

SAZZADUR RAHAMAN

Assistant Professor, University of Arizona

✉ sazz@cs.arizona.edu · 📞 · 🌐 www.sazzadur.com

⚙️ RESEARCH INTEREST

I work towards making security research more democratized and affordable. I am broadly interested in building robust systems and methodologies by using program analysis, automated reasoning and learning-based techniques. I emphasize transitioning my work into practice. I lead the SPRLab at the University of Arizona.

🎓 CHRONOLOGY OF EDUCATION

Ph.D. in Computer Science,
Virginia Tech, Blacksburg, VA Aug. 2015 – Aug. 2020

Dissertation: *From Theory to Practice: Deployment-grade Tools and Methodologies for Security Compliance Measurements*. **Advisor:** Dr. Danfeng (Daphne) Yao, Professor, Elizabeth and James E. Turner Jr. '56 Faculty Fellow.

B.Sc. in Computer Science and Engineering,
Bangladesh University of Engineering and Technology (BUET), Bangladesh 2006 – 2012

🐾 CHRONOLOGY OF EMPLOYMENT

University of Arizona, Tucson, AZ, USA Aug. '20 – Present
Assistant Professor, Computer Science

Data Security Technologies, LLC, Dallas, TX, USA May '19 – Aug. '19
Software Engineering Intern, SecureDL Team

Data Security Technologies, LLC, Dallas, TX, USA May. '17 – Aug. '17
Software Engineering Intern, SecureDL Team

Kona Software Lab Ltd, Dhaka, Bangladesh Mar. '14 – Jul. '15
Software Engineer and Team Lead, Kona Pay Team

Therap Services, LLC, Dhaka, Bangladesh Apr. '12 – Feb. '14
Software Engineer, System Team

☆ HONORS AND AWARDS

- NDSS, “Specialized PC” Recognition 2021
- Torgersen Award Finalist, Best Ph.D. research (Virginia Tech) 2021
- CSAW '20 Applied Research Competition Finalist, Paper on Security Certification [CCS'19b] 2020
- NSA Best Science of Security Paper Nomination, CryptoGuard [CCS'19a] 2020
- Pratt Fellowship, Fall 2019 and Spring 2020 2019
- Bitshare Fellowship, Fall 2018 and Spring 2019 2018
- Champion in .Net platform, Inter-University System Design Competition-2011, BUET 2011
- Dean's List Award, BUET Session 2009-10

📌 SERVICE/OUTREACH

Departmental Committees:

- Award committee (Chair): Fall'22, Spring'23, Fall'23, Spring'24, Fall'24, Spring'25
- MS and AMP admission committee: Fall'20, Spring'21, Fall'21, Spring'22, Fall'24, Spring'25

- *PhD admission committee*: Spring'21, Spring'22, Fall'24, Spring'25
- *Colloquium Czar*: Fall'22, Spring'23
- *Undergraduate honors advisor*: Fall'22, Spring'23

College Committees:

- *CoS Award committee (Member)*: Spring'24, Fall'24, Spring'25

Program (Co-)Chair:

- [IEEE SecDev] IEEE Secure Development Conference: 2025, 2026

Technical Program Committees:

- [IEEE S&P] IEEE Symposium on Security and Privacy: 2024, 2025
- [USENIX Security] USENIX Security Symposium: 2023, 2025, 2026
- [ACM CCS] ACM Conference on Computer and Communications Security: 2023, 2026
- [NDSS] The Network and Distributed System Security Symposium: 2021, 2022, 2023
- [PETS] Privacy Enhancing Technologies Symposium: 2022, 2023, 2025, 2026
- [SaTML] IEEE Conference on Secure and Trustworthy Machine Learning: 2024, 2025
- [IEEE SecDev] IEEE Secure Development Conference: 2023, 2024
- [CNS] IEEE Conference on Communications and Network Security: 2022
- [SACMAT] Symposium on Access Control Models and Technologies: 2022
- [NSysS] International Conference on Networking, Systems, and Security: 2021, 2024

Journal Reviewer:

- [TECS] Transactions on Embedded Computing Systems: 2021
- [IoT Journal] IEEE Internet of Things Journal: 2020
- [TDSC] IEEE Transactions on Dependable and Secure Computing: 2013, 2024.

