Muhammad Sajidur **Rahman**

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Profile Summary

- Goal oriented, team player, problem-solver.
- Proven skills in designing and carrying out research studies, analyzing results both qualitatively and quantitatively, scrutinizing output, and improving methods.
- Research interests: **Software Security, Deep Learning, Usable Security and Privacy Design**.
- 4+ years of extensive working experience as a Software Engineer in **Fintech** industry, **SaaS** in general.
- Ready to hit the ground running and produce results.

Education

University of Florida	*Gainesville, FL*
PHD STUDENT, DEPT. OF COMPUTER & INFORMATION SCIENCE & ENGINEERING	*2017 - Present*
Kansas State University	*Manhattan, KS*
M.S. IN COMPUTER SCIENCE	*Graduated in May, 2017*

- **MS Thesis:** An Empirical Case Study on Stack Overflow to Explore Developers' Security Challenges.

Bangladesh University of Engineering and Technology (BUET)	*Dhaka, Bangladesh*
B.S. IN COMPUTER SCIENCE AND ENGINEERING	*Graduated in January, 2011*

- **Undergrad Thesis:** Location aware fuzzy logic based decision making of vertical handoff in heterogeneous wireless networks.

Research and Professional Experience

Florida Institute for Cybersecurity Research (FICS)	*University of Florida, Gainesville*
GRADUATE RESEARCH ASSISTANT	*May 2017 - Present*

- Take initiative and responsibility in each phase of a research study - from the idea generation to experiment design, data analysis, interpretation, and manuscript writing.
- Currently investigating: i) source code-based threat modeling for Android Apps and ii) analysis of private data collection and sharing behavior of Android third-party libraries.

Avast, Inc.	*Emeryville, CA*
RESEARCH INTERN, AVAST RESEARCH LAB	*May 2020 - August 2020*

- Conducted a large-scale Android App privacy analysis to find gaps in *declared* privacy policy with *actual* App behavior of private data collection and sharing.
- Devised a mapping between *dangerous* Android permissions and privacy policy.
- Proposed visual indicator to support end-users making informed decisions (e.g., installing/uninstalling/switching apps) about App privacy.

FireEye, Inc.	*Reston, VA*
RESEARCH INTERN, DATA SCIENCE TEAM	*May 2019 - Aug. 2019*

- Conducted research into the tactics, techniques, and procedures being employed by adversaries over social media platforms to spread disinformation.
- Demonstrated proof-of-concept of generating synthetic disinformation by fine-tuning pre-trained language models as well as detecting disinformation from a mixed bag of benign and disinformation social media posts.
- The project was featured on WIRED and FireEye Blog.

Cyber Security Lab	*Kansas State University*
GRADUATE RESEARCH ASSISTANT	*Aug. 2014 - Dec. 2016*

- Remodeled and optimized functionality on Firefox SSL extension launcher for data logging and proxy setting for SSL warning study.
- Conducted semi-structured interviews, synthesized survey responses, and interpreted interview transcripts to elicit consumer usage patterns and behavior of different payment methods.
- Applied topic modeling on the Stack Overflow dataset to gauge software developers' security perception.

Progoti Systems Limited (FinTech company)	*Dhaka, Bangladesh*
SENIOR SOFTWARE ENGINEER	*Mar. 2012 - Feb. 2014*

- Orchestrated the engineering and architecture of the core service engine for SureCash Mobile Financial Service as a SaaS model which provides money deposit, withdrawal, and P2P and B2B financial transactions with seamless user experience.
- Headed several major milestones and new product features including three large bank integration with SureCash payment service, implementing and operationalizing USSD based push-pull service to ensure secure and seamless money withdrawal service from either Human or ATM agents, rolling out third-party utility bill payment service, to name a few.

Prime Bank Limited   *Dhaka, Bangladesh*

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- Implemented automated ETL service to run at the end of daily business hours to fetch data from core-banking system's data archive and populate MIS database for business analytics.
- Designed and developed a centralized MIS web portal with secure, role-based access control for various bank divisions (e.g., corporate/retail banking/credit-card) to facilitate real-time financial report generation and analysis from the current and historical dataset. This system increases the efficiency of these divisions in decision-making and policy planning by over 50%.

