

ANISHA ISLAM

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EDUCATION

Master of Science in Computing Science, University of Alberta, GPA: 3.9 Expected 2024

Bachelor of Science in Computer Science and Engineering, Bangladesh University of Engineering and Technology (BUET), Graduated with Honours (CGPA: 3.81) 2017 - 2022

SKILLS

Programming Languages	Python, Java, JavaScript, C, C++, C#
Databases and Frameworks	MongoDB, PostgreSQL, SQLite, Node.js, React, Flask
Others	Natural Language Processing, Statistical Language Models, Graph Analysis, Mining Software Repositories, KDD, Data Mining, \LaTeX , HTML, CSS, Git, TensorFlow, PyTorch, Shell Programming, Gradle, Continuous Integration, Continuous Deployment, Docker

WORK EXPERIENCE

Graduate Research and Teaching Assistant Sep 2022 - Current
University of Alberta *Edmonton, AB, Canada*

- Managed cross-functional Scrum teams to deliver software products to clients within set deadlines.
- Reviewed sprint submissions to ensure compliance with acceptance criteria.
- Provided guidance and mentorship to team members by assisting with technical challenges, and facilitating conflict resolution between clients and teams.
- Conducted lab sessions on various topics, including test-driven development, CI/CD pipelines using GitHub Actions and Cybera, setting up self-hosted runners, code coverage, mocks, stubs, technical debt, and static analysis.
- Instructed on testing techniques such as unit testing and system testing with Pytest and mutation testing using Pitest.

Software Engineering Intern May 2022 - Aug 2022
Optimizely *Dhaka, Bangladesh*

- Created an engineering dashboard using JIRA, Grafana, Docker, and Python, with visualizations from the JIRA API and PostgreSQL.
- Collaborated with senior developers, and participated in peer-reviews.
- Researched alternate technology stacks, and documented the findings.

Intern Feb 2021 - Mar 2021
eSystems Research and Development (eSRD) Lab *Dhaka, Bangladesh*

- Developed an e-prescription generation system using Angular, Spring Boot, and MongoDB to digitize the prescription process, and improving accessibility for patients, doctors, and hospitals.
- Built APIs for prescription generation and profile management for hospitals, patients, and doctors.
- Recognized as the best performer with a performance rating of $> 80\%$.

SELECTED PROJECTS

Graph-Based Probabilistic Code Prediction Model for Pure Data

- Developed a predictive model for nodes and edges in Pure Data graphs to enhance support tool availability for computer musicians, using graph structures and statistical probabilities of subgraphs.

- Constructed graphs and created a corpus from parsed PD files, identifying unique tokens and calculating frequencies for 2-node and 3-node subgraphs across multiple training/test splits.
- Applied adapted n -gram smoothing techniques for the prediction model, outperforming an order 3 n -gram model with modified Kneser-Ney smoothing by 30%.

Analyzing the Traffic Crash Data of Chicago Using Clustering

- Conducted data analysis on Chicago traffic crash data to extract insights for improving road safety.
- Applied different clustering algorithms like K-means, K-modes, OPTICS, and DBSCAN to analyze the time, location, and patterns of traffic accidents.
- Investigated the spatial distribution of accidents by type to identify trends and risk factors.

Personal Shopper Problem Web Prototype

- Developed a web prototype for the [Personal Shopper Problem](#), enabling route selection between shopper and customer locations based on time and cost constraints.
- Integrated two algorithms into the prototype to compute both optimal and sub-optimal linear skyline routes.
- Implemented frontend-backend interaction, with item selection and location data processed in the Flask backend, and routes displayed using Leaflet Routing Machine.

Easy Internet Service

- Led a 3-person team to build a web platform facilitating connections between NTTN (Nationwide Telecommunication Transmission Network), ISP (Internet Service Provider), and end users.
- Scoped the project, designed the ERD, and contributed to the Class Diagram.
- Developed 90% of backend APIs (Node.js), set up and populated the MongoDB database, and built the frontend with React and CSS.

PUBLICATIONS

1. **Anisha Islam**, Calvin Eng, and Abram Hindle. [Opening the Valve on Pure-Data: Usage Patterns and Programming Practices of a Data-Flow Based Visual Programming Language](#). In 2024 *IEEE/ACM 21st International Conference on Mining Software Repositories (MSR)*, pp. 492-497. IEEE, 2024.
2. **Anisha Islam**, Nipuni Tharushika Hewage, Abdul Ali Bangash, and Abram Hindle. [Evolution of the Practice of Software Testing in Java Projects](#). In 2023 *IEEE/ACM 20th International Conference on Mining Software Repositories (MSR)*, pp. 367-371. IEEE, 2023.

AWARDS AND HONORS

- **Alberta Graduate Excellence Scholarship (AGES)**: University of Alberta, 2023 - 2024
- **Graduate Travel Award**: University of Alberta, 2023 - 2024
- **Graduate Recruitment Scholarship**: University of Alberta, 2022 - 2023
- **Runners up (Team Tessera)**: Ada Lovelace Datathon, Dhaka, Bangladesh, 2021
- **University Merit Scholarship**: Bangladesh University of Engineering and Technology, Dhaka, Bangladesh, 2019 - 2021
- **Dean's List Award**: Bangladesh University of Engineering and Technology, Dhaka, Bangladesh, 2018 - 2022