Other Professional services:

- [IEEE SecDev] Publicity Chair: 2024.
- [NDSS] Student Travel Grant Committee: 2022, 2023.
- [NSF SaTC] Panelist: 2022.

PUBLICATIONS (UNDERLINE: THE MEMBERS OF SPRLAB, LAST AUTHOR: PROJECTS FROM SPRLAB)

Conference Papers

1. [IEEE S&P'26] Jesse Chen, Rubin Yuchan Yang, Ahmad Musa, Syed Rafiul Hussain, Omar Chowdhury, Sazzadur Rahaman. *Secret State Leakage Attacks and their Impacts on EMV Contactless Payment Apps*.
2. [EURO S&P'26] Gabriel Sauger*, Vincent Tourneur, Muaz Ali, Sazzadur Rahaman, Jean-Yves Marion. *Attacking the First-Principle: A Black-Box, Query-Free Targeted Evasion Attack on ML-Based Binary Function Code Classifiers*. (*: visiting student)
3. [FSE'26] Saleh Amareen, Sazzadur Rahaman, Amiangshu Bosu. *GraphQLify: Automated and Type Safety-Preserving GraphQL API Adoption*. Ottawa, Ontario, Canada. May, 2025.
4. [FSE'25] Tanner Allen Finken*, Jesse Chen*, Sazzadur Rahaman. *On the Characteristics and Impacts of Protestware Libraries*. ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (FSE). Trondheim, Norway. June, 2025. (*: co-first authors)
5. [PETS'25] Muaz Ali, Tugay Bilgis, N. Beyza Bozdog, Saumya Debray, Sazzadur Rahaman. *Does Stylometry Really Survive Compilation? Binary Code Stylometry Revisited*. 25th Privacy Enhancing Technologies Symposium (PETS 2025). Washington, DC, USA and Online. July, 2025.
6. [EMNLP'24] *Challenges and Opportunities for Deterring LLM-assisted Cheating in Introductory Computer Programming Assignments via Adversarial Perturbation*. Saiful Islam Salim*, Rubin Yuchan Yang*, Alexander Cooper*, Saumya Debray, Sazzadur Rahaman. The 2024 Conference on Empirical Methods in Natural Language Processing. Miami, Florida. November, 2024. (*: co-first authors, ★ Oral Presentation)
7. [CCS'24] *Trust, Because You Can't Verify: Privacy and Security Hurdles in Education Technology Acquisition Practices*. Easton Kelso, Ananta Soneji, Sazzadur Rahaman, Yan Shoshitaishvili, Rakibul Hasan. ACM Conference on Computer and Communications Security (CCS'24). Salt Lake City, USA. October, 2024.

