

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 (Rank: 8 / 72)
- **Final-Year Project (Grade: 4/4):** IoT-driven Water Quality Monitoring and Classification System for Biofloc Aquaculture using Machine Learning.
- **Scholarships:** Awarded the Dean's scholarships during all four years of B.Sc. for academic excellence. Received a government merit-based scholarship based on final academic results.

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. Also developed an on-device proof of concept (PoC) to test the feasibility of the method. 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.
- Ideated and developed 2 AI-driven solutions (Multimodal QnA, Health Assistant) for Samsung's internal AI contest, both selected for PoC exhibition.
- Designed and delivered 3 AI-enhanced features (automatic datalog rule naming, rule description, and a chat system using LLMs) to improve project functionality and user experience; 2 were integrated into the final product after successful PoCs, and one is under development.
- 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.
- Working on requirement analysis, technical design, feature refinement, and full-stack development of the project.
- Completed a 6-month advanced Generative AI training program organized by BUET and Samsung, and currently mentoring 24 engineers in AI.
- Mentoring 3 junior engineers by conducting code reviews, enhancing code quality, and guiding technical decisions.

RESEARCH & PUBLICATIONS

- **[*Best Paper] 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 @ ACL-IJCNLP 2025* [🔗](#). GitHub repo [🔗](#), Leaderboard [🔗](#), Acceptance [🔗](#).
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 as well as **accepted and presented** at ACL-IJCNLP 2025.
- **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 much performance, thereby enabling low-resource LLM deployment in real-world applications such as coding assistants.
- 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, using attention-based feature integration to improve visual fidelity.

AWARDS & RECOGNITIONS

- Received the **Recognition in Innovation** award for contributions to patent development at Samsung (2024). Certificate [🔗](#)
- **Bronze Medalist** among 324 teams in the International University Physics Competition (UPC) 2021 [🔗](#) (Team 233). Result [🔗](#) • Certificate [🔗](#)
- **Icon Engineer Award** (Jul-Aug 2025) for outstanding contributions to the project at Samsung.
- **Icon Engineer Award** (Nov-Dec 2024) for achieving patent and project contributions at Samsung. Certificate [🔗](#)
- Received a professional-level Software Coding (SWC) certification award at Samsung on August 4, 2023, in recognition of coding excellence. Certificate [🔗](#)

PROGRAMMING CONTESTS

Achievements

- 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)
- Participated in 10+ onsite, 185+ online contests, and solved 1500+ problems across major programming platforms.

Profiles

- **Codeforces:** Specialist (Max Rating: 1568) — @Mahim [🔗](#).
- **CodeChef:** 4* (Max Rating: 1916) — @mahim47 [🔗](#).

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 & Libraries:** Next.js, 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

Extracurricular Activities

- Mentored junior students during my undergraduate (Honors) studies by conducting regular sessions on problem solving and Data Structures & Algorithms.
- Served as an Organizer, Problem Setter, and Judge for university-level programming contests during my Honors program, including JU CSE 29's Brain Muscle Checking Contest 2022 [!\[\]\(6302aad5aed157b291fddf37b4870784_img.jpg\)](#).
- Actively organized departmental events during my undergraduate studies, including JU CSE FEST 2022, JU CSE Programming Workshop 2022.
- Serving as a Task Force Member across three Innovation teams at Samsung Research Bangladesh, contributing to achieving innovation goals.