

Rezwana Karim

CONTACT INFORMATION	665 Clyde Avenue Mountain View, CA 94043	Voice: 732-986-8075 E-mail: rezwana.k@samsung.com Website: http://paul.rutgers.edu/~rkarim
EDUCATION	Rutgers University , New Jersey, USA PhD, Computer Science Advisor: Vinod Ganapathy, CGPA: 3.97/4.00 Thesis: "Tools and Techniques for Simplifying Secure Browser Extension Development"	October 2015
	Bangladesh University of Engineering and Technology , Bangladesh B.Sc., Computer Science and Engineering, CGPA: 3.89/4.00	June 2007
EXPERIENCE	Senior Research Engineer, Samsung Research America , Mountain View, CA, USA	October 2015 - Present
	<ul style="list-style-type: none">• <i>Deep Learning based object recognition and tracking</i>: Worked on data collection, pre-processing, development and testing of an Android app that leverages Deep Learning for object recognition and tracking. Currently focusing on object tracking using Deep Learning.• <i>Analyzing security issues of web applications</i>: Designed a novel browser-independent technique for information-flow analysis of web applications. Implemented a tool to identify leakage of privacy-sensitive data in smart watch applications.• <i>Analyzing behavioral issues of web applications</i>: Developed techniques for automated detection and repair of event race errors in event-driven web applications.	
	Research Intern, IBM Research , Bangalore, India	May 2013 - August 2013
	<i>Recommendations for Responsive UI Design</i> <ul style="list-style-type: none">• Layout techniques for Web pages adaptable to desktops and multiple mobile devices• Developed a tool that automatically infers UIs for multiple devices from an initial design.	
	Research Intern, IBM Research , Bangalore, India	June 2012 - August 2012
	<i>Simplifying front-end programming by auto-generation of flexible UI</i> <ul style="list-style-type: none">• Developed a framework that infers layout from an unrestricted free-hand drawn mockup and automatically generates structured HTML, CSS code for a page that is cross-browser and cross-device compatible. The framework consists of a new technique that leverages k-dTree to infer hierarchical layouts from mockups based on combinatorial search.• Generated flexible UI gracefully adapts to browser window resize and font size changes. Artifacts are verified the FSE'13 committee and selected for "Best Artifact" session.	
	Research Intern, Mozilla , Mountain View, CA, USA	May 23, 2011 - August 26, 2011
	<i>Browser extension compatibility analysis</i> <ul style="list-style-type: none">• Static analysis of browser extensions for compatibility with multi-process browser architecture.• Worked on a tool to analyze 10,000 extensions for Firefox browser.	
	Rutgers University , New Brunswick, NJ, USA Research Assistant	January 2010 - December 2011, Fall 2012 - Spring 2014
	<ul style="list-style-type: none">• <i>Porting legacy browser extension to modern framework</i>: Developed tool to improve security of legacy browser extensions by automatically porting them to modern extension frameworks providing additional security guarantees.	

- *Security analysis of modern Firefox extensions*: Developed a static JavaScript code analysis tool, Beacon, to detect capability leaks in modular JavaScript code. Beacon analyzed 68k lines of code and detected 36 instances of capability leaks and 10 instances of security principle violation in browsers extensions and the Mozilla's extension development framework itself. Results are acknowledged by Mozilla.
- *Fast, memory-efficient network data processing*: Developed NFA-OBDD, a tool for faster regular-expression based signature matching in Network Intrusion Detection System (NIDS). Internally, NIDS represent and operate these regular expressions as finite automata. The tool uses a Ordered Binary Decision Diagrams (OBDDs) based novel technique for faster, memory efficient Non-deterministic finite automata(NFA) operation. While evaluated on around 3000 attack signatures, NFA-OBDD proved to be 1645 times faster than traditional NFA and its memory consumption is comparable to that of traditional one.

Teaching Assistant August 2008 - December 2009, January 2012-May 2012
 Courses I supervised

- Computer Security, Operating Systems Design, Principles of Programming Languages, Introduction to Computer and their Applications.