8. **[FSE'24]** *On the Contents and Utility of IoT Cybersecurity Guidelines*. Jesse Chen, Dharun Rajkkumar Anandayuvraj, James C. Davis, Sazzadur Rahaman. ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering. Porto de Galinhas, Brazil. July, 2024.
9. **[USec'23]** *Bilingual Problems: Studying the Security Risks Incurred by Native Extensions in Scripting Languages*. Cristian-Alexandru Staicu, Sazzadur Rahaman, Ágnes Kiss, Michael Backes. 32nd USENIX Security Symposium. Anaheim, CA, USA. August 2023. (★ **Fixed Vulnerabilities in Multiple Popular NodeJS Libraries**)
10. **[ACSAC'23]** *The Queen's Guard: A Secure Enforcement of Fine-grained Access Control In Distributed Data Analytics Platforms*. Fahad Shaon*, Sazzadur Rahaman*, Murat Kantarcioglu. The Annual Computer Security Applications Conference (ACSAC). Austin, Texas, USA. December 2023. (*: co-first authors) (★ **Adopted by Data Security Technologies, LLC.**)
11. **[ESORICS'23]** *A Tale of Reduction, Security and Correctness: Evaluating Program Debloating Paradigms and Their Compositions*. Muaz Ali^o, Muhammad Muzammil, Faraz Karim, Ayesha Naeem, Rukshan Haroon, Muhammad Haris, Huzaifah Nadeem, Waseem Sabir, Fahad Shaon, Fareed Zaffar, Vinod Yegneswaran, Ashish Gehani, Sazzadur Rahaman. 28th European Symposium on Research in Computer Security (ESORICS). Hague, Netherlands. 2023.
12. **[SecDev'23b]** *BLADE: Fast and Scalable Source Code Debloating with Structure-Aware Code Traversal*. Muaz Ali^o, Rumaisa Habib, Ashish Gehani, Sazzadur Rahaman, Zartash Uzmi. IEEE Secure Development Conference. Atlanta, GA. October, 2023.
13. **[SecDev'23a]** *DEBLOATBENCH: Evaluating container debloaters*. Muhammad Hassan, Talha Tahir, Muhammad Farukh, Abdullah Naveed, Anas Naeem, Fahad Shaon, Fareed Zaffar, Ashish Gehani, Sazzadur Rahaman. IEEE Secure Development Conference. Atlanta, GA. October, 2023.
14. **[SecDev'20]** *Coding Practices and Recommendations of Spring Security for Enterprise Applications*. Mazharul Islam, Sazzadur Rahaman, Na Meng, Behnaz Hassanshahi, Padmanabhan Krishnan and Danfeng (Daphne) Yao. IEEE Secure Development Conference. Atlanta, GA, September 2020.
15. **[CCS'19a]** *Security Certification in Payment Card Industry: Testbeds, Measurements, and Recommendations*. Sazzadur Rahaman, Gang Wang, Danfeng (Daphne) Yao. ACM Conference on Computer and Communications Security (CCS'19). London, UK. November 2019. (★ **CSAW'20 Best Applied Research Finalist**)
Source code: <https://github.com/sazzad114/{pci-checker,buggycart}>
16. **[CCS'19b]** *CryptoGuard: High Precision Detection of Cryptographic Vulnerabilities in Massive-sized Java Projects*. Sazzadur Rahaman, Ya Xiao, Sharmin Afrose, Fahad Shaon, Ke Tian, Miles Frantz, Murat Kantarcioglu, Danfeng (Daphne) Yao. ACM Conference on Computer and Communications Security (CCS'19). London, UK. November 2019. (★ **Adopted by Oracle, NSA Best Science of Security Paper Nomination**)
Source code: <https://github.com/CryptoGuardOSS/cryptoguard>
17. **[SecDev'19]** *CryptoAPI-Bench: A Comprehensive Benchmark on Java Cryptographic API Misuses*. Sharmin Afrose, Sazzadur Rahaman, Danfeng (Daphne) Yao. 2019 IEEE Secure Development Conference (SecDev'19). McLean, VA. September 2019. (★ **Used by multiple research groups**)
Source code: <https://github.com/CryptoGuardOSS/cryptoapi-bench>
18. **[PETS'17]** *"Provably Secure Anonymous-yet-Accountable Crowdsensing with Scalable Sublinear Revocation."* Sazzadur Rahaman, Long Cheng, Danfeng (Daphne) Yao, He Li, and Jung-Min (Jerry) Park. 17th Privacy Enhancing Technologies Symposium (PETS'17). Minneapolis, MN, USA. July, 2017.
19. **[SecDev'17]** *"Program Analysis of Cryptography Implementations for Security."* Sazzadur Rahaman, Danfeng (Daphne) Yao. 2017 IEEE Secure Development Conference (SecDev'17). Cambridge, MA, USA. September, 2017.

