FARIHA TABASSUM ISLAM

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EDUCATION

Bangladesh University of Engineering & Technology (BUET)
Master of Science, Computer Science & Engineering *Jun 2021*
CGPA 3.92 out of 4.00
Thesis: A Privacy-enhanced Approach for Planning Safe Routes with Crowdsourced Data and Computation

Bangladesh University of Engineering & Technology (BUET)
Bachelor of Science, Computer Science & Engineering *Oct 2018*
CGPA 3.89 out of 4.00 (11^{th} out of 126)
Thesis: An Efficient Approach for Real-Time Crowdsourced Package Delivery using Public Transport Networks

WORK EXPERIENCE **Feb 2019 - now (4 years)**

Lecturer *Feb 2019 - Present*
Dept. of Computer Science & Engineering, United International University

Part-time Research Assistant *Jan 2022 - Present*
Dept. of Computer Science & Engineering, Bangladesh University of Engineering & Technology

High Profile ICT Scholar Fellow *Jun 2019 - Jun 2020*
ICT Division, Govt. of Bangladesh

PUBLICATION

A Privacy-Enhanced and Personalized Safe Route Planner with Crowdsourced Data and Computation
Fariha Tabassum Islam, Tanzima Hashem, Rifat Shahriyar
ICDE 2021 (CORE Rank **A***), DOI 10.1109/ICDE51399.2021.00027 [Full research paper] [Presenter]

A Crowd-enabled Solution for Privacy-Preserving and Personalized Safe Route Planning for Fixed or Flexible Destinations
Fariha Tabassum Islam, Tanzima Hashem, Rifat Shahriyar
IEEE Transactions on Knowledge and Data Engineering (TKDE) 2022 [Full research paper]

MTUL: A Novel Approach for Multi-Trajectory User Linking
Fariha Tabassum Islam[*], Md. Tareq Mahmood[*], Mahmuda Naznin
NSysS 2022, Acceptance Rate 27%, DOI 10.1145/3569551.3569554 [Full research paper]

Representative Dissimilar Path Queries: Understanding Human Movement Dynamics in Road Networks
Tanzima Hashem, Matt Duckham, Mahathir Monjur, *Fariha Tabassum Islam*
Journal of Spatial Information Science (JOSIS) 2022 [Full research paper]

FELLOWSHIP

High Profile ICT Scholar Fellowship, ICT Division, Govt. of Bangladesh | *BDT 2.4 Million* *2019*
· Selected after competing in two phases: a test on undergrad studies; writing and presenting a research proposal

RESEARCH EXPERIENCES **Sep 2017 - now (5 years)**

Safe route planner | *Master's thesis*, *published in ICDE2021*, *extension accepted in TKDE* *2019-2022*
Computes safe routes for fixed or flexible destinations for a user or group using crowd data while preserving privacy.
· Collaborated in designing the system architecture, safety quantification model and two efficient algorithms to compute safest routes while preserving privacy
· Identified and proved the necessary conditions for choosing the safety quantification parameters to maintain privacy
· Analyzed, visualized, and prepared road network, crime, and user-checkins data using `Python` (`Pandas`, `OSM`)
· Simulated the full system and wrote *all* experiments using `Java` (∼35K lines of code)
· Developed an `Android` prototype using `SparkJava` and `Firebase`

Learning safe routes | *Extension of safe route planner* *2022-ongoing*
Learns to compute safe routes for a source-destination pair in a road network utilizing federated learning for privacy.
· Identified the gaps of existing relevant works and the challenges of learning safe routes
· Designing ML pipeline to train the route planner

Crowdsourced package delivery in public transport network | *Undergrad thesis* *2017-2019*

Computes package delivery routes that match commuters' pre-planned journeys in a public transport network.

· Collaborated in designing efficient algorithms by precomputing a summary graph

· Used GTFS data and analyzed, visualized, and prepared Myki data (∼30GB) using `PostgreSQL` and `Python`

· Wrote *all* experiments using `Java` (∼20K lines of code)

Trajectory user linking | *Data Mining master's course project, published in NSysS 2022* *2020*

Identifies a user from his/her multiple available trajectories using GRU autoencoder.

· Worked on problem formulation, data preparation using `Python`, partial implementation using `PyTorch`, and writing

Dissimilar route finding | *accepted in JOSIS* *2022*

Finds a set of most dissimilar routes from sets of representative routes for different features.

· Implemented parts of experiment codes in `C++` and `Python` and worked on the revision phase

Mobile image analysis in healthcare | *A survey manuscript under preparation* *2020 - Ongoing*

Utilizes smartphone cameras and sensors to screen various diseases for preliminary healthcare, especially considering underserved people

· Mentored undergrads in writing the survey paper and contributed to writing

Credit card fraud detection | Network Security master's course project *2020*

Detects credit card fraud using Siamese network.

· Collaborated in designing the ML pipeline, implementation, and writing a report in a group of two

Reference Guided Genome Annotation | Computational Biology master's course project *2019*

Annotates a target genome using a closely related, well-annotated reference genome using ensemble of RATT, Glimmer and BLAST.

SKILLS

`Java`, `Python` (Scikit-learn, NumPy, SciPy, Keras basics, PyTorch, Selenium), `C++`, `SQL`, `Android` app development, `Git` – used in

· Research experiments

· Data analysis and visualization

· Course projects during undergrad and master's

· Teaching

AWARDS & SERVICES

· First runner-up group | Hackathon for Women 2017 (36 hours) by ICT Division, Govt. of Bangladesh

· First runner-up group | Women's Day Innovation Challenge 2017, Facebook Developer Circle, Dhaka

· University Merit | BUET - 2015, 2017

· Dean's Honor List | BUET - 2015-18

Reviewer. WISE (2021, 2022), NSysS (2020, 2021), APWeb-WAIM (2019)

NOTABLE TEACHING EXPERIENCES

Undergraduate Courses:

Theory. Object Oriented Programming, Data Structure and Algorithms I & II, Artificial Intelligence, Compiler.

Lab. Introduction to Computer Systems, Structured Programming Language, Data Structure and Algorithms II, Artificial Intelligence, Pattern Recognition, System Analysis and Design, Software Engineering, Compiler.

· Taught nine trimesters so far

· Singlehandedly taught four to six sections each trimester from lecture delivery, examinations/assignments setting to grading; each section consists of 30 to 40 students

· Coordinated one or two courses each trimester

· Held counseling hours

· Approximately 36 hours spent per week

STANDARDIZED TESTS

TOEFL: 111 (R:30, L:29, S:25, W:27)

Updated on December 29, 2022