Md Sultanul Islam Ovi

PhD Student | AI/ML Researcher

👤 portfolio | ⌨ github | 🔗 linkedin | ✉ movi@gmu.edu | 📞 (+1)5715919887 | 📍 Virginia, USA

Research Interests

My research interests span applied deep learning, edge AI, and responsible ML. Specifically, I work on: (a) AI/ML applications in education, healthcare, and other sensitive domains; (b) human–AI collaboration for educational content evaluation and generation using LLMs; and (c) security and privacy of TinyLLMs/SLMs in resource-constrained settings such as IoT.

Education

George Mason University   **Fairfax, VA, USA**
Ph.D. in Computer Science (Current GPA: 4/4)   Aug. 2023 – Present

Islamic University of Technology   **Gazipur, Bangladesh**
B.Sc. in Computer Science and Engineering, Honors Class (CGPA: 3.87/4) Jan. 2017 – Mar. 2021

Publications

1. **Quantitative Currency Evaluation in Low-Resource Settings through Pattern Analysis to Assist Visually Impaired Users** 📄
   Md Sultanul Islam Ovi, Mainul Hossain, Md Badsha Biswas
   International Conference on Data Mining (ICDM), Workshop on Data Mining for Reliable Decision Making, IEEE, 2025

2. **Benchmarking ChatGPT, Codeium, and GitHub Copilot: A Comparative Study of AI-Driven Programming and Debugging Assistants** 📄
   Md Sultanul Islam Ovi, Nafisa Anjum, Tasmina Haque Bithe, Md. Mahabubur Rahman, Mst. Shahnaj Akter Smrity
   27th International Conference on Computer and Information Technology (ICCIT), IEEE, 2024

3. **PhishGuard: A Multi-Layered Ensemble Model for Optimal Phishing Website Detection** 📄
   Md Sultanul Islam Ovi, Md. Hasibur Rahman, Mohammad Arif Hossain
   6th International Conference on Sustainable Technologies for Industry 5.0 (STI), IEEE, 2024

4. **Sedimentation Analysis on Padma River Using Machine Learning Techniques** 📄
   *Md. Ruhen Hossain Bhuiyan, Niloy Saha Roy, Monoshi Kumar Roy, **Md. Sultanul Islam Ovi**, Faiz Al Faisal, Muhammad Aminur Rahaman*
   4th International Conference on Sustainable Technologies for Industry 4.0 (STI), IEEE, 2022

Submitted Papers

1. **Protecting Student Mental Health with a Context-Aware Machine Learning Framework for Stress Monitoring** 📄
   Md Sultanul Islam Ovi, Jamal Hossain, Md Raihan Alam Rahi, Fatema Akter
   Submitted to ICCIT 2025 Conference

2. **A Study on Distributed Strategies for Deep Learning Applications in GPU Clusters** 📄
   Md Sultanul Islam Ovi
   Submitted to Nature Computing Journal

3. **Workload Characterization and Scheduling Insights from Alibaba's 2023 GPU Cluster Trace**
   Md Sultanul Islam Ovi
   Submitted to Nature Cluster Computing Journal

Research Experience

George Mason University   **Fairfax, VA, USA**
Graduate Research Assistant, Advisor: **Prof. Sanjeev Setia**   May 2024 – Aug. 2024
- Focused on GPU sharing, distributed training strategies, and resource optimization for deep learning.

Green University of Bangladesh   **Dhaka, Bangladesh**
Research Assistant, Systems & Security Research Cell, Advisor: **Prof. Saiful Azad**   Jun. 2022 – Jun. 2023
- Focused on system security, vulnerability analysis, and secure software practices.

Islamic University of Technology   **Gazipur, Bangladesh**
Undergraduate Researcher, Advisor: **Prof. Muhammad Mahbub Alam**   Jan. 2020 – Mar. 2021
- Focused on network security, SDN architecture, and real-time attack detection.

Teaching Experience

George Mason University   **Fairfax, VA, USA**
Graduate Teaching Assistant, Department of Computer Science   Aug. 2023 – May 2024, Aug. 2024 – Present
- Facilitated lab sessions, conducted office hours, and graded assignments in Systems Programming and Object-Oriented Programming.

Green University of Bangladesh   **Dhaka, Bangladesh**
Lecturer, Department of Computer Science & Engineering   Jun. 2021 – Jun. 2023
- Courses Taught: Structured Programming, Data Structures, Algorithms, Computer Fundamentals & IT, Data Communications, Computer Networking, Discrete Mathematics, Digital Logic Design, Microprocessors & Micro-controllers, Database Systems.

Professional Experience

CETL - Green University   **Dhaka, Bangladesh**
Teaching & Learning Development Trainee   Jun. 2021 – Sep. 2021
- Trained in modern teaching strategies: Pedagogy, Andragogy, and Heutagogy.
- Participated in faculty skill development and capacity-building workshops.
- Engaged in collaborative teaching enhancement activities.

Green University of Bangladesh   **Dhaka, Bangladesh**
Mentor Moderator   Oct. 2021 – Jun. 2023
- Monitored the mentoring activity of the mentors & developed mentorship guidelines.
- Organized 'Meet the Mentors' program every semester.
- Facilitated regular meetings with the Mentors, Director of Permanent Campus, and respective Chairpersons.

Beetles Cyber Security Ltd.   **Dhaka, Bangladesh**
Cyber Security Intern, Supervisor: **Mr. Shahee Mirza**   Nov. 2019 – Dec. 2019
- Applied different strategies in Cyber Kill Chain Model and MITRE ATT&CK Model to defend systems under attack.
- Performed vulnerability analysis on different compromised systems using open source tools like Nmap, Metasploit, Wireshark, Nessus etc.