Journal Papers

20. **[S&P Journal'22]** **Being the Developers' Friend: Our Experience Developing a High-Precision Tool for Secure Coding*. Danfeng (Daphne) Yao, Sazzadur Rahaman, Ya Xiao, Sharmin Afrose, Miles Frantz, Ke Tian, Na Meng, Cristina Cifuentes, Yang Zhao, Nicholas Allen, Nathan Keynes, Barton Miller, Elisa Heymann, Fahad Shaon, Murat Kantarcioglu. IEEE Security and Privacy Journal. 2022. (**Impact Factor: 3.57**)
21. **[TSE'22]** **Evaluation of Static Vulnerability Detection Tools with Java Cryptographic API Benchmarks*. Sharmin Afrose, Ya Xiao, Sazzadur Rahaman, Barton Miller, Danfeng (Daphne) Yao. IEEE Transactions on Software Engineering (TSE). 2022. (**Impact Factor: 6.11**)
22. **[TDSC'21]** **From Theory to Code: Identifying Logical Flaws in Cryptographic Implementations*. Sazzadur Rahaman, Haipeng Cai, Omar Chowdhury and Danfeng (Daphne) Yao. IEEE Transactions on Dependable and Secure Computing (TDSC). 2020. (**Impact Factor: 6.86**)

Workshop and Short Papers

23. **[CHI-Late Breaking Work'25]** *Investigating the Security & Privacy Risks from Unsanctioned Technology Use by Educators*. Easton Kelso, Ananta Soneji, Syed Zami-Ul-Haque Navid, Yan Soshitaishvili, Sazzadur Rahaman, Rakibul Hasan. CHI Conference on Human Factors in Computing Systems - Late-Breaking Work. Yokohama, Japan.
24. **[SCI'23]** **SpanL: A Language for Screening Improper Use of Security APIs in High-level Languages*. Sazzadur Rahaman, Miles Frantz, Barton Miller and Danfeng Yao. Secure Cryptographic Implementation Workshop collocated with 21st International Conference on Applied Cryptography and Network Security (ACNS), 2023.

25. [SERP4IoT'22] "If security is required": Engineering and Security Practices for Machine Learning-based IoT Devices. Nikhil Gopalakrishna, Dharun Anandayuvraj, Annan Detti, Forrest Lee Bland, Sazzadur Rahaman, James Davis. SERP4IoT workshop collocated with ACM/IEEE International Conference on Software Engineering (ICSE), 2022.
26. [CheckMATE'21] Optimization to the Rescue: Evading Binary Code Stylometry with Adversarial Use of Code Optimizations. Ben Jacobsen, Sazzadur Rahaman, Saumya Debray. CheckMATE workshop collocated with ACM Conference on Computer and Communications Security (CCS), 2021.

OTHER SCHOLARSHIP

Conference Posters

- [FSE'24] Jesse Chen, Dharun Rajkkumar Anandayuvraj, James C. Davis, Sazzadur Rahaman. *A Unified Taxonomy and Evaluation of IoT Security Guidelines*. ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering. Porto de Galinhas, Brazil. July, 2024.
- [S&P'19] Sazzadur Rahaman, Ya Xiao, Sharmin Afrose, Ke Tian, Miles Frantz, Danfeng (Daphne) Yao, Na Meng, Barton P. Miller, Fahad Shaon, Murat Kantarcioglu. "Poster: Deployment-quality and Accessible Solutions for Cryptography Code Development." 2019 IEEE Symposium on Security and Privacy (IEEE S&P'19). San Francisco, CA, USA. May, 2019.
- [CCS'19] Sazzadur Rahaman, Ya Xiao, Sharmin Afrose, Ke Tian, Miles Frantz, Danfeng (Daphne) Yao, Na Meng, Barton P. Miller, Fahad Shaon, Murat Kantarcioglu. "POSTER: Deployment-quality and Accessible Solutions for Cryptography Code Development." 2019 ACM Conference on Computer and Communications Security (ACM CCS'19). London, United Kingdom. November 2019.
- [SecDev'19] Sharmin Afrose, Sazzadur Rahaman, Danfeng (Daphne) Yao. "A Comprehensive Benchmark on Java Cryptographic API Misuses." 2019 IEEE Secure Development Conference (SecDev'19). McLean, VA. September 2019.
- [SecDev'17] Sazzadur Rahaman, Long Cheng, Danfeng (Daphne) Yao, He Li, and Jung-Min (Jerry) Park. "Enabling Large-scale Anonymous-yet-Accountable Crowdsensing" (Poster). 2017 IEEE Secure Development Conference (SecDev'17). Cambridge, MA, USA. September, 2017.
- [USENIX SEC'16] Sazzadur Rahaman, Long Cheng, He Li, Danfeng (Daphne) Yao and Jung-Min (Jerry) Park. "GroupSense: Scalable Crowdsensing with Privacy and Accountability." (Poster). 2016 USENIX Security (USENIX SEC'16). Austin, TX. August, 2016.

