

MD MAHBUB ALAM

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RESEARCH INTERESTS

Security in Computer Systems and Networks, Automated Vulnerability Detection, Program Analysis, Machine Learning

EDUCATION

Syracuse University Ph.D in Computer/Information Science and Engineering	August 2023 - Present Syracuse, NY
Bangladesh University of Engineering and Technology (BUET) Bachelor of Science in Computer Science and Engineering <i>CGPA: 3.57 (out of 4.00)</i>	Feb 2013 - Sep 2017 Dhaka, Bangladesh

WORK EXPERIENCE

Syracuse University Graduate Research Assistant	August 2023 - Present Syracuse, NY
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- Designed and implemented text to IoT policy translator using LLM and developed policy language validator using grammar parser.
- Implemented an input generator using Z3 Theorem Prover to generate inputs compliant with the PKCS#1-v1.5 standard.
- Created a fuzz campaign platform designed for conducting experiments by employing various fuzzers and test subjects.

Intuitive Web Solutions LLC (BriteCore) Senior Site Reliability Engineer (remote)	Redwood City, CA March 2022 - July 2023
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- Improved monitoring of application performance and failures. Automated detection and healing of system failures.
- Diagnosed, investigated, and resolved system incidents, and performed post-incident reviews.
- Investigated security vulnerabilities and implemented security best practices across cloud infrastructures.
- Implemented monitoring and optimization of resource allocation in batch processing, which reduced infrastructure costs by 10%.

Senior Cloud Engineer(remote)	Oct 2021 - Feb 2022
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- Modularized cloud infrastructure as code using AWS CDK and Cloudformation.
- Developed deployment portal to manage applications and cloud infrastructures in 100+ AWS accounts.
- Automated upgrading 100+ production AWS database clusters ensuring minimal downtime.

Cloud Engineer (remote)	Aug 2019 - Sep 2021
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- Configured multi-master shared Elasticsearch cluster and exposed this service to multiple AWS accounts securely through AWS Private Link.
- Developed and improved CI/CD release and deployment pipelines used by 40+ products.
- Migrated legacy application from EC2 instance to Elastic Container Service.

Field Information Solutions Ltd Software Engineer	Dhaka, Bangladesh May 2018 - Jul 2019
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- Developed API endpoints to support both web application and mobile application for last-mile sales distribution product.
- Revised and modularized old codebase to increase the code re-usability in new projects.

Reve Systems Junior Software Engineer	Dhaka, Bangladesh Oct 2017 - Apr 2018
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- Developed source code generator using Java and Apache Velocity template engine, which ensured coherent structure and style of the codebases and enhanced development speed.
- Worked on high-performant SMS server application utilizing SMPP protocol.

UNDERGRADUATE THESIS

Solving Sudoku as a Constraint Satisfaction Problem and Analyzing Effects of Constraint Ordering

The problem of solving the Sudoku puzzle is an NP-Complete problem. We formulated it as a Constraint Satisfaction Problem and solved using constraint programming. In this thesis, we introduced constraint ordering based on different criteria to determine the effects of constraint ordering. Our experiment result shows that ordering the constraints based on the number of clues gives better resolution time than unordered constraints.

Supervised by Abu Wasif, Assistant Professor, Department of CSE, BUET, wasif@cse.buet.ac.bd

ACADEMIC PROJECTS

Adversarial Search-based Reversi Game. Used Java Swing to build the game interface and alpha-beta pruning algorithm to find the computer's next move.

4-bit Computer System. Designed and implemented a 4-bit Computer System based on Simple As Possible (SAP) architecture with my team. The computer system could run 28 assembly instructions.

University Residence Hall Management System. A desktop application that helps the university hall office to maintain interactions with students. Used Java Swing for the UI and MySQL database for storing information.

Online Judge to host programming contest. Contestants could participate and submit solutions that were evaluated automatically by the server. The contest admin could configure the contest with a problem set and expected solutions. Implemented server-client communication using Java Socket Programming.

Park Your Car puzzle game. Built this game using C language, where the player's goal is to park his car at an available spot by moving other cars forward or backward.

Image Scanning Robot. Designed and implemented a robot that could scan a ground image and send it to another robot via Bluetooth communication.

TECHNICAL SKILLS

Programming Languages	Python, JavaScript, C, C++, Java
Database	MySQL, PostgreSQL, DynamoDB, Oracle
Framework	Django, Flask, VueJS
Container Orchestration	Docker, Kubernetes, Elastic Container Service
Cloud	Amazon Web Services (AWS)
Others	Linux administration, Terraform, SaltStack, Git, Bash Scripting, AFL, Vagrant

LICENSES & CERTIFICATIONS

CKA: Certified Kubernetes Administrator <i>Issued by</i> The Linux Foundation	Aug 2022 - Aug 2025 See Credential
LFCS: Linux Foundation Certified Systems Administrator <i>Issued by</i> The Linux Foundation	Jun 2022 - Jun 2025 See Credential
AWS Certified Solutions Architect - Professional <i>Issued by</i> Amazon Web Services Training and Certification	Mar 2022 - Mar 2025 See Credential
AWS Certified DevOps Engineer - Professional <i>Issued by</i> Amazon Web Services Training and Certification	Oct 2021 - Oct 2024 See Credential

AWARDS

2nd Runner-up in Software Project Show. My team was awarded the 2nd runner-up position at the **2nd International Conference on Networking Systems and Security, 2016** for **University Residence Hall Management System** project in the software project show section.