Muhammad Sajidur **Rahman**

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Education

University of Florida — *Gainesville, FL*

PH.D. IN COMPUTER SCIENCE — *Expected in May, 2021*

- **Current Research work:** Investigating the effect of *developers' cognitive blind spots* while using security-critical APIs through crowd-sourcing.

Kansas State University — *Manhattan, KS*

M.S. IN COMPUTER SCIENCE — *Graduated in May, 2017*

- **MS Project:** Mining StakcOverflow to explore software developers challenges in security feature implementation.

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

B.S. IN COMPUTER SCIENCE AND ENGINEERING — *Graduated in January, 2011*

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

Skills

Programming	Java, Python, PHP, C/C++, R, SML
Web Frameworks	Spring, Grails, JavaEE(Servlet/JSP)
Big Data Technologies	Apache Hadoop, Apache Spark, Apache Pig
Pen Testing Tools	Metasploit, Kali Linux, Windbg

Experience

Florida Institute for Cybersecurity Research (FICS) — *University of Florida*

GRADUATE RESEARCH ASSISTANT — *May. 2017 - Present*

- Responsibilities include but not limited to designing experiment, performing data analysis, reviewing literature and programming.
- Remodeled and improved audio data capture functionality in Qualtrics survey with better data logging and exception handling.
- Currently investigate: **i)** developers' blind spots while using security-critical APIs and **ii)** developing developer-centric security tools to illuminate API blind spots.

Cyber Security Lab — *Kansas State University*

GRADUATE RESEARCH ASSISTANT — *Aug. 2014 - May 2017*

- Remodeled and improved functionality on firefox SSL extension launcher for data logging and proxy setting.
- Conducted semi-structured interview, synthesized survey responses and interpreted interview transcripts to elicit consumer usage pattern and behavior of different payment methods .
- Applied the concept of knowledge discovery and data mining in online software repositories and QA sites to gauge developers' security perception.

Department of Computer Science — *Kansas State University*

GRADUATE TEACHING ASSISTANT — *Spring 2015, 2016, 2017*

- Instruct lab classes for 'Computer Architecture and Operations' and 'Programming Language' courses.
- Coach students for assignments/projects, motivate them to enjoy solving programming problems, evaluate home works/exam papers.

Dynamic Solution Innovators,Inc. — *Dhaka, Bangladesh*

SENIOR SOFTWARE ENGINEER — *Mar. 2014 - July 2014*

- Designed and implemented JSON-RPC architecture for a SaaS based Educational ERP, which was deployed in Heroku and communicated to a Node Server through RabbitMQ.
- Reorganized and simplified online payment processing module.
- Provided carefully designed product concepts, made deep research of project's technology stack and tried to skillfully apply and produce effective development approaches.

SureCash Mobile Financial Service

Dhaka, Bangladesh

Lead Software Engineer at Progoti Systems Limited

April. 2012 - Feb. 2014

- Orchestrated the engineering and architecture of the core service engine *Profino* of the Mobile Financial Service as a *SaaS model* which handles core business logic, profile based transaction processing, event logging, notification handling and facilitates scalability, secure authentication, authorization and role based privilege delegation support for different access channels (Web, SMS, USSD, Mobile Apps) as well as third-party modules, to list a few.
- Engineered a middle tier RESTful application server to connect USSD gateway and core service engine, *Profino*.
- Spearheaded the design and development of inter-bank transactions and real-time gross settlement system that helped increase inter-bank transactions over 40% in first year after deployment.
- Headed teams in security auditing, code reviewing, testing and release engineering.
- Analyzed PCI security guidelines for mobile payments and formulated best practices which accommodated for legal and security guidelines provided by central bank and helped maintain security posture of the company.

Prime Bank Limited

Dhaka, Bangladesh

Information Technology Engineer

Feb. 2011 - Mar. 2012

- Centralized the information-processing system (from data extract, transform and load to real time financial report generation and view) for corporate/retail banking/credit card divisions which helped increase their efficiency in decision making and policy planning over 50%.
- Implemented overall application logic and programmed RESTful API server for a m-banking prototype.

Enosis Solutions Limited

Dhaka, Bangladesh

Software Engineering Intern

Nov. 2010 - Jan. 2011

- Worked as part of a team developing an intelligent and location based mobile advertisement platform.
- Programmed and tested new components as well debugged new features and products.

Projects

Blind Spots - Building Developer Centric Security Through Crowdsourcing

FICS, UF

Team Member, supervised by Dr. Daniela Oliveira

May 2017 - Present

- Investigating developers' blind spots while using security critical APIs *(in the context of loosely typed programming languages)* through developer crowdsourcing .
- The results from first phase of the study *(API blindspots in strongly typed programming languages)* is published in **SOUPS 2018** conference.

Dissecting Spear–Phishing Emails: Exploring the Interplay on User Age, Social Influence and Phishing Emails

FICS, UF

Team Member, supervised by Dr. Daniela Oliveira

May 2017 - Dec. 2017

- Analyzed post-experimental debriefing data from younger and older participants to understand individual comprehension of spear-phishing emails and the impact of perceived knowledge, trust and security behavior, as well as their reasoning for online victimization.

