Md Tarikul Islam Papon   PhD Student@Boston University

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CAREER OBJECTIVE	To pursue career in research under academic settings. To explore challenging interdisciplinary research problems in various fields of Computer Science as well as to impart my knowledge to have a positive impact in the society.
RESEARCH INTERESTS	Database, Big Data Management, Distributed Systems, Machine Learning, and the interactions among these fields.

EDUCATION

Ph.D. in Computer Science,   2019 - Present
Boston University, Massachusetts, USA.

M.Sc. in Computer Science and Engineering,   2016 - 2019
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.
Thesis: "Design and Development of A Deep Learning Based Application for Detecting Diabetic Retinopathy"

B.Sc. in Computer Science and Engineering,   2010 - 2015
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.
Thesis: "Photoplethysmographic Analysis of Optical Signals : A Single Device to Measure All the Vital Signs"

PROFESSIONAL EXPERIENCE

PhD Researcher at Boston University, MA, USA   Sept 2019 - Present
Lecturer at Department of CSE, BUET, Dhaka, Bangladesh   Oct 2015 - Aug 2019

PUBLICATIONS

1. **Md Tarikul Islam Papon**. "Design and Development of A Deep Learning Based Application for Detecting Diabetic Retinopathy", M.Sc. Engineering Thesis, 2019, Department of CSE, BUET, Bangladesh. (under the supervision of Dr. A.K.M. Ashikur Rahman)

2. Sadia Tamanna Khan, Ashef Ainan Baksh, **Md Tarikul Islam Papon**, Muhammad Ashraf Ali. "Rainwater Harvesting System: An Approach for Optimum Tank Size Design and Assessment of Efficiency", International Journal of Environmental Science and Development, 8(1), 37-43, 2017.

3. **Md Tarikul Islam Papon**, Ishtiyaque Ahmad, Nazmus Saquib and Ashikur Rahman. "Non-invasive Heart Rate Measuring Smartphone Applications using On-board Cameras: A Short Survey". The 1st International Conference on Networking Systems and Security 2015 (NSysS 2015), January 5-7, 2015, Dhaka, Bangladesh.

4. Nazmus Saquib, **Md Tarikul Islam Papon**, Ishtiyaque Ahmad and Ashikur Rahman. "Measurement of Heart Rate Using Photoplethysmography". The 1st International Conference on Networking Systems and Security 2015 (NSysS 2015), January 5-7, 2015, Dhaka, Bangladesh.

5. **Md Tarikul Islam Papon**, Nazmus Saquib, Ishtiyaque Ahmad. "Photoplethysmographic Analysis of Optical Signals : A Single Device to Measure All the Vital Signs", B.Sc. Engineering Thesis, 2015, Department of CSE, BUET, Bangladesh. (under the supervision of Dr. A.K.M. Ashikur Rahman)

M.Sc. Thesis

I worked on detecting diabetic retinopathy from the images of interior surface of eye (known as fundus image) under the supervision of Dr. A.K.M. Ashikur Rahman, Professor, Department of CSE, BUET. This is a collaborative project with Ubicomp Lab at Marquette University. I trained a deep convolutional neural network with our data set of fundus images. *TensorFlow* was used to create the deep learning model. Moreover, various image processing and machine learning techniques have been used to perform a comparative study.

B.Sc. Thesis

I worked to build a cost-effective noninvasive device to calculate heart rate using Photoplethysmographic (PPG) signal under the supervision of Dr. A.K.M. Ashikur Rahman. Infrared sensors were used to capture the volumetric change of blood from the fingertip of a person. From different parameters of the PPG signal, patient's heart rate was calculated and blood pressure was approximated.

Technical Skills

- **Programming Languages:** C, C++, Java, Python, Assembly, PHP, JS
- **Markup Languages:** HTML, XML, LaTeX
- **Database Management Systems:** MongoDB, MySQL, Oracle, Neo4j
- **Distributed Computing Frameworks:** Apache Hadoop, Apache Spark
- **Machine Learning:** TensorFlow, PyTorch, Keras
- **Hardware:** Arduino, AVR, Rasberry Pi

Selected Projects

- **A New Distributed Approach for Determining the Most Influential Spreader in a Social Network:** I implemented a modification of the popular *k-core decomposition* algorithm that can be run in a distributed manner. MongoDB was used to store and process 5 million twitter data and Neo4j was used to visualize the highly intricate graph. For distributed computation, Apache Giraph was run over HDFS on an amazon AWS cluster. I am still working on this project to include Natural Language Processing (NLP) for better performance.

