

Mohammad Junayed Hasan

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EDUCATION

Johns Hopkins University

Master of Science in Computer Science

Baltimore, MD

Expected Dec 2025

North South University

Bachelor of Computer Science and Engineering GPA: 3.95/4.00, Summa Cum Laude

Dhaka, BD

Dec 2023

- Received full-merit scholarship (top 1% of class)

WORK EXPERIENCE

AI Research Instructor

North South University

Jan 2024 – Present

Dhaka, BD

- Led ML curriculum development and instruction for 150+ students covering topics from statistical ML to deep learning, LLMs, and model compression, with 85% successfully implementing production-level ML systems
- Supervised 15+ research projects in applied ML, medical imaging, and clinical NLP through systematic project guidance and mentorship, resulting in 90% project completion rate with publishable outcomes
- Collaborated with 20+ researchers through research ideation, execution, and publication processes

Machine Learning Engineer

Apurba Technologies Ltd.

Nov 2023 – July 2024

Dhaka, BD

- Developed a compression framework with LLMs for healthcare systems using knowledge distillation, pruning, and quantization, reducing model size by 95.6% and inference time by 96.5%, with a performance loss of <5%
- Fine-tuned 32 LLMs and their ensembles on 4 downstream tasks, achieving state-of-the-art on all of them
- Designed a multi-task learning architecture for smile video classification by combining hand-crafted features with deep learning based transformers, outperforming all existing methods (CNNs, RNNs) by >3%
- Secured \$35,000 grant for the Best Innovation Idea at a research competition; presented findings at 3 venues

PROJECTS

Stress Detection System | PyTorch, Scikit-learn, LLMs, HuggingFace, Git

- Engineered an AI framework for occupational stress detection from tabular data with ML models and BERT encoders, achieving 90.32% accuracy on test data, surpassing all state-of-the-art frameworks by 5-10%
- Developed an algorithm to transform tabular data to texts with 100% information retention for domain analysis
- Deployed a real-time assessment tool with response time $\leq 100\text{ms}$, validated across 4 synthetic data techniques

Disease Prediction Framework | PyTorch, Scikit-learn, LLMs, Prompt Engineering, AWS

- Developed a pipeline for detecting noncommunicable diseases through optimized data preprocessing and prompt engineering for feature selection, achieving an improvement of 3-10% over existing methods
- Improved generalizability by 1.2% on synthetic data by adding domain knowledge with Knowledge Prompting
- Deployed the model on HuggingFace spaces for detection and management, achieving $\leq 100\text{ms}$ response time

Web Crawling Engine | Python, Django, BeautifulSoup, MySQL

- Led a team of 4 to build a scalable search engine with automated data crawling and extraction up to 5 levels
- Designed efficient indexing algorithms handling 100,000+ web pages with 95% accuracy in content extraction

SKILLS

Languages & Frameworks: Python, Java, C/C++, JavaScript, Django, Spring, NLTK

Machine Learning & AI: PyTorch, TensorFlow, Scikit-learn, HuggingFace, LLM Fine-tuning, Prompt Engineering

Developer Tools & Cloud: Git, Docker, MySQL, AWS, GCP, Pandas, NumPy, Matplotlib, Seaborn, SciPy

PUBLICATIONS

- Hasan, M. J. et al. "DeepMarkerNet: Duchenne Marker for Smile Recognition." *Pattern Recognition Letters*, 2024
- Hasan, M. J. et al. "OptimCLM: Optimizing Clinical Language Models." *Int. Journal of Medic. Informatics*, 2024