Interests: Jazz Trumpet