Conference Tutorials

- [SecDev'20] Ya Xiao, Miles Frantz, Sharmin Afrose, Sazzadur Rahaman and Danfeng (Daphne) Yao. "Tutorial: Principles and Practices of Secure Cryptographic Coding in Java" (90 minutes Tutorial). 2020 IEEE Secure Development Conference (SecDev'20). September, 2020.
- [SecDev'18] Sazzadur Rahaman, Na Meng and Danfeng (Daphne) Yao. "Tutorial: Principles and Practices of Secure Crypto Coding In Java" (90 minutes Tutorial). 2018 IEEE Secure Development Conference (SecDev'18). Cambridge, MA, USA. September, 2018.

US Patents

- [PATENT'23] Fahad Shaon, Sazzadur Rahaman. "Systems and methods for proactive and reactive data security". U.S. Patent Application No: 16/698,328.

CONFERENCE/SCHOLARLY PRESENTATIONS

- *Expectation vs Reality: Why do industry guidelines and certifications fail to ensure baseline security?*
Invited talk, at SRI International, Menlo Park, CA. May, 2024. (Host: Dr. Ashish Gehani)
- *Expectation vs Reality: Why do industry guidelines and certifications fail to ensure baseline security?*
Invited talk, at The University of New Mexico, NM. April, 2024. (Host: Dr. Afsah Anwar)
- DEBLOATBENCH: *Evaluating container debloaters*.
IEEE Secure Development Conference. Atlanta, GA. (October, 2023)
- *Compliance Gap Triangle: Navigating through the impediments to improve industry-wide baseline security*
Invited talk, at Marquette University, Wisconsin, Online. February, 2022. (Host: Dr. Nasim Yahyasoltani)
- *Compliance Gap Triangle: Impediments for effective compliance certification*
Invited talk, FACC Workshop at Computer-Aided Verification (CAV), Online. (July, 2021)
- *From Theory to Practice: Deployment-grade Tools and Methodologies for Software Security*
Invited talk, Department of Computer Science, Clemson University. September, 2020. (Host: Dr. Long Cheng)
- *Tutorial: Principles and Practices of Cryptographic Coding in Java*
Tutorial, IEEE Secure Development Conference (SecDev'20), Online. (September, 2020)
- *From Theory to Practice: Deployment-grade Tools and Methodologies for Software Security*
Invited talk, CSE, BUET. Bangladesh. September, 2020. (Host: Dr. Atif Hasan Rahman)

- *From Theory to Practice: Deployment-grade Tools and Methodologies for Software Security*
Department of Computer Science, University of Arizona, Tucson, AZ. March, 2020.
- *From Theory to Practice: Deployment-grade Tools and Methodologies for Software Security*
Department of Computer Science, Wayne State University, Detroit, MI. (March, 2020)
- *From Theory to Practice: Deployment-grade Tools and Methodologies for Software Security*
Department of Computer Science, University of Central Florida, Orlando, FL. (February, 2020)
- *CryptoGuard: High Precision Detection of Cryptographic Vulnerabilities in Massive-sized Java Projects*
In ACM Conference on Computer and Communications Security (CCS'19), London, UK. (November, 2019)
- *Security Certification in Payment Card Industry: Testbeds, Measurements, and Recommendations*
In ACM Conference on Computer and Communications Security (CCS'19), London, UK. (November, 2019)
- *Research on the dangers of copy/pasting code*
In Snyk.io Podcast with James Davis. (November, 2019)
- *Understanding and Minimizing The Gap Between Secure Coding Theory and Practice*
Invited Talk, The University of Wisconsin-Madison, Madison, WI. (Host: Dr. Barton Miller)
- *Principles and Practices of Secure Crypto Coding In Java*
Tutorial, IEEE Secure Development Conference (SecDev'18), Cambridge, MA. (September, 2018)
- *Program Analysis of Cryptography Implementations for Security*
In IEEE Secure Development Conference (SecDev'17), Cambridge, MA. (September, 2017)
- *Enabling Large-scale Anonymous-yet-Accountable Crowdsensing*
In 17th Privacy Enhancing Technologies Symposium (PETS'17), Minneapolis, MN. (July, 2017)
- *Smart Card to the Cloud for Convenient, Secured NFC Payment*
Invited talk, JavaOne'15, San Francisco, CA. (2015)
- *Languages in JVM Ecosystem and The future of JVM*
Invited talk, JUG, BD (Meetup 5.0), Dhaka, BD. (2015)
- *Java 8: Lambda expression and Stream API*
Invited talk, JUG, BD (Meetup 3.0), Dhaka, BD. (2015)
- *Antibandwidth problem for itchy caterpillar*
In IEEE International Conference on Informatics, Electronics & Vision (ICIEV'14), Dhaka, BD. (May, 2014)

