Mohammad Junayed Hasan

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EDUCATION

Johns Hopkins University — Baltimore, MD
Master of Science in Computer Science — *Expected Dec 2025*

North South University — Dhaka, BD
Bachelor of Computer Science and Engineering ***GPA: 3.95/4.00, Summa Cum Laude*** — *Dec 2023*

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

WORK EXPERIENCE

AI Research Instructor — *Jan 2024 – Present*
North South University — 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 — *Nov 2023 – July 2024*
Apurba Technologies Ltd. — 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 spatial and temporal 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 convert tabular data to texts with **100%** information retention enabling domain analysis
- Deployed a real-time assessment tool with response time $\leq$**100ms**, 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 integration of prompt engineering for feature selection, achieving an improvement of **3-10%** over existing methods
- Improved generalizability by **1.2%** on synthetic data by integrating domain knowledge with Knowledge Prompting
- Deployed the model on HuggingFace spaces for detection and management, achieving $\leq$**100ms** response time

Web Crawling Engine | *Python, Django, BeautifulSoup, MySQL*

- Led a team of **4** to build a scalable search engine with automated web crawling and data 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 Medical Informatics*, 2024