- **Developing LTE Module in NS-2:** I developed a patch for simulating Long Term Evolution (LTE) network in Network Simulator 2 (ns-2). Since there is no inherent support for LTE in ns-2, I had to add numerous C++ classes and modify many core files of ns-2 to simulate LTE. Moreover, I implemented four energy modes for this wireless network to simulate the energy consumption. A comprehensive analyses of these modes were also performed.

- **PinBox:** An android application which I developed on 2013 where a user can "Pin" his favorite places in Google Map based on category. User could maintain his profile as well as view other users' profile to explore different "pins" (favorite places) based on category and location. Polygonal data structure in spatial database was used to automatically identify the zone/area of a pin, which was the prime feature of the app. This project was declared as the *Champion* of the "Database Project Show, 2013" in BUET.

- **Pacman on e-puck robot:** A maze similar to Pacman's was developed in the WEBOTS tool. One e-puck imitated the role of Pacman which was controlled by the user. The role of Ghosts was mimicked by three e-pucks who could communicate among themselves via bluetooth. Algorithm was developed for the ghosts to surround the Pacman robot.

- **Online Course Management System** A PHP/mysql based website was developed for maintaining academic courses along with an examination module.

Consultancy Projects (Selected)	• Testing and Certification of the Flora Bank Online Core Banking System (2018-2019) • Development of Android Based 21 I-Books & Associated Services for Bangladesh Technical Education Board and Bangladesh Madrasah Education Board (2016-2019) • Development, Supply & Installation of Multi-Language Training Software titled "*Vashaguru*" for Sheikh Russell Digital Labs in Bangladesh (2017-2018) • XI Class Admission in Bangladesh (Session: 2016-2017, 2017-2018) • Processing of Results of IEB Election (2017)

Teaching Experience (Selected)

Bangladesh University of Engineering and Technology

• CSE 453 (High Performance Database Systems)	Jan 2019
• CSE 218 (Numerical Methods Lab)	Jan 2019
• CSE 410 (Computer Graphics Lab)	Jan 2019
• CSE 322 (Computer Networks Lab)	Jul 2018, Jan 2016
• CSE 208 (Data Structures & Algorithms II Lab)	Jul 2018
• CSE 108 (Object Oriented Programming Lab)	Jul 2018, Jul 2017
• CSE 433 (Digital Image Processing)	Jan 2018, Jul 2016
• CSE 308 (Software Engineering Lab)	Jan 2018, Jan 2017
• CSE 206 (Digital Logic Design Lab)	Jan 2018, Jan 2016
• CSE 102 (Structured Programming Language Lab)	Jan 2018
• CSE 317 (Numerical Methods)	Jul 2017
• CSE 216 (Database Lab)	Jul 2017, Jul 2016
• CSE 307 (Software Engineering & Information System Design)	Jan 2017
• CSE 402 (Artificial Intelligence Lab)	Jul 2016
• CSE 404 (Digital Sytem Design Lab)	Jul 2016, Jan 2016
• CSE 214 (Assembly Language Lab)	Jul 2016

Scholarships and Awards (Selected)

• **Dean's Fellowship** at Boston University	Fall 2019
• **Dean's Honor List** in all 4 levels of Undergraduate Studies	2010-2015
• **University Merit Scholarship** in all 8 terms of U.G. Studies	2010-2015
• **Champion** of the Intra University Database Project Show	2013
• **Champion** of the Intra University Robotics Contest	2012
• **Champion** of the Intra University Logic Olympiad	2012

Extra-Curricular Activities (Selected)

- **Convener** of BUET CSE Festival 2019
- **Member**, Sponsorship and Finance Committee, International Conference on Networking, Systems and Security (NSysS 2016 – 2018)
- **Runner Up** of Intra University Faculty Bridge Competition, BUET, 2017
- **Trainer** at Bangladesh Bank IT Training on Java Spring, 2016
- **Lead Organizer & Treasurer** of BUET CSE Festival 2015
- **Member** of BUET System Analysis, Design and Development community
- **Champion** of the Intra BUET Poker Tournament, BUET CSE Festival 2015
- **Branch Co ordinator & Lecturer** at Sunrise Coaching Center, 2010-2014
- **Semi Finalist** of annual under 21 Pool (8 ball) Championship, BDC 2012