

Sajedul Talukder

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RESEARCH INTERESTS

My research interests lie at the intersection of privacy and security of online and geosocial networks, with a particular interest in detection and prevention of abuse using machine learning. The overarching goal is to design and develop automated defense techniques against abuse to ensure secure and reliable online social network experience.

EDUCATION

Florida International University, Miami, FL

Ph.D. in Computer Science Apr 2019
■ Dissertation: *Detection and Prevention of Abuse in Online Social Networks*
■ Advisor: Bogdan Carbunar

M.S. in Computer Science Dec 2018

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

B.Sc. in Computer Science and Engineering Jul 2014
■ Thesis: *Security Issues and Protection Mechanisms of IP Mobility Protocols*

RECENT POSITION

Assistant Professor

Department of Mathematics and Computer Science, Edinboro University May 2019 – Current

HONORS, GRANTS AND AWARDS

- Association for the Advancement of Artificial Intelligence (AAAI) Student Travel Grant (\$350), 2018
- FIU Graduate and Professional Student Committee Student Travel Grant (\$500), 2018
- FIU School of Computing and Information Sciences Student Travel Grant (\$500), 2018
- ACM SIGWEB Student Travel Grant (\$500), 2017
- Dean's Merit List Award from Bangladesh University of Engineering and Technology (BUET), 2013 & 2014
- Honorable Mention in Undergraduate Thesis Poster Competition, Department of CSE, BUET, 2014
- Best Paper Award, ICEEICT, 2014
- EATL-Prothom Alo Apps Contest, Champion in Android Utilities Category, 2012
- President's Rover Scout Award for scouting activities and community services, 2009 – 2014
- Bangladesh Government Merit Scholarship, secondary and higher secondary public exams (Top 1% among 2 million students), 2006 & 2008

RESEARCH EXPERIENCE

Graduate Research Assistant

Cyber Security and Privacy Research Lab, FIU Jan 2016 – Apr 2019

- *AbuSniff: Detection and defenses against abusive Facebook friends*
 - Designed and developed an **automated abuse detection system** for online social networks like Facebook by detecting whether the Facebook friend is a perceived stranger or abuser
 - Demonstrated various security & privacy vulnerabilities that may originate from friend abuse in Facebook (e.g., timeline abuse, newsfeed abuse, stranger abuse)
 - Performed analysis over crowdsourced user data and implemented **AbuSniff, a social network assistant** able to predict abusive Facebook friend using supervised learning and take personalized defensive action

- Evaluated the system by conducting user studies on real Facebook users from **25 countries and 6 continents**
- Presented research to both technical and non-technical audiences
- *F*Lock: *Friend Lock for strangers and abusers to reduce social networking risks*
 - Designed a novel system to crack down on the stranger and abusive pending friends on Facebook
 - Analyzed the pending **friend acceptance behavior** of a number of Facebook users spanning different demographics, gender, age and education groups
 - Performed experiments and user studies to leverage new Facebook user interface in order to create a noticeable visual display that will encourage safer social networking behaviors
 - Developed **F**Lock, a tool to automatically identify stranger and abusive pending friend with a minimal access to the common history between the user and the pending friend

TEACHING EXPERIENCE

Graduate Teaching Assistant

School of Computing and Information Sciences, FIU

Aug 2014 – Dec 2015

- Worked as a TA for the **Java Programming** course
 - Prepared PowerPoint presentations, lesson plans, and programming projects for three classes of twenty students each
 - Designed weekly quizzes, graded quizzes and lab reports, tracked the student progress using Blackboard
 - Provided students with one-on-one tutoring and regular out of class assistance
 - Tutored students with special needs, including those with learning disabilities or who had language disadvantages
- Worked as a TA for the **Software Engineering** course
 - Assisted professor with classroom instruction materials, exams, assignments and record keeping
 - Collaborated with the professor at weekly meeting and actively contributed new ideas on teaching
 - Improved student participation in the classroom through integration of creative role-playing exercises and peer review sessions
- Worked as a TA for the **Algorithm Techniques** course
 - Prepared and presented three lectures per week for three course sections using multimedia technologies such as PowerPoint, video clips, and Blackboard course website
 - Developed and graded exams and quizzes that assess student mastery of subject matter
- Worked as a TA for the **Computer Data Analysis** course
 - Prepared lesson plans, and assignments and conducted the labs
 - Evaluated homeworks, tests, and quizzes and held office hours to ensure students understood course concepts
 - Consistently received positive teacher evaluations from students
- Worked as a TA for the **Introduction to Microcomputers** course
 - Conducted labs and graded student lab reports and quizzes using an auto-grader
 - Held office hours to ensure students understood the labs and successfully balanced student work-load with teaching work-load

