Kareem Baba Shaik

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Experience

Responsible AI Lab   **Feb 2024**
Graduate Research Assistant, University of North Texas   *Denton, TX*
- Authored and published a research paper on advanced AI topics in arXiv and presented at the ICCS 2024 conference in Spain within my first month at the Responsible AI Lab.
- Engaged in a collaborative effort with scientists from Argonne National Lab, Oak Ridge National Lab, and Saint Louis University to develop and test scientific software. Utilized Large Language Models (LLMs) for analyzing large-scale programs and documentation, focusing on a case study of the E3SM project.
- Conducted in-depth studies on Large Language Models, aiming to enhance their accuracy through innovative research methodologies.
- Spearheaded initiatives to refine LLMs by reviewing and integrating findings from hundreds of research papers to develop new techniques for model improvement.

Bootcamp Startup   **Sep 2021 – Jan 2022**
Owner, Trainer   *Hyderabad, TG*
- Initiated and led a bootcamp that generated 200,000 INR in revenue within the first three months despite the challenges posed by the COVID-19 pandemic, co-managed with my brother and a friend from NIT, Warangal.
- Educated over 150 students and conducted intensive 2-day workshops for more than 300 students, focusing on programming languages and web and app development.
- Designed and delivered a diverse curriculum covering C++, data structures, Python projects, machine learning principles, data science, and Flutter development, contributing to significant learning outcomes.

MedCords   **Feb 2022 – Aug 2022**
Software Engineer Intern   *Hyderabad, TG*
- Engineered and launched responsive user interfaces using Angular, enhancing user satisfaction by 12%, during my tenure at MedCords, a start-up focused on healthcare products in India.
- Collaborated directly with the Chief Technology Officer to deepen my understanding of the company's technology stack, contributing significantly to both front-end and back-end development of web applications.
- Partnered with the data science team to facilitate the collection and analysis of data, optimizing a tool that manages millions of medical orders, thereby supporting the product management team.

Education

University of North Texas   **Expected Dec 2024**
Master's in Artificial intelligence   *Denton, TX*
- **Relevant Coursework:** Software Development for AI, Digital Image Processing(C++), Empirical Analysis(prob & stat), Machine Learning, Deep Learning, Scientific Data Visualization, Data Modelling and Natural Language Processing

Malla Reddy Engineering College   **Jul 2018 - Aug 2022**
Bachelor of Technology (BTech) in Computer Science   *Hyderabad, TG*
- **Leadership and Training Experience:** Led the Technical Student Association Council Club, mentoring and guiding student members to explore and pursue their passions in technology and related fields.
- **Relevant Coursework:** Data Structures and Algorithms (C++/C), Prob & Stat in CS, Intro to CS II (C++), Linear Algebra, Java Applications, Operating Systems, Applied Physics, Engineering Graphics, Data Mining, Web Technologies, Database Management Systems, Compiler Design, and Computer Networks.

Technical Skills

Languages: Python, C++, JavaScript, TypeScript
AI Frameworks: TensorFlow, PyTorch, Keras, Caffe
Technologies: Deep Learning Models (Generative Models, GANs, Conditional Autoencoders, Diffusion Models), Computer Vision (Image Processing, Object Detection, Recognition, Segmentation, Tracking, Reconstruction), Angular, CherryPy
Concepts: Artificial Intelligence, Multimodal AI, Interpretable Machine Learning, Novel Architectures (Transformers, Attention Modules), Machine Learning Techniques (Adversarial Learning, Probabilistic Methods, Model Adaptation), Model Interpretability (Black-box Model Interpretability, Designing Adversarial Attacks), Data Handling (Data Analysis, Statistical Methods, Algorithm Evaluation)

Research Projects

S3LLM : Large-Scale Scientific Software

- Developed S3LLM, a framework designed to bridge the gap in accessible source code analysis for large-scale software, utilizing the LLaMA 2 model and RAG techniques. This was showcased through the analysis of complex programs like the Energy Exascale Earth System Model (E3SM), which contains over a million lines of code.
- Integrated a feature query language (FQL) to facilitate intricate static code analysis without requiring advanced programming knowledge. Demonstrated the ability to generate accurate FQL queries from natural language inputs, enhancing user interaction with the system.
- Enhanced metadata comprehension capabilities of S3LLM by integrating various metadata formats (DOT, SQL) and employing advanced LLM techniques to query and interpret this data effectively, thus providing deeper insights into software architecture and operations.
- Conducted extensive document analysis by pairing RAG with LLMs to improve the accuracy of extracting information from complex technical documents, thereby simplifying the user's access to pertinent information from extensive technical reports.