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Programming Languages	Java, C/C++ (advanced); Python, Elixir, C# (moderate); R, SML (prior experience)
Frameworks	Spring, Grails, JavaEE(Servlet/JSP), Hibernate (advanced)
Web/Mobile Technologies	REST/SOAP, JSON/XML, Microservice Design (advanced to moderate); PHP, Node.js, Android (prior experience)
Big Data Technologies	Apache Hadoop, Apache Pig (moderate)
Machine Learning Tools	PyTorch, TensorFlow, Keras, Scikit-learn, Pandas (moderate)
Pen-testing Tools	Metasploit, Kali Linux, Windbg (prior experience)
Database	MySQL, MS-SQL (advanced); Oracle, PostgresSQL (prior experience)

Academic Projects

Threat Modeling Android Apps   *FICS, UF*

Rᴇꜱᴇᴀʀᴄʜ Pʀᴏᴊᴇᴄᴛ   *2020 - Ongoing*

- Analyze Android App source code and data flow information to annotate source code with security and privacy threats and mitigation strategies.
- Investigate Android App's private data collection and sharing behavior by developing a mapping between App's usage of dangerous permissions, third party libraries, and app's privacy policy.
- Goal: Develop a lightweight threat modeling framework for App developers to detect and mitigate privacy and security threats at the early phase of App development.

Adversarial Speech Sample Generation against Automated Speech-to-Text Systems   *FICS, UF*

Rᴇꜱᴇᴀʀᴄʜ Pʀᴏᴊᴇᴄᴛ   *Sep. 2018 - Dec. 2018*

- Investigated multiple widely-used speech recognition systems and developed techniques to force erroneous transcription of human speech while minimizing disruption to human auditory comprehension.
- Responsible for creating a cellular network testbed to run perturbed audio samples over the cellular network, designing and performing a user study on Amazon MTurk to understand the performance of the adversarial algorithm we designed and its applicability for real-time telecommunication, among others.

API Blindspots: Why Experienced Developers Write Vulnerable Code   *FICS, UF*

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- Spearheaded every phase of the online user study - from implementing and optimizing server back-end for conducting a user study to data collection, analysis and interpretation, literature review, and research manuscript writing.
- Redesigned and optimized audio data capture functionality of the online user study for enhanced data logging and exception handling, which reduced audio-data loss from 30% to nearly 0%.
- Published in **SOUPS 2018** conference.

Mining Stack Overflow to Explore Developers' Security Challenges   *CS, K-State*

M.S. Pʀᴏᴊᴇᴄᴛ   *Aug. 2016 - Dec. 2016*

- Applied topic-modeling on Stack Overflow data to explore and analyze challenges, misconceptions, and deterrents among developers while they try to design and build security features during various phases of the software development life cycle.
- Defined and implemented metrics to identify key discussion topics related to software security and overlapping areas.
- Analyzed the nature and trends of *security-related* posts in Stack Overflow both quantitatively and qualitatively. Tool used: **R**.

Publications

- "How Security{Over}flows: Why Experienced Developers Write Vulnerable Code." Currently Under Review.
- "So{u}rcerer : A Developer-focused, Lightweight Framework for Mobile App Threat Modeling" Currently Under Review.
- "Hear *"No Evil"*, See *"Kenansville"*: Efficient and Transferable Black-Box Attacks on Speech Recognition and Voice Identification Systems" In Proceedings of the 2021 IEEE Symposium on Security and Privacy.
- "Of *Ulti, 'hajano', and "Matachetar otanetak datam"*: Exploring Local Practices of Exchanging Confidential and Sensitive Information in Urban Bangladesh" In *Proceedings of the 22nd ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW'19)*.
- "API Blindspots: Why Experienced Developers Write Vulnerable Code." In *Proceedings of the 14th Symposium on Usable Privacy and Security (SOUPS'18)*.
- "An Exploratory Study of User Perceptions of Payment Methods in the UK and the US." In *Proceedings of the 10th NDSS Workshop on Usable Security (USEC'16)*.
- "Smart Blood Query: A Novel Mobile Phone-Based Privacy-Aware Blood Donor Recruitment and Management System for Developing Regions," In *Proceedings of 2011 IEEE Workshops of International Conference on Advanced Information Networking and Applications*.