

# MAZHARUL ISLAM

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## RESEARCH INTERESTS

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**Topics** User authentication, Detection and prevent of online abuse, Privacy enhancing techniques  
**Areas** Cryptography, Machine Learning, and empirical analysis.

## EDUCATION

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### University of Wisconsin-Madison

*Madison, WI*

- Ph.D. student in Computer Science, Advisor: Prof. Rahul Chatterjee.
- Master of Computer Science, CGPA: 3.75/4.00

2020 - Present  
2020 - 2022

### Bangladesh University of Engineering & Technology (BUET)

*Dhaka, Bangladesh*

- Bachelor of Computer Science, CGPA: 3.73/4.00

2012 - 2017

## WORK EXPERIENCES

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### University of Wisconsin-Madison

*Madison, WI*

- Graduate Research Assistant, Lab: [MadS&P](#)
- Projects: Working on enhancing security of password based user authentication using techniques from applied cryptography and machine learning.

August 2020 - Present  
Supervisor: [Prof. Chatterjee](#)

### Visa Research

*Palo Alto, CA*

- Ph.D. Research Intern, Systems security team
- Project: Account recovery problem in passwordless user authentication.

May 2023 - August 2023  
Supervisor: [Sunpreet S. Arora](#)

### Visa Research

*Palo Alto, CA*

- Ph.D. Research Intern, Systems security team
- Project: Designing multi-party computation (MPC) friendly complex non-linear functions used in deep neural networks.

May 2022 - August 2022  
Supervisor: [Sunpreet S. Arora](#)

### University of Wisconsin-Madison

*Madison, WI*

- Graduate Teaching Assistant, [CS 642-Introduction to Information Security](#)
- Responsibilities: conducting office hours for students, preparing homework and grading for a class of more than 90 students.

August 2020 - Dec 2020

### United International University

*Dhaka, Bangladesh*

- Lecturer, Department of Computer Science
- I designed and was the primary instructor for two undergraduate-level courses [CSE-477: Network Security](#) and [CSE-315: Data communications](#) for more than 300 students throughout six semesters.

Jul. 2017 - Jul. 2019

### iPay Systems Ltd

*Dhaka, Bangladesh*

- Software Engineer, Front-end developer
- I developed a firewall manager on top of [iptables](#) to help the network administrator add new rules delete old rules, and modify existing rules

May 2017 - Jul. 2017

## RESEARCH IMPACT

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- Might I Get Pwned (MIGP) [C4] is deployed at [Cloudflare](#) (a major CDN provider) to warn users from selecting passwords similar (and same) to a breached password in a secure way ([official blog link](#) [↗](#))
- My proposed changes of [Spring security](#) framework in [C3] have improved its documentation ([Link](#) [↗](#)) and contributed a new fix ([Link](#) [↗](#)) on 6.0.x release.