➡ AWARDED GRANTS AND CONTRACTS

- **FY22 TRIF NSS** (University of Arizona): *Over-the-Air-Heist: Verifying and Protecting NFC-based Payment Applications*. PI: Sazzadur Rahaman, Co-PI: Loukas Lazos. Duration: 1 year (0.5 FTE). Submission year: 2023. Budget: \$48,807
- **FY24 Eighteenth Mile TRIF**: *Security Analysis of Mobile Application-based Payment Protocol Implementations*. PI: Sazzadur Rahaman, Co-PI: Loukas Lazos. Duration: 1 year. Submission year: 2021. Budget: \$77,540.
- **Google Research Credit**: *Developing meta-huristics for source-level program debloating*. PI: Sazzadur Rahaman. Duration: 1 year. Submission year: 2024. Budget: \$5,000.

🏛️ SELECTED TEACHING EXPERIENCE

- *CSC 466 - Computer Security*: Spring 2023, Fall 2023, Fall 2024.
- *CSC 566 - Computer Security*: Fall 2022, Spring 2024, Spring 2025.
- *CSC 466/566 - Computer Security*: Spring 2022.
- *CSC 696I - Advanced Topics in Security*: Spring 2021
- *CS 4264 - Principles of Computer Security*: Spring 2020 (Virginia Tech).

👤 MENTORING EXPERIENCE

- **PhD Students**: Priya Kaushik (Fall 2022), Jesse Chen (Fall 2023), and Rubin Yuchan Yang (Fall 2024).
- **Member of the PhD committee**: Terrence Lim (University of Arizona, CS), Sahil Hassan (University of Arizona, ECE), Rajshakhar Paul (Wayne State University, CS).
- **Master's Students**: Ahmad Musa (Summer 2024), Rubin Yuchan Yang (Fall 2023), Jesse Chen (Fall 2022).
- **Undergraduate Students**: Jesse Chen (Graduated: Fall 2021), Ben Jacobsen (Graduated: Fall 2021; Currently: A graduate student at University of Wisconsin-Madison), Jonathon Harold Lamparter, Xin Li, Nimet

Beyza Bozdag, Tugay Bilgis, Alexander E Cooper, Logan Michael Sandlin, Suryashree Ray, Genesis Elizabeth Benedith, Ifeoluwa Ale.

- **Visiting Students:** Gabriel Sauger (University of Lorraine, Nancy, Grand Est, France)
- **Former Student Collaborators:** Sharmin Afrose (VT), Ya Xiao (VT), Mazharul Islam (VT), Miles Frantz (VT), Hannah Roth (VT)

♡ MISCELLANEOUS

- **Program Committee**, for selecting the best applied research contribution for CSAW 2021, 2022, 2023.
- **Mentor**, University of Arizona Women in Science and Engineering Program (WISE): 2021, 2024.
- **Mentor**, Individualized Cybersecurity Research Mentoring Workshop 2020 (iMentor 2020).
- **Founding member and initiator**, Java User Group, Bangladesh (JUGBD).

📰 SELECT MEDIA COVERAGE

- **Faculty Spotlight:** <https://www.cs.arizona.edu/news/faculty-spotlight-sazzadur-rahaman>
- **ACM News Article:** <https://cacm.acm.org/news/a-tool-for-hardening-java-crypto/>