Mahbub Islam Mahim

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EDUCATION

Jahangirnagar University   2023
Master of Science in Computer Science & Engineering   *Dhaka, Bangladesh*
- **CGPA:** 3.83 / 4.00
- **Thesis (Grade: 4/4):** Optimizing the Fine-tuning Process of Large Language Models.
- **Fellowship:** Awarded the National Science and Technology Fellowship by the Ministry of Science and Technology, Bangladesh.

Jahangirnagar University   2021
Bachelor of Science in Computer Science & Engineering   *Dhaka, Bangladesh*
- **CGPA:** 3.69 / 4.00
- **Final-Year Project (Grade: 4/4):** IoT-driven Water Quality Monitoring and Classification System for Biofloc Aquaculture using Machine Learning.
- **Scholarships:** Received merit-based scholarships during all four years of B.Sc. for academic excellence.

PATENT

Achieved a patent for a method that enhances wide-angle images by integrating multiple fields of view from different lenses. **Graded A1** by Samsung Research on 20 Feb 2025. The patent filing process is currently ongoing.

EXPERIENCE

Samsung R&D Institute Bangladesh   Apr 2023 – Present
Sr. Software Engineer   *Dhaka, Bangladesh*

Innovation & Research
- Achieved 1 A1-grade patent and developed an on-device PoC to demonstrate the feasibility of this patent.
- Submitted 2 research proposals for patent development, which were selected by Samsung's Tech Management team and assigned DOIs.
- Conceived and developed 2 AI-driven solutions for Samsung's internal AI contest, both selected for PoC exhibition.
- Designed and delivered 3 AI-enhanced features to improve project functionality and user experience; all were integrated into the final product after successful PoCs.
- Actively contribute to team innovation meetings by evaluating peer-submitted ideas and providing constructive technical feedback on novelty, obviousness, and feasibility.

Development
- Working on developing a Knowledge Graph build tool in collaboration with **Oxford Semantic Technologies, UK** (acquired by Samsung in 2024), focusing on ontology creation, visualization, data mapping, and semantic reasoning with **RDFox**.
- Developed real-time in-memory persistent graph canvas with drag-and-drop support, allowing users to construct and edit RDF-based knowledge schema visually.
- Leading the development of a module called DATA MAPPING, featuring a data mapping canvas that enables users to connect raw data to semantic entities, allowing large CSV or Parquet datasets to be transformed into RDF triples smoothly.
- Contribute to requirement analysis, technical design, and full-stack development of the project.
- Mentored 3 junior engineers by conducting code reviews, enhancing code quality, and guiding technical decisions.

Awards
- Received the **Recognition in Innovation** award for contributions to patent development at Samsung.
- Received **Icon Engineer Award 2 times** (2024, 2025) for outstanding contributions to a key project and patent.
- Received an award for achieving the professional-level Software Coding (SWC) certification test on August 4, 2023, in recognition of coding excellence.

RESEARCH & PUBLICATIONS

- **Mahim, M. I.**, & Das, J. K. (2025). *Optimizing the Fine-Tuning Process of Large Language Models. Jahangirnagar University Journal of Electronics and Computer Science, 16* ↗, June 2025.

  A comprehensive comparison of a memory-efficient fine-tuning method that combines quantization and LoRA on LLaMA-2 7B using the CodeAlpaca-20k dataset, reducing GPU memory usage from 112 GB to 10.8 GB without sacrificing performance, thereby enabling low-resource LLM deployment in real-world applications such as coding assistants.

- **Mahim, M. I.**, & Hasan, M. (2025). *Divide and Conquer: A Two-Stage Label-Wise Cascaded Framework for Bangla Hate Speech Detection. Proceedings of the BLP Shared Task 1 @ AACL-IJCNLP 2025* ↗. GitHub repo ↗, Leaderboard ↗.

  Designed a label-wise cascaded pipeline where each label is first classified using a binary model and then refined with a multiclass model, employing k-fold cross-validation and intra-label ensembling. Achieved **1st place** in the contest and currently under review for the Best Paper award.

- Safwan, M. H., & **Mahim, M. I.** (2025). *Enhancing Wide-Angle Image Using Narrow-Angle View of the Same Scene. arXiv preprint arXiv:2504.09455* ↗, April 2025.

  Developed a GAN-based approach to enhance wide-angle images by fusing fine details from co-captured narrow-angle views, leveraging attention-based feature integration to improve visual fidelity.

PROGRAMMING CONTESTS

Achievements

- **Bronze Medalist** among 324 teams in the International University Physics Competition (UPC) 2021 ↗ (Team 233). Result ↗ • Certificate ↗.
- Competed three times in the *ICPC Dhaka Regional (2021–2024)* as a member of teams JU_NoName, JU_3AngryMen, and JU_Metamask.
- **Finalist** in the *National Collegiate Programming Contest (NCPC) 2021*.
- Ranked **2nd in Bangladesh** and 82nd globally out of 22,249 in CodeChef Starters 62 ↗.
- Secured 16th place among 62 teams in the MBSTU Inter-Department Programming Contest 2021 (Team: JU_darkMatter)
- Served as Organizer, Problem Setter, and Judge for university-level contests: JU CSE 29's Brain Muscle Checking Contest 2022 ↗ and Binary Brains Battle – December 2022 ↗.
- Participated in 10+ onsite and 185+ online contests across major platforms.

Profiles

- **Codeforces:** Specialist (Max Rating: 1568) — `@Mahim` ↗.
- **CodeChef:** 4* (Max Rating: 1916) — `@mahim47` ↗.
- Solved 1500+ problems across competitive programming platforms — StopStalk Profile ↗.

Technical Skills

Knowledge & Semantic Technologies: Knowledge Representation & Reasoning, Semantic Web, Ontology Engineering, Data Engineering, RDF
Machine Learning & AI: PyTorch, Hugging Face Transformers, Optimization, Quantization, LLMs
Programming Languages: TypeScript, Python, C, C++, Java
Frameworks: Next.js
Libraries: React.js, MaterialUI, React Flow, Zustand
Query Languages: SPARQL, Datalog, SQL, MQL
Databases: RDFox, MySQL, MongoDB
API & Backend Tools: tRPC, Zod, Swagger, Postman, WebSocket
Testing & Development Tools: Storybook, Playwright, Jest, Git, Azure
Operating Systems: Linux, macOS, Windows