Technical Skills

- **Programming Languages:** Python, Java, Golang, C/C++, SQL, Bash
- **Machine Learning & Deep Learning:** PyTorch, TensorFlow, Keras, Hugging Face Transformers, Scikit-learn
- **LLMs & Advanced AI:** LangChain, Agentic AI frameworks, RAG, Model Compression (Quantization, Pruning)
- **Data Science & Analytics:** Pandas, NumPy, Matplotlib, Seaborn, Tableau, Power BI
- **Tools & Platforms:** AWS, GCP, Azure, Linux, Docker, Kubernetes, Git, MLflow
- **Distributed Computing:** Multi-GPU Training, HPC, MPI, Slurm, Ray, DeepSpeed

Technical Projects

NaturalQuery: AI-Powered SQL Query Generator ⭘   *GPT-4, FastAPI, MySQL, Streamlit*
- Built an AI system converting natural language to optimized SQL using GPT-4 with schema detection and validation.
- Implemented FastAPI backend with multi-database support and performance optimization suggestions.
- Deployed Streamlit web interface with real-time query execution, results visualization, and REST API endpoints.

PDF2Table: AI-Powered Data Extraction from Research Papers ⭘   *RAG, GPT-4, ChromaDB, Streamlit*
- Built end-to-end RAG pipeline extracting structured data (title, authors, summary, year) from research papers.
- Implemented vector search with ChromaDB and GPT-4o for intelligent document processing.
- Deployed production-ready Streamlit application with Docker containerization.

Math2LaTeX: Equation OCR to LaTeX with Qwen2 VL ⭘   *PyTorch, Qwen2-VL, LoRA, Gradio*
- Fine-tuned Qwen2-VL-7B vision-language model to convert mathematical equation images into LaTeX code.
- Developed interactive Gradio web app with LaTeX preview, clipboard integration, and .tex file export functionality.
- Leveraged LoRA adapters and 4-bit quantization for efficient training, reducing computational costs while maintaining performance.

Agentic RAG with CrewAI: Multi-Agent Knowledge Retrieval and Deployment ⭘   *RAG, Groq, Tavily, AWS*
- Built an agentic RAG system with CrewAI, routing between a ChromaDB knowledge base and Tavily web search.
- Developed a Streamlit interface and deployed the application on AWS EC2 using Docker for scalable access.
- Implemented collaborating agents for routing, retrieval, relevance grading, and hallucination checks using Groq LLaMA models.

Paperback Portal: E-commerce Bookstore Web Application ⭘   *Java, JSP, Hibernate, MySQL*
- Built a feature-rich e-commerce bookstore using Java EE, Hibernate ORM, and deployed on Tomcat Server.
- Added admin panel, role-based access, responsive UI, and secure payment integration; validated with JUnit.

GhostType: Cross-Platform Keylogger with Stealth Capabilities ⭘   *Python, Cryptography*
- Developed a stealth keylogger with RSA-encrypted logs, customizable input tracking, and auto self-destruct.
- Integrated secure email-based data delivery with user-defined intervals for forensic-grade usage.

LearningTurtles: School Management System ⭘   *Node.js, Express.js, MongoDB*
- Engineered a full-stack school management system with RESTful APIs for exams, registration, and tracking.
- Implemented role-based access and optimized MongoDB queries with pagination and filtering features.

*Remaining projects are available on my **github*** ⭘

Certificates

- **Natural Language Processing Specialization** 📝   DeepLearning.AI
- **DeepLearning.AI TensorFlow Developer** 📝   DeepLearning.AI
- **Mathematics for Machine Learning and Data Science Specialization** 📝   DeepLearning.AI
- **Python for Everybody Specialization** 📝   University of Michigan
- **Programming with Google Specialization** 📝   University of California, Irvine
- **Machine Learning A-Z: AI, Python & R** 📝   Udemy

Academic Services

- *Reviewer*, AAAI 2026, MURE Workshop, Singapore **(Conference)**   2026
- *Reviewer*, IEEE IATMSI 2026, India **(Conference)**   2026
- *Reviewer*, BMVC 2025, MPI Workshop, UK **(Conference)**   2025
- *Reviewer*, NeurIPS 2025, LLM Evaluation Workshop, USA **(Conference)**   2025
- *Reviewer*, NeurIPS 2025, Muslims in ML Workshop, USA **(Conference)**   2025
- *Reviewer*, IEEE-BHI 2025, USA **(Conference)**   2025
- *Reviewer*, AACL-IJCNLP 2025, BLP Workshop, India **(Conference)**   2025
- *Technical Committee Member*, IEEE-STI 2022, Bangladesh **(Conference)**   2022
- *Technical Committee Member*, IEEE-STI 2021, Bangladesh **(Conference)**   2021

Professional Memberships

- *Member*, AAAI   Jun. 2025 – Present
- *Member*, IEEE   Apr. 2025 – Present
- *Member*, IEEE Computer Society   Apr. 2025 – Present
- *Member*, USENIX Association   Apr. 2025 – Present

Volunteer & Outreach

AIML Professional Community Bangladesh 🔗   **Bangladesh (Remote)**
Community Mentor   Mar. 2025 – Present
- Guiding AI/ML enthusiasts in research, career growth, and community building across Bangladesh's tech ecosystem.

Extracurricular Activities

- *Member Secretary*, Hostel Infrastructure and Management Committee at GUB   Oct. 2021 – Jun. 2023
- *Member*, Community Outreach Committee at GUB   Feb. 2022 – Jun. 2023
- *Member*, Lab Development Committee at GUB   Feb. 2022 – Jun. 2023
- *Organizing Committee Member*, 9th and 10th National ICT Fest at IUT   2017, 2019
- *Organizing Committee Member*, App Development Workshop at IUT   2019
- *4th Place*, National BDAPPS Innovation Hackathon   2018