Mehbubul Hasan Al-Quvi

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Education

Bangladesh University of Engineering and Technology (BUET) April 2019 – July 2024
Bachelor of Science in Computer Science and Engineering *CGPA: 3.84/4.00*

Research Experience

Summer Research Internship, OrderLab, University of Michigan June 2024 – Present
Remote Research Intern advised by Prof. Ryan Huang

- Co-developed a framework for enhancing the flexibility and the runtime safety of eBPF programs.
- Contributed to the framework's code generation module and the custom IR for code instrumentation.
- Wrote passes that moved some static checks to runtime and improved runtime safety.
- Curated a dataset of accepted and rejected eBPF programs from real-world projects for evaluation.
- Conducted evaluations of scalability, safety, and verifier enhancements.
- Co-authored a paper on the framework, currently under submission to **OSDI 2025**.

BUET CSE, and Samsung Research Bangladesh February 2024 – December 2024
Research Assistant advised by Prof. Anindya Iqbal and Prof. Sukarna Barua

- Co-developed an automated app-testing framework that utilizes large language models as autonomous agents.
- Proposed and implemented the framework's verification module for enhanced reliability.
- Led the initiative for dataset collection and fine-tuning language models.
- Co-authored a paper on the framework which is currently under review by Samsung Research Bangladesh.

Achievements and Awards

RISE Research Grant 2023
Bangladesh University of Engineering and Technology

- Awarded the RISE Research Grant for outstanding research contributions and potential.

Dean's List Award, Merit Scholarship, and Admission Test Scholarship 2019 – 2024
Bangladesh University of Engineering and Technology

- Awarded after each term for academic excellence.

Second Runner-Up, DUITS IT Fest Hackathon 2014
Dhaka University IT Society

- Secured the second runner-up position for developing EmerApp.

Projects (Selected)

Paging Framework and Scheduler for xv6 Operating System 2023

- Implemented a simple paging framework and a lottery scheduler for the xv6 OS.

QCC - Tiny C Compiler | GitHub 2022

- Built a tiny C compiler using C++ that translates C code into assembly code.

4-Bit MIPS CPU | GitHub 2022

- Built hardware and a virtual simulation for the CPU pipeline.

Ray-Tracing in OpenGL | GitHub 2023

- Implemented rasterization and a ray-tracing pipeline in C++ and OpenGL.

CryptoSys - Basic Crypto-System for Secured Communication | GitHub 2023

- Implemented a basic crypto-system utilizing AES and Diffie-Hellman algorithm.

HTTP Server | GitHub 2022

- Built a multi-threaded HTTP server using Java and socket programming.

Microcontroller based Automated Traffic Signaling System | GitHub 2022

- Built an automated traffic signaling system with Arduino.

Gradery - An Online CMS | GitHub 2022

- Developed an online course management system (CMS) for BUET CSE.

KagOJ - An Online Judge | GitHub 2023

- Co-developed an online judge platform for coding practice and contests.

Bounce Game for Windows | GitHub 2019

- Built the desktop version of the popular mobile game, Bounce.

EmerApp - Helper in Emergency 2014

- Developed an Android app to assist users during emergencies.

ACTIVITIES

Director of Technology, BUET Cyber-Security Club 2023 – 2024
Bangladesh University of Engineering and Technology

- Organized workshops on various cyber-security topics and arranged Capture-the-Flag (CTF) competitions.

Student Mentor 2019 – 2024
Bangladesh University of Engineering and Technology

- Mentored several undergraduate students in research and university projects.
- Mentored around 20 high school students in informatics, physics and mathematical olympiads.

LANGUAGES

English: TOEFL 111/120 (Reading: 29, Listening: 26, Speaking: 29, Writing: 27)
Bengali: Native Proficiency

SKILLS

Programming: C/C++, C#, Bash, Java, Python, SQL, JavaScript, HTML/CSS, R, LaTeX, Kernel Hacking and eBPF
Frameworks: Node.js, Express.js, React
Miscellaneous: Vim, Emacs, Git, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse, pandas, NumPy, Matplotlib

REFERENCE

Ryan Huang University of Michigan, Ann Arbor
Associate Professor, Computer Science and Engineering *ryanph@umich.edu*

Anindya Iqbal Bangladesh University of Engineering and Technology
Professor, Computer Science and Engineering *anindya@cse.buet.ac.bd*

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