Uchswas Paul

ukpaulbd@gmail.com 1-(984)-269-8714
github.com/uchswas linkedin.com/in/uchswas-paul/

Skills

- **Languages:** C/C++, Python, Java, PHP, Javascript, HTML5, CSS3, SQL
- **Frameworks:** Laravel, Django, Java Spring, VueJs, NuxtJs, Jquery, ReactJs
- **Others:** Git, Docker, Kubernetes, Nginx, JIRA, SQL Server, Excel

Research Experience

Gender Inclusive Bugs in Software Systems

- Utilized a Large Language Model (LLM) to identify gender-inclusive bugs in the software system, achieving a precision of 76%, recall of 66%, and overall accuracy of 75%

Kubernets Configuration Bugs in Open Source Project

- Mined and categorized 792 bugs from open-source Kubernetes projects into 15 categories, mapping each to its corresponding fix patterns.
- Evaluated 8 static code analysis tools to identify gaps in detecting bugs within Kubernetes manifests, leading to the development of a linter.
- Achieved an 80% accuracy rate with our linter, with 31 out of 35 detected bugs accepted as valid defects by practitioners.

An Efficient and Secure Handover Mechanism for SDN-Enabled 5G HetNet

- Achieved a 42% reduction in delay during inter-domain reactive handover, with 50% less communication overhead than the existing scheme.
- Published in IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom)IEEE 5G Hetnet

Key Value Storage for Higher Dimensional Data

- Proposed an efficient way of storing multidimensional data using key-value storage that achieved about a 90% reduction in data storage.
- Designed Exact-Match, Single-Key Query, and Range-Key Query on the system that was more efficient than Mysql for large amounts of data

Work Experience

Teaching Assistant | **North Carolina State University** Aug 2023- Present

- Course Instructed: Software Engineering, Database Management Concepts and Systems

Lecturer | **University of Information Technology and Sciences** Jul 2029 - Jul 2023

- Course Instructed: Software Engineering, Object Oriented Programming, Structured Programming Language, Data Structures and Algorithms, Web Application Design, Microprocessors and Microcontroller

Project Leader | **Textile Today, Dhaka** Sep 2019- Aug 2020

- Guided the development of **TextileTalentHunt.com**, Bangladesh's first-ever talent hunt competition website.
- Implemented a single-page application using Laravel for the backend and Nuxt.js for the frontend.
- Automated the entire process, including registration, question setting, live exams, result preparation, and the interview process.

Software Engineer | **Mazegeek Technologies Limited, Dhaka and New York** Mar 2018 - July 2019

- Led the development and launch of **PartsCargo.com**, an automobile e-commerce web application serving thousands of users. Successfully managed over 3 million records in an SQL Server database while maintaining optimal website performance.
- Served as the backend developer for the 'Maxxecom' project, which manages multiple eBay stores, offering features such as listing management, order fulfillment, role management, and synchronization.
- Contributed to various projects as a full-stack developer, conducting research on SEO-related issues that significantly improved website accessibility, visibility, and search engine ranking.

Education

North Carolina State University | **PhD in Computer Science** | **CGPA: 4.00** Aug 2023 - Present

Khulna University of Engineering and Technology | **B.Sc in Computer Science** | **CGPA: 3.65** Apr 2014 - Feb 2018

Courses: Generative AI for Software Engineering, Software Testing and Reliability, Artificial Intelligence, Graph Theory, Design and Analysis of Algorithms, Software Engineering, Object-oriented programming, Discrete Mathematics, Data Structures and Algorithms, Compilers, Database Management Systems, Operating Systems, Computer Networks, Image Processing, Computer Graphics, Machine Learning, Data Mining

Academic Projects

BanghBandi Game Github Link

Developed an AI-driven adversarial game, Bagh Bandi, featuring human-vs-computer gameplay. Implemented automated strategic goat movements using algorithms such as BFS, A*, and Monte Carlo.

ClassMate Bot Github Link

Worked on a Discord bot project to enhance the educational experience by automating tasks for students, TAs, and professors, including group creation, deadline reminders, polls, and distribution of course materials.

Handgloves Piano Github Link

Designed and developed an Arduino-based HandGloves Piano, a wearable digital Piano that plays traditional musical notes by detecting touch interactions between the fingers and thumb.

Awards and Recognitions

- Graduate Merit Award, NC State University, 2024
- Best Employee, MazeGeek Technologies Ltd, 2018
- Dean's Award for Outstanding Result, KUET, 2017

Leadership

- SmallPack Leader, Int. Student Orientation, NCSU, 2024
- Member Secretary, Contest Programming Club, UITS 2021
- Couse Coordinator, Dept of CSE, UITS, 2020