# RIDDHO RIDWANUL HAQUE

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## EDUCATION

**University of Massachusetts Amherst**                                                              *2021-2022, 2024-*
*MS/PhD in Computer Science* — Current GPA 4.00/4.00                                                  MA, USA
**Advised by** Peter J. Haas & Alexandra Meliou
**Coursework:** RL, NLP, Databases, Optimizations in CS & Neural Networks

**University of Dhaka**                                                                              *2015-2021*
B.Sc & M.Sc in Computer Science and Engineering                                           Dhaka, Bangladesh
**Grades:** CGPA 3.79/4.00 (B.Sc) & CGPA 3.85/4.00 (M.Sc.)
**Dissertations:**
-Effective Approach for Mining Frequent Subgraph Patterns from Uncertain Graph Databases (MSc)
-Efficient Approach for mining Frequent Subgraphs in Weighted Single Large Graphs (BSc)

## EXPERIENCE

**University of Massachusetts Amherst**                                                              MA, USA
*Graduate Research Assistant*                                                                        2024-
- Invented Stochastic SketchRefine, which allows risk-constrained data-driven decision-making in orders
of magnitude lower runtime than the SOTA approaches.
- Creating ways to increase fairness, diversity and inclusivity of decisions and recommendations made
from high-dimensional data with minimal impact on optimality.
- Exploring the possibility of reverse data management on ML models to detect the probability of
private information being used during their training.
*Graduate Teaching Assistant*                                                                        2021-22
**Courses:** CS240: Reasoning Under Uncertainty & CS345: Intro to Data Management

**Google**                                                                                          2022-2024
*Software Engineer III*                                                                              Taipei, Taiwan
- Optimized Pixel Camera's performance and power consumption during on-device image processing.
- Implemented features and fixed bugs that reduced the image processing pipeline's latency by 10% and
battery consumption by 30%.
- Reduced the cache memory requirement during Pixel 8 & 9's video recording by upto 50%.

**East West University**                                                                            2019-2022
*Lecturer, Department of Computer Science and Engineering*                                    Dhaka, Bangladesh
**Courses:** AI, Algorithms, Data Structures, Object Oriented Programming, Structured Programming

**Data and Design Lab**                                                                             2019 - 2021
*Research Assistant*                                                                           Dhaka, Bangladesh
- Designed a robust mechanism to generate unique identification numbers for BRAC's beneficiaries.
- Created an optimal routing scheme for the home health-care providers of BRAC.

## PUBLICATIONS

1. *Stochastic SketchRefine: Scaling In-Database Decision-Making under Uncertainty to Millions of Tuples*, R. R. Haque, A. L. Mai, M. Brucato, A. Abouzied, P. J. Haas, A. Meliou, Under review at VLDB 2025 [Preprint]
2. *Data Management Perspectives on Prescriptive Analytics*, A. Meliou, A. Abouzied, P. J. Haas, *R. R. Haque*, A. L. Mai, V. Vittis, EDBT/ICDT 2025, [PDF]
3. *Accelerating Stochastic Package Queries*, R. R. Haque, A. L. Mai, M. Brucato, A. Abouzied, P. J. Haas, A. Meliou, NEDB 2024 [Poster]

4. *UFreS: A New Technique for Discovering Frequent Subgraph Patterns in Uncertain Graph Databases*, *R. R. Haque*, C. F. Ahmed, M. Samiullah, C. K Leung, ICBK 2021 [DOI]
5. *WeFreS: Weighted Frequent Subgraph Mining in a Single Large Graph*, N. Ashraf, *R. R. Haque*, M. A. Islam, C. F. Ahmed, C. K. Leung, J. J. Mai, B. H. Wodi, ICDM 2019 [PDF]]
6. *What can nighttime lights tell us about Bangladesh?*, M. Wahed, R. A. Rizvee, *R. R. Haque*, A. M. Ali, M. Zaber, and A. A. Ali, TENSYMP 2020 [DOI]
7. *Seasonal, Temporal and Spatial Variation of Particulate Matter Concentration in Bangladesh: A Longitudinal Analysis*, A Zaman, SB Rabbani, *R. R. Haque*, M Zaber, TENSYMP 2021,[DOI]
8. *Identifying selected diseases of leaves using deep learning and transfer learning models, A. Mimi, S. F. T. Zohura, M. Ibrahim,* R. R. Haque, O. Farrok, T. Jabid, M. S. Ali, Machine Graphics & Vision 2023 [PDF]

## PROJECTS

**Bangladesh at a Glance:** *bdqol.dndlab.org*                                                                 2021
A website visualizing Bangladesh's socio-economic and environmental condition across districts.
**Virtual Lab on Data Structures:** [Code]                                                                 2020
A collection of automatically assessed tutorials to help students learn how to implement data structures.
**Deniability Ensuring Tree** [Code]                                                                 2019
A novel decision-tree based privacy preserving approach for publishing sensitive data.
**itSpeaks.com** [Code]                                                                 *2018*
A website that recommends and allows users to search, share, write, discuss and generate audiobooks.
**Movie Genre Classifier** [Code]                                                                 *2017*
A clustering based approach for predicting genres of movies based on their plot synopses..

## TECHNICAL SKILLS

**Programming Languages:** C, C++, Java, Python, Assembly        **Misc.:** LaTex, Linux, GitHub
**Libraries:** Pandas, Matplotlib, scikit-learn, NumPy, Selenium        **Web:** Flask, SQL, Javascript

## AWARDS

**CSEDU Ambidexterity Award, 2016 and 2017**, Awarded by the University of Dhaka for achieving excellence in both competitive programming and academic results

## COMPETITIVE PROGRAMMING

**National Programming Contest Results**
-**2nd**, Banglalion-SUB IUPC, 2018                       -**5th**, NSU Cybernauts IUPC, 2018
-**6th**, IUT 9th ICT Fest IUPC, 2017                       -**7th**, GUB IUPC, 2018
-**10th**, ACM ICPC Dhaka Regionals, 2016        -**10th**, ACM ICPC Kharagpur Regionals, 2017
**Programming Contest Trainer**
Took classes on competitive programming at *East West University*, the *University of Dhaka* and the *Begum Rokeya University, Rangpur* in Bangladesh.

## VOLUNTARY ACTIVITIES

- Mentored undergraduate students at UMass CICS for the URV program. [Summer 24 Poster]
-Taught Mathematics and English to underprivileged school children at the *Shabab Murshid Development Foundation (SMDF)* in Dhaka, Bangladesh (2015 to 2019)
-Conducted sessions on Computational Thinking at Fulki to popularize algorithmic thinking among school children in Bangladesh.
-Volunteered & fundraised for several programs for hunger prevention and promoting school education among street children in Bangladesh.