# 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

**Software Engineer - Machine Learning** — *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 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 $\leq$**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 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 $\leq$**100ms** 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++, HTML, CSS, PHP, PyTorch, TensorFlow, Keras, Django, Spring
**Machine Learning & AI:** Pandas, NumPy, Matplotlib, Scikit-learn, HuggingFace, Seaborn, SciPy, NLTK
**Developer Tools & Cloud:** Git, Docker, LLM Fine-tuning, Prompt Engineering, MySQL, NoSQL, AWS, GCP

## 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