

# Muhammad Sajidur Rahman

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## Profile Summary

- Goal oriented, team player, problem-solver.
- Proven skills on designing and carrying out research studies, analyzing results both qualitatively and quantitatively, scrutinizing output and improving methods.
- Research interests: **Application Security & Threat Modeling, Deep Learning.**
- 3.5+ 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

PHD STUDENT, DEPT. OF COMPUTER SCIENCE

Gainesville, FL

2017 - Present

### Kansas State University

M.S. IN COMPUTER SCIENCE

Manhattan, KS

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)

B.S. IN COMPUTER SCIENCE AND ENGINEERING

Dhaka, Bangladesh

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)

GRADUATE RESEARCH ASSISTANT

University of Florida

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.
- Manage research materials, logs and documentation.
- Currently investigating: i) neural learning techniques for source code comprehension and vulnerability detection and ii) AI enabled, usable threat-modeling techniques for software developers.

### Cyber Security Lab

GRADUATE RESEARCH ASSISTANT

Kansas State University

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 interview, synthesized survey responses and interpreted interview transcripts to elicit consumer usage pattern and behavior of different payment methods.
- Applied topic modeling in dataset collected from Stack Overflow site to gauge software developers' security perception.

### Dynamic Solution Innovators, Inc.

SENIOR SOFTWARE ENGINEER

Dhaka, Bangladesh

Mar. 2014 - July 2014

- Designed and implemented JSON-RPC based microservices for a SaaS based Educational ERP solution.
- Implemented AMQP-based messaging protocol to facilitate fast and scalable client-server communication where client was a Node.js application and server side was a Java component-based framework.
- Reorganized and simplified online payment processing module which resulted in over 50% more efficient than previous one.

### Progoti Systems Limited (FinTech company)

SENIOR SOFTWARE ENGINEER

Dhaka, Bangladesh

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, withdraw 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 withdraw service from either Human or ATM agents, rolling out third-party utility bill payment service, to name a few.

### Prime Bank Limited

INFORMATION TECHNOLOGY ENGINEER

Dhaka, Bangladesh

Feb. 2011 - Feb. 2012

- Implemented an 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 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 current and historical dataset. This system increases efficiency of these divisions in decision making and policy planning over 50%.

## Skills

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

## Academic Projects

### Anomaly Detection in Android App Permissions

FICS, UF

RESEARCH PROJECT

Jan. 2019 - Present

- Investigating deep learning based models to detect anomalies in Android app permissions by leveraging various sources of meta-information (e.g. source code, app-description etc.)

### Adversarial Speech Sample Generation against Automated Speech-to-Text Systems

FICS, UF

RESEARCH PROJECT

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 cellular network, designing and performing a user study on Amazon MTurk to understand the performance of adversarial algorithm we designed and its applicability for real-time telecommunication, among others.

### API Blindspots: Why Experienced Developers Write Vulnerable Code

FICS, UF

RESEARCH PROJECT

May 2017 - June 2018

- Spearheaded every phase of the online user study - from implementing and optimizing server back-end for conducting 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. PROJECT

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 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**.

### Risk Prediction from Data Breach Incident Report

CS, K-State

COURSE PROJECT (PATTERN RECOGNITION AND MACHINE LEARNING)

Mar. 2016 - May. 2016

- Utilized data breach incident reports from VERIS Community Database (VCDB) as data source and *verisr*, an open-source R package for working with VERIS framework.
- Trained and tested a sequence of classifiers in order to calculate risk assessment and prediction of an organization, given its size and business nature.

## Publications

- "API Blindspots: Why Experienced Developers Write Vulnerable Code." In *Proceedings of the 14th Symposium on Usable Privacy and Security (SOUPS 2018)*.
- "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 2016)*.
- "An Efficient PKI for Secure Commerce Using Basic Phones." In *20th Annual K-State Research Forum (KRF), Poster Presentation, March 31, 2015*.
- "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*.

## Honors & Awards

2018	<b>Best Poster Award</b> , FICS Research Annual Conference on Cybersecurity, University of Florida	Gainesville, FL
2017	<b>Travel Grant</b> , To attend Conference on Secure Development (SecDev'17)	Cambridge, MA
2015-2016	<b>Graduate Fellowship Award</b> , College of Engineering, Kansas State University	Manhattan, KS
2015	<b>Best Graduation Display Award</b> , Dept. of CS, Kansas State University	Manhattan, KS
2011	<b>Champion</b> , SpaandanB Entrepreneurship Contest	Bangladesh
2010	<b>Finalist</b> , E-Content and ICT for Development	Bangladesh
2003-2010	<b>Merit Scholarship</b> , Outstanding result in Secondary & Higher Secondary School Certificate Exam	Bangladesh