Summer RET Instructor

School of Computing and Information Sciences, FIU

Summer 2015 – Summer 2018

- Worked as an instructor for **NSF–DoD RET** program for K-12 STEM teachers
 - Prepared PowerPoint presentations, lesson plans, and assignments for twenty K-12 STEM teachers each year on summer from 2015-2018
 - Taught the fundamental concepts of Java programming (2018), algorithms (2017), data mining (2016) and web programming (2015)
 - Adopted variety of teaching methods to make learning fun and keep teachers of all ages engaged in the learning process
 - Successfully motivated six K-12 teachers to enroll in the masters degree program in FIU after their summer program

Lecturer

Asian University of Bangladesh, Department of Computer Science and Engineering,
Bangladesh

Jul 2014 – Aug 2014

- Courses taught: Object-Oriented Programming, Computer Security

MENTORING EXPERIENCE

TA Mentor

School of Computing and Information Sciences, FIU

- Mentored the TA of the undergraduate **Java Programming** course on how to conduct the lab sessions and evaluate the programming assignments.
- In addition to TA responsibilities, led and mentored weekly planning meetings, coordinated with the professor, and acted as a liaison between all teaching assistants and the professor for the **Computer Data Analysis** course.

Spring 2015

Fall 2015

NSF–DoD REU Site Mentor

School of Computing and Information Sciences, FIU

- Mentored five undergraduate students in research formulation, data collection and analysis to help them complete their summer REU program.
- Guided the students in preparation and presentation of their research findings.
 - Alexandria Morales
 - Ivia Alvarez, Krista Shuckerow
 - Frank Hu, Harold Simpson

Summer 2017

Summer 2016

Summer 2015

NSF–DoD RET Site Mentor

School of Computing and Information Sciences, FIU

- Mentored two K-12 STEM teachers to participate in authentic summer research experiences.
- Guided the teachers to translate their research experiences and new scientific knowledge into their classroom activities and curricula.
 - Christine Todd, Irina Vega

Summer 2016

OTHER WORK EXPERIENCE

Software Engineering Intern

Samsung R&D Institute Bangladesh (SRBD)

Oct 2013 – Mar 2014

- worked on the **Mobile Authentication and Security (MAS)** team to re-design some of the authentication user interfaces for the Samsung devices.
- Improved features for facial recognition technology for the authentication of Samsung devices.
- Implemented tools for static and dynamic code analysis for the deployment of Samsung KNOX products.

Software Engineering Intern

Ministry of Foreign Affairs, Bangladesh

Jan 2012 – Jan 2013

- Worked as a team leader in a group of 4 other interns to digitalize the Consular, Diplomatic Bag and Central Receipt Sections of the Ministry.
- Designed and implemented an automation software supporting SAML-based SSO services for the Ministry and tested the performance in real life environment.

PUBLICATIONS

Refereed Journal Papers

- **Sajedul Talukder** and Bogdan Carbutar, “A Study of Friend Abuse Perception in Facebook”, ACM Transactions on Social Computing (**TSC**), 2018. [Under Review]

Refereed Conference Papers

- **Sajedul Talukder**, Nestor Hernandez, Mozghan Azimpourkivi and Bogdan Carbutar, ““I don’t remember exactly, but ...”: Vulnerabilities and Defenses to Facebook Friend Spam”, The Fifteenth Symposium on Usable Privacy and Security (**SOUPS**), Aug 2019. [Under Review]
- **Sajedul Talukder** and Bogdan Carbutar, “AbuSniff: Automatic Detection and Defenses Against Abusive Facebook Friends”, Proceedings of the 12th International Conference on Web and Social Media (**ICWSM**), Jun 2018. [Acceptance Rate = 16%]
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib, Md. Faruk Hossen, Zahidur Rahim Talukder and Md. Shohrab Hossain, “Attacks and Defenses in Mobile IP: Modeling with Stochastic Game Petri Net”, In proceedings of the IEEE International Conference on Current Trends in Computer, Electrical, Electronics and Communication (**ICCTCEEC**), Sep 2017.
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib, Zahidur Rahim Talukder, Upoma Das, Arnob Saha and Nur Sultan Nazar Bayev, “USenSewer: Ultrasonic Sensor and GSM-Arduino Based Automated Sewerage Management”, In proceedings of the IEEE International Conference on Current Trends in Computer, Electrical, Electronics and Communication (**ICCTCEEC**), Sep 2017.
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib and Md. Mustafizur Rahman, “Digital Land Management System : A new initiative for Bangladesh”, In proceedings of the 1st IEEE International Conference on Electrical Engineering and Information & Communication Technology (**ICEEICT**), Apr 2014. [Best Paper Award]
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib and Md. Mustafizur Rahman, “Model for E-Government in Bangladesh: A Unique ID Based Approach”, In proceedings of the 3rd IEEE International Conference on Informatics, Electronics & Vision (**ICIEV**), May 2014.

