ANISHA ISLAM

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EDUCATION

Master of Science in Computing Science, University of Alberta, GPA: 3.9 Jan 2025

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, and 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 test-driven development, CI/CD pipelines with GitHub Actions and Cybera, ensuring code quality through coverage analysis, implementing mocks and stubs, managing technical debt, performing static analysis, conducting unit and system testing with Pytest, and executing mutation testing with 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.

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**, and Abram Hindle. TriGraph: A Probabilistic Subgraph-Based Model for Visual Code Completion in Pure Data. Accepted in 2025 *IEEE/ACM 22nd International Conference on Mining Software Repositories (MSR)*. IEEE, 2025.

2. **Anisha Islam**, Kalvin 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.

3. **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