

HASAN MASUM

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EDUCATION

University of Maryland, Baltimore County

PhD in Information Systems

- CGPA 4.0 / 4.0

Baltimore, Maryland, USA

Aug 2025 – Present

WORK EXPERIENCE

University of Maryland, Baltimore County

Research Assistant, Reliable and Intelligent Software Engineering (RISE) Lab

Baltimore, MD, USA

Aug 2025 – Present

- Building a fully automated framework for reproducing system-level concurrency bugs. (in review)
- Curated a dataset of 70+ real-world system-level concurrency bugs (Red Hat Bugzilla, Debian Debbugs, GNU bug trackers), reproducing and analyzing each; now developing input/test-case generation for them. (in submission)
- Developed an approach for automatically reproducing quantum software bugs in the **Qiskit** framework with a curated dataset of 150+ quantum software bugs. (in submission)
- Conducted a user study on how developers use LLMs for debugging. (in submission)

Pridesys IT Ltd.

Software Engineer II

Onsite / Dhaka, Bangladesh

Jun 2024 – Jul 2025

- **Language & Tools:** Java, Go, Springboot, OpenAPI, Terraform, Azure, AKS, NGINX, Keycloak, GitHub Actions
- **Redesigned** monolithic on-premis ERP system to **Cloud Native Architecture** using **Domain Driven Design**.
- Implemented Identity and Access Management using **Keycloak**.
- Automated infrastructure (**Terraform**) and deployments (GitHub Actions reusable workflows, self-hosted runners).
- Unit and integration testing using **JUnit**, **Mockito** and **Testcontainers**.
- API load testing using **Grafana K6** and monitoring using **Grafana & Prometheus**.
- Managed a Kubernetes cluster on Azure.
- Developed **Flutter** App with GitHub Actions to automate APK & IPA build and deployment.

Junior Software Engineer

Oct 2023 – Apr 2024

- Shifted the backend architecture from deprecated Oracle Forms to Spring Boot 3 resulting in better performance, and security, with support for modern RESTful APIs and a reduction in maintenance costs.
- Shifted the database from Oracle to PostgreSQL which reduced the overall cost by 70%
- Deployed the cloud ERP backend and database on Azure using AKS, ACR, cloud storage and NGINX, increasing reliability and availability by 20% and reducing infrastructure cost by about 30%.

AI Samurai JAPAN Ltd (Chowagiken)

Machine Learning Intern

Remote / Tokyo, Japan

Apr 2023 – Aug 2024

- Developed a deep learning pipeline for **background removal** of an object using **instance segmentation** techniques, mostly using **zero-shot models** like **Grounded Dino** and **Segment Anything** with **RealESRGAN** for image super resolution.

Pubali Bank Limited | Software Engineer Intern

May 2023 – Jun 2023

SELECTED PROJECTS

AutoAlloc: Bi-Level Approach to Memory Management for SLO-Targeted Microservices | *Memory Management, Microservices, SLO, Kubernetes*

[Github](#)

- Developed a bi-level memory management approach for microservices to meet SLOs.

Brainlytic: An Interactive Problem Solving App. | *Android, Java, Retrofit, RoomDB*

[Github](#)

- Developed an interactive problem-solving Android app in Java and released it on Google Play (800+ downloads).

A Lightweight Compiler Implemented from Scratch. | *Flex, Bison, Emu8086*

[Github](#)

- Developed a C compiler from scratch using Flex, Bison, and Emu8086.
- Implemented the symbol table, lexer, parser, semantic analyzer, intermediate code generator, optimizer and code generator.

xv6-riscv OS Features Implementation | *OS, System call, Paging*

[Github](#)

- Implemented system calls, virtual memory, and paging in the xv6 operating system.

SKILLS

- **Programming:** C/C++, Python, Java, Go, JavaScript, SQL
- **ML & GenAI:** PyTorch, Scikit-learn, OpenCV, LangChain, Pydantic AI, Prompt Engineering
- **Testing & Monitoring:** JUnit, Mockito, Testcontainers, K6, Grafana, Prometheus
- **Cloud & Systems:** Docker, Kubernetes, Azure, GCP, Terraform, GitHub Actions, PostgreSQL, MongoDB

SELECTED AWARDS

Champion Student Poster Award @ Networks, Systems and Security (NSysS) 2024

Global Winner Honorable Mention (Top 10 out of 3000+ teams) @ NASA Space Apps Challenge 2020

[details](#)

First Runner-Up (Ranked 2 out of 511 teams) @ Code Samurai Hackathon 2022

[details](#)