Anamul Hoque Emtiaj

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EDUCATION

Bangladesh University of Engineering and Technology(BUET) Dhaka, Bangladesh
B.Sc. in Computer Science and Engineering; ***CGPA: 3.78/4.00*** *Feb 2020 – Feb 2025*

Relevant coursework: Object-Oriented Programming (OOP), Data Structure and Algorithm, Database, Computer Architecture, Microprocessors and Microcontrollers, Compiler, Operating System, Computer Networking, Software Engineering, Information System Design, Computer Security, Computer Graphics, Bioinformatics, Fault Tolerant System, Simulation and Modeling, Machine Learning, Linear Algebra, Statistics and Probability.

Academic Achievements:

* Dean's List Award recipient in 2nd year.
* University Merit Scholarship recipient in 3rd and 4th semesters.

SKILLS

Languages: C, C++, Java, Python, JavaScript, Assembly, Bash
Frameworks & Libraries: Django, Django REST Framework, Next.js, Celery, PyTorch, TensorFlow, scikit-learn
DataBase: Oracle, PostgreSQL, MySQL, Django ORM, Redis
Tools: Git, Github, Docker
Clouds: Azure (Kubernetes Service, Container Registry, Storage Account, PostgreSQL), DigitalOcean, cPanel

PROJECTS

Learning Management System (LMS) | Django REST Framework, PostgreSQL, Next.js Ongoing
- Developing a scalable LMS for *Med-Sparkle*, focusing on video-based courses, mock tests, subscription services, real-time updates via WebSockets, and a comprehensive admin interface for instructors.
- My role involves designing and implementing the entire backend, managing asynchronous tasks with Celery and Redis, integrating Vimeo and YouTube as video servers, and Implementing backend-relevant frontend functionalities, including WebSocket integration, user authentication, and video API connections.
- Handling full deployment using Docker on DigitalOcean, with Nginx and Gunicorn configured for optimized web performance.

Personal Websites | Django, MySQL, bootstrap, jQuery | *Link1* | *Link2* Jul 2024
- Built and deployed two personal websites for clients as part of paid contractual projects.
- Deployed on shared hosting using cPanel, Apache, and mod-wsgi to deliver cost-effective and efficient solutions.

Tensor Insight Training System | Django Rest Framework, PostgreSQL, React JS | *GitHub* Feb 2024
- Developed a web application to facilitate learning and practicing tensor manipulation through interactive puzzle-solving exercises.
- Deployed the application using Azure Kubernetes Service (AKS), Azure Container Registry (ACR), and Azure Storage Account, with a CI/CD pipeline implemented via GitHub Actions

Tontu | Django, Django Templates, bootstrap, jQuery | *Link* Jun 2023
- Created an e-commerce site prototype as part of the Hult Prize 2023 competition.
- Deployed the application on PythonAnywhere.

RESEARCH EXPERIENCE

CRISPR Off-Target Prediction and Optimization | Thesis Dec 2023– Present
Supervisor: *Dr. M. Sohel Rahman*

- Conducting research on CRISPR-Cas9 gene-editing technology, focusing on predicting off-target effects and optimizing guide RNA using deep learning techniques.
- Utilizing advanced architectures including Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs) with LSTM and GRU, Transformers, Self-Attention mechanisms, and BERT models.
- Aiming to surpass state-of-the-art (SOTA) models in F1 score and PR-AUC while ensuring model interpretability.

Protein-Protein Interaction Prediction | Term Project   Oct 2024 – Present
- Developing a predictive model for Protein-Protein Interactions (PPIs) leveraging ProtBERT, joint embedding, cross-attention mechanisms, and a Multi-Layer Perceptron (MLP).
- Focused on achieving high-performance metrics while maintaining interpretability of the model.

Awards & Achievements

Research Grant: Recipient of the 'Research and Innovation Center for Science and Engineering - RISE, BUET' Students' Research Grant, awarded to our thesis group in recognition of our research endeavors.

Hult Prize: Hult Prize 2023 On-Campus Champion and Regional Round Participant (Milan Summit).

Idea Contest: Achieved the 1st Runner-up position at the BUET Debating Club presented ScribeQuest, an idea contest for Augmedix Bangladesh, as part of Team Augmenta.

Term Project: Awarded 2nd place (Runner-up) among all groups in the CSE 316: Microcontroller and Microprocessor course for our project, Bi-axial Autonomous Robot with Obstacle Avoidance (BABO).

Certifications

Machine Learning Specialization | *Certificate 1* | *Certificate 2*   *Nov 2023*
Completed the first two courses of the Machine Learning Specialization on Coursera.

Data Structures and Algorithms | *GitHub*   *Nov 2021*
Completed a paid course on Data Structures and Algorithms from Bohubrihi.