MD HASAN ANOWAR

Open to relocation | US Green Card holder (No sponsorship required)
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Computer Science PhD candidate with 6+ years of experience developing, optimizing, and deploying scalable Machine Learning and GenAI models, with expertise in neural networks and LLM. Built and evaluated ML/AI frameworks using structured and unstructured data for tasks such as predictive modeling, retrieval-ranking, and recommendation systems. High impact research resulted in 5 peer-reviewed publications; presented to technical and business stakeholders.

EDUCATION

Ph.D. in Computer Engineering, Iowa State University, USA | 2021 - 2026
M.S. in Electrical Engineering, University of Texas Rio Grande Valley (UTRGV), USA | 2019 - 2020
B.Sc. in Electrical and Electrical Engineering, Bangladesh University of Eng & Tech (BUET) | 2010 - 2015

PROFESSIONAL EXPERIENCE

◊ **AI/ML Engineer,** Evolving Data Lab, Iowa State University, IA | Jan '21 – Present

Deep Learning: Designed transformer-based models for link prediction on large-scale data, achieving 98% precision-recall. Optimized model training pipelines with GPUs achieving 3-5x speedups over state-of-the-art techniques. Evaluated using ablation studies and performed tradeoffs between accuracy and cost [**MDM'26**].
LLMs: Built Large Language Models (LLaMA, Mistral) ranking systems using LoRA fine-tuning, delivering 10x inference speedup while maintaining accuracy and reducing hallucinations.
Developed a RAG system using LangGraph, LangChain and LlamaIndex for multilingual document synthesis. Engineered a property graph index for 600+ document chunks to map entity relationships; optimized overhead by 40% by implementing a dual model (GPT-4o 200B parameter/ 4o-mini 8B parameter).
Data Mining: Designed scalable data processing pipelines for 2TB of moving trajectories; yielded 5x storage reduction and 4x faster query processing [Published in **Information Systems'24, ADBIS'22 (Best paper award)**]. Invented a novel clustering algorithm for large moving-object trajectories [Published in **Sigspatial'24**].

◊ **ML Engineer Intern, ViaSat,** CA | June '24 – Sept '24 (Industry Experience)

Developed end-to-end ML regression models on AWS from time series datasets exceeding 22 billion records. Designed ETL pipelines including model selection, training, validation, and evaluation for models ranging from tree-based (XGBoost) to foundational models (TimesFM); achieved 25% RMSE improvement. Collaborated with engineers, data scientists, and product managers to translate business requirements into ML solutions. Implemented model monitoring and logging systems to ensure availability and reliability.

◊ **ML Engineer,** UTRGV, TX | Jan '19 - Dec '20

Built a production-grade ML system with a user interface for biomedical data, including data ingestion, wrangling, cleaning, feature extraction, visualization, and model inference. Developed supervised learning models (Gradient Boosting, Random Forests) achieving 94% accuracy.

PROJECTS

Database & Distributed System: Designed secure, scalable data access pipelines using Snowflake and Trino, integrating distributed SQL queries into Python-based ML workflows with enterprise authentication (SSO/Kerberos). Optimized pipelines with Hadoop, MapReduce, Spark, Apache Pig, Apache Flink.
Software Development: Mentored a 4-person team to build an open-source visualization tool. Handled implementation, debugging, testing, code reviews, and UI/UX. [Published in **Sigspatial'24**]
Natural Language Processing (NLP): Built an LSTM-based sentiment analysis achieving 50% higher accuracy than standard recurrent neural network (RNN).

SKILLS

ML & AI: Neural Network, Artificial Intelligence, Agentic AI, Forecasting, Retrieval-augmented generation, VectorDB, A/B Test, Statistical analysis
Programming: Python, Java, PyTorch, TensorFlow, Keras, Scikit-Learn, NumPy, Pandas, SQL, Git
Data & Systems: MySQL, Slurm, Unix/Linux, MDX, Matplotlib, Plotly
Cloud Computing & Pipelines: AWS, GCP, CUDA, Databricks, Docker, Hugging Face, CI/CD, MLOps
Soft Skills: problem-solving, leadership skills, creative, cross-functional team, excellent communication.