Nishat Farhana Purbasha

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Research Interest: Systems and Networking, Distributed Systems, HCI, Machine Learning

WORK EXPERIENCE

- **Lecturer**　　　　　　　　　　　　　　　　　　　　　　　**June 2023 - current**
  Department of Computer Science and Engineering, BRAC University

EDUCATION

- **Bangladesh University of Engineering and Technology (BUET)**　　　**April 2018 - May 2023**
  B.Sc. in Computer Science and Engineering (CSE)
  CGPA: 3.68/4.00
  Notable Courses: Computer Networking, High Performance Database Systems, Operating Systems, Computer Security, Machine Learning, Artificial Intelligence, Simulation and Modelling, Bioinformatics, Compiler Design, Software Developement, Microprocessors and Microcontrollers

- **Sylhet Govt. Women's College**　　　　　　　　　　　　　　　　　　　**2015 - 2017**
  H.S.C.
  GPA: 5.00/5.00

- **Blue Bird School and College, Sylhet**　　　　　　　　　　　　　　　　**2003 - 2015**
  S.S.C.
  GPA: 5.00/5.00

RESEARCH EXPERIENCES

- **Cluster Based Distributed State Management of Network Function**　　**May 2022 - current**
  - Undergraduate thesis project under the guidance of Dr. Rezwana Reaz. We proposed a cluster based distributed state management system for network function that supports dynamic and efficient flow and state migration information between network functions.

- **Where Will You Meet on the Next Sunday?: A Deep Learning-based Approach for a Meetup POI Prediction**　　　　　　　　　　　　　　　　　　　　　　　**Oct 2023 - current**
  - Recent work with Salsabil Arabi and Adiba Shaira under the supervision of Dr. Tanzima Hashem on the development of a deep learning-based prediction model to infer the meetup POI of an individual at a particular time without the information of the companions associated with the particular meetup event. Currently, our manuscript is under review for publication at ACM TSAS.

ACADEMIC PROJECTS

- **Gender Classification from Audio Clips**　　　　　　　　　　　　　　**Level - 4, Term - 2**
  Tensorflow ∣ Keras ∣ Pandas
  - Machine learning model that can identify the gender of a person from their voice recording. In the process, we use two intermediary data representation format of the audio clips- Mel Spectrogram (Mel) and Mel-Frequency Cepstral Coefficients (MFCC).

- **Vectorized Convolutional Neural Network from Scratch**　　　**Level - 4, Term - 2**
  Numpy

  – A vectorized version of a Convolutional Neural Network using only numpy without any deeplearning frameworks. Training and testing of the developed model is done on the NumtaDB: Bengali Handwritten Digits dataset.

- **EventFly: An Online Event Management Tool**　　　**Level - 4, Term - 1**
  ExpressJS | Kubernetes | Docker | NAT Streaming Server | MongoDB

  – Online event management platform where users can host and attend online or offline events based on the user preferences.

- **Ray Tracing**　　　**Level - 4, Term - 1**
  Graphics | OpenGL

  – Followed by implementation of the raster based graphics pipeline, implemented ray tracing using OpenGL.

- **RR-TCP: A Reordering-Robust TCP with DSACK**　　　**Level - 3, Term - 2**
  ns-3

  – RR-TCP is a modified Congestion Control algorithm for TCP with misinterpretation of out-of-order packets as packet loss. It offers significantly enhanced throughput on reordering paths.

- **Compiler**　　　**Level - 3, Term - 1**
  Flex | Bison

  – A compiler for subset of C language is made from scratch using flex and bison.

- **Cycloan: An Online Cycle Sharing Platform**　　　**Level - 2, Term - 2**
  Django | Bootstrap | OracleDB | Google maps

  – Ride sharing platform where users can put up their cycles for renting it to others and vice versa.

TECHNICAL SKILLS

- **Languages**: C/C++, Python (Sklearn, Pandas, Matplotlib), Java, Javascript, x86 Assembly, Bash

- **Frameworks**: Docker, Django, NextJS, React, Tensorflow, Oracle DBMS, LaTeX

- **OS**: Windows, Linux

- **Dev Tools**: Visual Studio Code, Git

HONORS AND ACHIEVEMENTS

- **Dean's List Scholarship**　　　**2019**

- **Talent Pool Scholarship:** SSC, HSC　　　**2015, 2017**

- **Bangladesh Mathematical Olympiad**

  – 2nd Runner-up at National Mathematical Olympiad　　　**2017**
  – Participant at International Mathematical Olympiad Team Selection Camp　　　**2015, 2016**
  – Participant at National Mathematical Camp　　　**2014, 2016**
  – Participant at Special Mathematical Camp　　　**2015**