Mining Stack Overflow to Explore Developers' Security Challenges

CS, K-State

Team Member, supervised by Dr. Eugene Vasserman

Aug. 2016 - Dec. 2016

- Applied topic-modeling on Stack Overflow data-dump to explore and analyze challenges, misconceptions, and deterrents, if any, among developers while they try to design and build security features during software development life cycle (SDLC).
- Identified key discussion topics related to security and different developer communities involved in the discussion.
- Analyzed the nature of *security-related* posts in Stack Overflow both quantitatively and qualitatively.
- Currently investigate the nature of knowledge dissemination and collaborative problem solving pattern during security-related discussion in Stack Overflow.
- Technical report available here http://tiny.cc/msreport .

Cross-cultural Study of Security Perceptions of Different Payment Methods

Cyber Security Lab, K-State

Core Member

May. 2015 - Dec. 2015

- Collaborated with research team from University College London, UK.
- Conducted a series of semi-structured interviews, coded the transcriptions and reviewed literature.
- Analyzed and compared US and UK participants' data and elicited commonalities and differences that may help better understand, if not predict, attitudes of US consumers once technologies like Chip-and-PIN are rolled out.
- Published in **USEC 2016**.

SIM as Trusted Element for Secure M-Commerce

Cyber Security Lab, K-State

Core Member

Jan. 2015 - May 2015

- Researched, reviewed and compared prior work on Public Key Infrastructure(PKI) in the context of mobile payments in resource constrained environments.
- Proposed a lightweight model of PKI, leveraging Subscriber Identity Module(aka SIM card) as a trusted element to bootstrap security, along with providing sufficient computational power to secure transactions by using modern cryptographic features.
- Presented the work in K-State Annual Graduate Research Forum.

'Trusted Tweets': Measure Trust and Informativeness in Twitter Crisis Data

CS, K-State

Team Lead for Course Project (Database Management Systems) *Mar. 2015 - May. 2015*

- Proposed a trust scoring mechanism based on two different twitter crisis datasets: '2013 Boston Bombing' dataset as an example of Human-induced disaster and '2013 Australian Bushfire' dataset as an instance of natural disaster
- Analyzed word frequency and trending of tweets over time using Apache Pig-Latin.

Study of Effective and Usable SSL Warnings

Cyber Security Lab, K-State

Core Member *Aug. 2014 - Dec. 2015*

- Replicated and extended default SSL warnings found in different browsers and investigated the effectiveness of SSL warnings.
- Examined and analyzed end users' mental model of web security and tried to determine which attributes would be most appropriate to apply to web-based threats.

MobiCASH:Flexible and Easiest Payment Solution

CS, BUET

Team Lead, National Software Development Contest *2010*

- Proposed a mobile payment platform leveraging the ubiquity and power of the standard mobile phone.
- Designed the prototype of a SMS based payment system to deliver payment facilities for farmers living in rural, resource constrained areas.
- Received 'special mention' in ***E-Content and ICT for Development Contest-2010 and Financial IT Case Competition-2010.***

SMS Based Intelligent Blood Donation System

CS, BUET

Core Member, Senior Year Project *2010*

- Designed and implemented a prototype for SMS based blood donor recruitment, management, available donor query and information retrieval system for developing regions.
- Published our work in **AINA 2011**.

Publications

- D. Oliveira, T. Lin, **Muhammad Sajidur Rahman**, R. Akefirad, D. Ellis, E. Perez, L. A. DeLong, J. Cappos, Y. Brun, N. Ebner. "API Blindspots: Why Experienced Developers Write Vulnerable Code." *To appear in Proceedings of the 14th Symposium on Usable Privacy and Security (SOUPS 2018).*
- **Muhammad Sajidur Rahman**, "An Empirical Case Study on Stack Overflow to Explore Developers' Security Challenges." *Masters Technical Report.*
- Kat Krol, **Muhammad Sajidur Rahman**, S. Parkin, E. D. Cristofaro and E. Y. Vasserman. "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).*
- **Muhammad Sajidur Rahman**, "An Efficient PKI for Secure Commerce Using Basic Phones." In *20th Annual K-State Research Forum (KRF), Poster Presentation, March 31, 2015.*
- **Muhammad Sajidur Rahman**, K. A. Akter, S. Hossain, A. Basak and S. I. Ahmed, "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	**Best Poster Award,** FICS Research Annual Conference on Cybersecurity, University of Florida	*Gainesville, Fl*
2015-2016	**Graduate Fellowship Award,** College of Engineering, Kansas State University	*Manhattan, KS*
2015	**Best Graduation Display Award,** Open House Day, Dept. of CS	*Manhattan, KS*
2011	**Champion,** SpaandanB Entrepreneurship Contest	*Dhaka, Bangladesh*
2010	**Finalist,** E-Content and ICT for Development	*Dhaka, Bangladesh*
2005	**Merit Scholarship,** Higher Secondary School Certificate Exam	*Bangladesh*
2004	**Finalist,** National Math Olympiad	*Dhaka, Bangladesh*
2003	**Merit Scholarship,** Secondary School Certificate Exam	*Bangladesh*

Profile Summary

Computer Science Student with a passion for 'build security in' mentality for software design and development. 4+ years extensive working experience as a Software Engineer in mobile payment industry, SaaS in general. Proven skills on project management, team leadership, organization and research with an academic background focused in cross-cutting areas: human-centered security & privacy design, software engineering and ubiquitous, social computing. Ready to hit the ground running and produce results.