

RESEARCH INTEREST

- Big Data Analytics
- Health Analytics
- Social Networks
- Deep Learning
- Distributed Systems
- Cloud Computing

EDUCATION

- **University of Rochester** Rochester, NY, USA
Ph.D. (on-going) in Computer Science (Human-Computer Interaction) August 2022 – Present
- **Bangladesh University of Engineering and Technology (BUET)** Dhaka, Bangladesh
M.Sc. in Computer Science and Engineering; CGPA: 3.92/4.0 October 2017 – February 2021
Thesis: Fast, Scalable and Geo-Distributed PCA for Tall and Wide Big Data
- **Bangladesh University of Engineering and Technology (BUET)** Dhaka, Bangladesh
B.Sc. in Computer Science and Engineering; CGPA: 3.95/4.0 February 2013 – September 2017
Ranked **3rd** in a class of 150 students

WORK EXPERIENCE

- **University of Rochester** Rochester, NY, USA
Graduate Research Assistant, Department of CSE, UR August 2022 – Present
- **Bangladesh University of Engineering and Technology (BUET)** Dhaka, Bangladesh
Assistant Professor (on-leave), Department of CSE, BUET May 9, 2021 – August 2022
- **Bangladesh University of Engineering and Technology (BUET)** Dhaka, Bangladesh
Lecturer, Department of CSE, BUET July 3, 2018 – May 8, 2021
- **Bangladesh University of Engineering and Technology (BUET)** Dhaka, Bangladesh
Graduate Research Assistant, Department of CSE, BUET October, 2017 – March, 2018

RESEARCH EXPERIENCE

- **Progression tracking for Parkinson’s Disease**

- We analyze video recordings of movement tasks (e.g., tapping fingers) to track the progression of Parkinson’s disease.
- Our proposed interpretable, objective measures can help explain the pre-diction of the machine learning models.
- The objective measures, when explained to clinical practitioners, can help them towards better diagnosis.

Supervisor: [Dr. Ehsan Hoque](#)

Status: Work ongoing

- **Fast, Scalable and Geo-Distributed PCA for Big Data Analytics**

- Took advantage of the **zero-noise-limit** Probabilistic PCA model, and introduced a **block-division** method for it in order to suppress the explosion of intermediate data efficiently.
- Proposed a communication efficient solution in the geo-distributed environment.

- The proposed algorithm is referred to as **TallnWide**, and empirical evaluation with real datasets shows that TallnWide can successfully handle significantly higher dimensional data (**10×**) than existing methods, and offer up to **2.9×** improvement in running time in the geo-distributed environment compared to the conventional approaches.

Supervisor: [Dr. Muhammad Abdullah Adnan](#)

Status: Published in [Information Systems](#)

● **UACD: A Local Approach for Identifying the Most Influential Spreaders in Twitter in a Distributed Environment**

- Proposed a novel method of identifying the most influential spreaders on Twitter social network by incorporating the **user-specific information** (extracted from his/her Twitter account) to the topological information.
- Provided a **distributed implementation** of the proposed algorithm **UACD** on the Amazon EC2 and observed that the algorithm is **scalable** and can process a significantly large network.
- Compared the ranking generated by UACD with that of the existing methods using widely accepted metrics of ranking comparison and the experimental results indicate that UACD can produce **12.5%** (on average) more accurate results in **175×** (on average) less time.

Supervisor: [Dr. Muhammad Abdullah Adnan](#)

Status: Published in [SNAM](#)

● **Hierarchical Attention for Host Intrusion Detection**

- Proposed a novel hierarchical attention based deep learning method of detection intrusion on a host.
- Evaluated the model on ADFA-LD dataset, which is a collection of a trace data of Linux system calls.
- With proper tuning of hyper-parameters, the proposed method successfully outperforms the existing methods in terms of accuracy as well as lower false alarm rate.

Supervisor: [Dr. Shohrab Hossain](#)

Status: Preprint

PUBLICATIONS

- **TM Tariq Adnan**, Md Mehrab Tanjim, and Muhammad Abdullah Adnan. “Fast, scalable and geo-distributed PCA for big data analytics”. Elsevier Journal on Information Systems, Elsevier, Vol 98, Article 101710, May 2021. [\[Paper\]](#) [\[Code\]](#)
- **TM Tariq Adnan**, Md. Saiful Islam, Tarikul Islam Papon, Sourav Kumar Nath, Muhammad Abdullah Adnan. “UACD: A Local Approach for Identifying the Most Influential Spreaders in Twitter in a Distributed Environment”. Social Network Analysis. Min. 12, 37 (2022).

TEACHING EXPERIENCE (SELECTED)

- **CSE 313:** Operating Systems (July 2021 Semester)
- **CSE 391:** Embedded Systems and Interfacing (January 2021, January 2019)
- **CSE 215:** Database (January 2020)
- **CSE 453:** High Performance Database System (January 2019)
- **CSE 483:** Computer Interfacing (July 2018)
- **CSE 315:** Microprocessors and Microcontrollers (January 2018)
- **CSE 216:** Database Sessional (January 2020)
- **CSE 110:** Programming Language Sessional (January 2020, January 2018)
- **CSE 208:** Data Structure and Algorithm II Sessional (July 2018)

TECHNICAL SKILL

- **Programming Languages:** Python, C, C++, Java, Assembly Language (8086), Prolog, PL/SQL
- **Database:** mySQL, Oracle, PostgreSQL
- **Frameworks:** Keras, Tensorflow, Django, Spring Boot, React, Laravel
- **Others:** Hadoop MapReduce, Apache Spark, Scala

EXTRA CURRICULAR ACTIVITIES

- **Member of Organizing Committee**

International Conference on Networking Systems and Security ([NSysS](#)), organized by Department of CSE, BUET (2018, 2019, 2020, 2021)

- **Coach**

BUET International Collegiate Programming Contest (ICPC) Teams (2018, 2019, 2020)

HONORS AND AWARDS (SELECTED)

- Dean's Award in each academic year in BUET for academic result
- University Merit Scholarships in each semester in BUET for academic result
- University Scholarship for Best Project in July-2016 semester

ACADEMIC PROJECTS (SELECTED)

- **Sudoku Solving Game**

A graphical classic sudoku puzzle solving game developed using C.

- **Download Manager**

A file download manager developed using Java, which tries to increase the download speed by partitioning the file and downloading them concurrently.

- **School Management System**

A web application that manages academic events of a school. The app was developed using Laravel and mySQL.

- **Coin Sorting Machine**

An automated device that sorts different valued Bangladeshi coins. The project was developed using Arduino, Load Cell with Amplifier, multiple motors, etc. It was awarded the Best Project Award. [\[Weblink\]](#)

REFERENCES

- **Dr. Ehsan Hoque**

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[\[Google Scholar Profile\]](#)

- **Dr. Muhammad Abdullah Adnan**

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