## SELECTED PUBLICATIONS

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### Conference Papers

- [C6] **Mazharul Islam**\*, Marina Sanusi Bohuk\*, Paul Chung, Thomas Ristenpart, Rahul Chatterjee (\*co-first authors).  
*"Araña: Discovering and Characterizing Password Guessing Attacks in Practice"*, 32<sup>nd</sup> USENIX Security 2023, Anaheim, CA (To appear).  
[\[Acceptance rate: TBD%\]](#), [\[PDF\]](#)[\[Source Code\]](#)
- [C5] Marina Sanusi Bohuk, **Mazharul Islam**, Sulman Ahmad, Mike Swif, Thomas Ristenpart, Rahul Chatterjee  
*"Gossamer: Securely Measuring Password-based Logins"*, 31<sup>st</sup> USENIX Security 2022, Boston, MA  
[\[Acceptance rate: 17.2%\]](#) [\[PDF\]](#) [\[Source Code\]](#) [\[Media Coverage\]](#)
- [C4] Bijeta Pal, **Mazharul Islam**, Marina Sanusi Bohuk, Nick Sullivan, Luke Valenta, Tara Whalen, Christopher Wood, Thomas Ristenpart, Rahul Chatterjee  
*"Might I Get Pwned: A Second Generation Compromised Credential Checking Service"*, 31<sup>st</sup> USENIX Security 2022, Boston, MA  
[\[Acceptance rate: 17.2%\]](#) [\[PDF\]](#) [\[Source code\]](#)[\[Media Coverage\]](#)
- [C3] **Mazharul Islam**, Sazzadur Rahaman, Na Meng, Behnaz Hassanshahi, Padmanabhan Krishnan, Danfeng Yao.  
*"Coding Practices and Recommendations of Spring Security for Enterprise Applications"*, IEEE-SecDev 2020  
[\[Acceptance rate = 39%\]](#) [\[PDF\]](#) [\[Presentation Video\]](#)
- [C2] **Mazharul Islam**, Novia Nurain , Mohammad Kaykobad , Sriram Chellappan , A. B. M. Alim Al Islam  
*"HEliOS: Huffman Coding Based Lightweight Encryption Scheme for Data Transmission"*  
 16<sup>th</sup> EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services ACM, Houston, TX, USA, 2019  
[\[h-index 40, Acceptance rate: 30%\]](#) [\[PDF\]](#).
- [C1] **Mazharul Islam**, MD. Nazmuddoha Ansary, Novia Nurain, Salauddin Parvez Shams, A. B. M. Alim Al Islam  
*"Attacking a Live Website by Harnessing a Killer Combination of Vulnerabilities for Greater Harm"*  
 5<sup>th</sup> International Conference on Networking, Systems and Security 2018 , Dhaka, Bangladesh [\[Acceptance rate: 29%\]](#), [\[PDF\]](#)

### Journal Papers

- [J2] **Mazharul Islam**, Kowshika Sarker, Trisha Das, Rezwana Reaz, Md. Shamsuzzoha Bayzid  
*"STELAR: A statistically consistent coalescent-based species tree estimation method by maximizing triplet consistency"*, [BMC Genomics](#) **21**, 136 (2020)  
[\[Impact factor: 3.9\]](#) [\[PDF\]](#) [\[Source Code\]](#)
- [J1] Sumit Tarafder, **Mazharul Islam**, Swakkhar Shatabda, Atif Rahman  
*"Figbird: A probabilistic method for filling gaps in genome assemblies"*, [Bioinformatics](#), Volume 38, Issue 15  
[\[Impact factor: 6.9\]](#) [\[PDF\]](#) [\[Source code\]](#)

### Under Submission

- **Mazharul Islam**, Sunpreet S. Arora, Rahul Chatterjee, Peter Rindal, Maliheh Shirvanian  
*"Approximating Complex Neural Network Activation Functions for Real Time Secure Computation"*  
[\[PDF available on request\]](#) [\[Provisional patent filed\]](#)

## AWARDS

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- **Travel Grants:** [Privacy Preserving Machine Learning \(PPML\)](#), 2022
- **CS Fellowship:** Given to 15 – 20% top admitting graduate students at UW-Madison, 2020
- **Best Poster:** NSysS conference, 2015
- **Programming Contest:** ACM-ICPC Dhaka regional, Bangladesh 17<sup>th</sup>/170 teams.
- **Academic Excellence:** Dean List Awards & University Merit List Scholarship for Academic Result, BUET.

SKILLS

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Languages	Python, C++, Java, Go, HTML, CSS
Frameworks	Pytorch, Django, EMPToolkit
Tools	Git, Docker

EXTRA CURRICULAR ACTIVITIES

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Reviewer	<ul style="list-style-type: none"><li>• <a href="#">Artifact evaluation PC member USENIX 2022</a> (2), Externally reviewed papers from USENIX 2022 (1)</li></ul>
Social Work	<ul style="list-style-type: none"><li>• Worked as field volunteer and took sessions on improving health hygiene and mental development of the children of sex-workers at nonprofit organization named <a href="#">Project Pothchola</a> (2017).</li><li>• Running the “<a href="#">Madison Tech Clinic</a>” as part of “<a href="#">Domestic Abuse Intervention Services (DAIS)</a>” at Madison to provide services to give consultation to victims of tech-enabled intimate partner violence (2022 — 2023)</li></ul>