Workshops and Posters

- **Sajedul Talukder** and Bogdan Carbutar, “When Friend Becomes Abuser: Evidence of Friend Abuse in Facebook”, In proceedings of the 9th ACM Conference on Web Science (**ACM WebSci**), Jun 2017, Troy, NY.
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib, Md. Faruk Hossen and Md. Shohrab Hossain, “Security Issues and Protection Mechanisms of IP Mobility Protocols”, Workshop on Mobile Computing and Human Computer Interaction (**WMHCI**), Jan 2014, Dhaka, Bangladesh.
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib, Md. Faruk Hossen and Md. Shohrab Hossain, “Investigations of IP Mobility Protocols: A Petri Game Net Approach”, Workshop on Design and Implementation of Emerging Computing Systems (**WECS**), Sep 2013, Dhaka, Bangladesh.

Technical Report

- **Sajedul Talukder**, Shalisha Witherspoon, Kanishk Srivastava and Ryan Thompson, “Mobile Technology in Healthcare Environment: Security Vulnerabilities and Countermeasures”, School of Computing and Information Sciences, Florida International University, 2018. Available at : <https://arxiv.org/abs/1807.11086>

WORK IN PROGRESS

- **Sajedul Talukder** and Bogdan Carbutar, “FLock: Friend Lock for Strangers and Abusers to Reduce Social Networking Risks in Facebook”, In preparation, 2018.
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib, Md. Faruk Hossen and Md. Shohrab Hossain, “A Study of Attacks and Defenses of IP Mobility Protocols”, In preparation, 2018.
- **Sajedul Talukder**, Md. Iftekharul Islam Sakib, and Md. Shohrab Hossain, “Secured Traffic Management Using Wireless Sensor Networks: Using RFID in Non-lane Road Intersections”, In preparation, 2018.

TALKS AND PRESENTATIONS

- *When Your Friend Becomes Abuser in Facebook*, ICWSM Science Slam at Dutch Goose, Stanford University, CA, USA, Jun 2018.

- *Automatic Detection and Defenses Against Abusive Facebook Friends*, Conference talk at Stanford University, CA, USA, Jun 2018.
- *Using Petri Net to Model Attacks and Defenses in IP Mobility Protocols*, BUET, Dhaka, Bangladesh, May 2014.

PROFESSIONAL ACTIVITIES

■ External reviewer for conferences

- ACM ASIA Conference on Computer and Communications Security (ACM ASIACCS) [2017]
- IEEE International Conference on Cryptology And Network Security (CANS) [2017]
- International Conference on Networking Systems and Security (NSysS) [2016, 2017]
- IEEE International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT) [2015, 2016, 2017]
- IEEE International Conference on Informatics, Electronics & Vision (ICIEV) [2016, 2017]
- IEEE International Conference On Electrical And Electronics Engineering (ICEEE) [2017]
- IEEE International Conference on Advances in Electronics Engineering (ICAEE) [2015, 2017]

■ Journal reviewer

- ACM Digital Threats: Research and Practice (DTRAP) [2018]

■ Program Committee

- 3rd Workshop on Abusive Language Online (ACL) [2019]

MEDIA COVERAGE

- “Facebook Quizzes Can Give Personal Data to Obscure Companies” Reported By Jamie Guirola, **NBC 6 News**, Nov 21, 2017. Available at: <https://www.nbcmiami.com/news/local/Facebook-Quizzes-Give-Personal-Data-to-Obscure-Companies-459217673.html>
 - Discussion on dangers of Facebook quizzes and practical demonstration of how Facebook quizzes have the potential of relinquishing someone’s personal information to inconspicuous companies, aired on NBC as a sweeps prime-time story.
- “Studying Abuse Perception on Facebook Using Android App” Reported By Ailsa Dann, **SAGE Research Methods** video streaming collection on data science, big data analytics and digital methods, Jun 27, 2018. Available at: <http://methods.sagepub.com/video/studying-abuse-perception-on-facebook-using-android-app>
 - Interview that discusses the research of friend abuse on Facebook, including data collection, participant selection, app creation, algorithm development, data management, results of research, and advice for those interested in this type of research. To be used in higher education across academic levels and disciplines, and made available to academic libraries for subscription or purchase aimed at students and early career researchers who are interested in learning more about research in related field and acquiring the necessary skills to carry out their own research.

REFERENCES

Sundaraja S. Iyengar

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