

# Nishat Farhana Purbasha

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

## WORK EXPERIENCE

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

## EDUCATION

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- **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 Development, 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

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- **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

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- **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

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- **Languages:** C/C++, Python (Sklern, 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

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- **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