Lecturer, **BRAC University** June 2007 - August 2008

Department of Computer Science, Dhaka, Bangladesh

Duties included designing and teaching undergraduate courses, maintaining office hours, grading exams and assignments. Courses I taught

- Artificial Intelligence, Computer Graphics, Programming Languages Lab

JOURNAL ARTICLE

- *Fast, Memory-efficient Regular Expression Matching with NFA-OBDDs*
Rezwana Karim*, Liu Yang*, Vinod Ganapathy and Randy Smith.
 Computer Networks (COMNET) Journal, Volume 55, Number 15, October 2011. (*) Both authors contributed equally.
- *Ubiquitous Secretary: A Ubiquitous Computing Application Based on Web Services Architecture*
 Salmin Sultana, **Rezwana Karim**, Rifat Shahriyar, Md. Mostofa Akbar and Sheikh Iqbal Ahamed.
 International Journal of Multimedia and Ubiquitous Engineering, Volume 4, Number 4, October 2009.

REFERRED CONFERENCE PAPERS

- *Repairing Event Race Errors by Controlling Nondeterminism*
 Christoffer Quist Adamsen, Anders Møller, **Rezwana Karim**, Manu Sridharan, Frank Tip and Koushik Sen
 39th International Conference of Software Engineering (ICSE 2017).
- *Responsive Design in Snap*
 Nishant Sinha and **Rezwana Karim**
 11th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2015).
- *Simplifying Web Programming* **BEST PAPER AWARD**
 Nishant Sinha, **Rezwana Karim** and Monika Gupta
 8th India Software Engineering Conference (ISEC 2015).
- *Retargetting Legacy Browser Extensions to Modern Extension Frameworks*
Rezwana Karim, Mohan Dhawan and Vinod Ganapathy.
 28th European Conference on Object-Oriented Programming (ECOOP 2014).
- *Compiling Mockups to Flexible Web UIs*
 Nishant Sinha and **Rezwana Karim**
 9th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2013).

- *An Analysis of the Mozilla Jetpack Extension Framework*
Rezwana Karim, Mohan Dhawan, Vinod Ganapathy and Chung-chieh Shan.
26th European Conference on Object-Oriented Programming (ECOOP 2012).
- *Improving NFA-based Signature Matching using Ordered Binary Decision Diagrams*
Rezwana Karim*, Liu Yang*, Vinod Ganapathy and Randy Smith.
(*) Both authors contributed equally. 13th International Symposium on Recent Advances in Intrusion Detection (RAID 2010)
- *Ubicomp Secretary : A Web Service Based Ubiquitous Computing Application*
Salmin Sultana, **Rezwana Karim**, Md. Mostofa Akbar and Sheikh Iqbal Ahamed.
23rd Annual ACM Symposium on Applied Computing (SAC 2008).

REFERRED TECH
REPORTS

- *VANET: Superior system for content distribution in vehicular network applications*
Rezwana Karim
Rutgers University, Department of Computer Science, Technical Report, 2008.

SELECTED TALKS

- *Secure App Development for Extensible Architecture*
Samsung Research America, Mountain View, CA, USA, May 2015.
- *Simplifying Responsive UI Design*
Grace Hopper Celebration Women in Computing (GHC 2014), Phoenix, AZ, USA, October 2014.
- *Retargetting Legacy Browser Extensions to Modern Extension Frameworks*
28th European Conference on Object-Oriented Programming (ECOOP 2014), Uppsala, Sweden, August 2014.
- *Retargetting Legacy Browser Extensions to Modern Extension Frameworks*
3rd Annual Workshop on Tools for JavaScript Analysis (JSTOOLS 2014), Uppsala, Sweden, July 2014.
- *Compiling Mockups to Flexible Web UIs*
9th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2013), Saint Petersburg, Russia, August 2013.
- *Artifacts Presentation: Compiling Mockups to Flexible Web UIs*
Artifacts Evaluation for 9th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (AEC-ESEC/FSE 2013), Saint Petersburg, Russia, August 2013.
- *An Analysis of the Mozilla Jetpack Extension Framework*
26th European Conference on Object-Oriented Programming (ECOOP 2012), Beijing, China, June 2012.
- *Improving Signature Matching using Ordered Binary Decision Diagrams*
13th International Symposium on Recent Advances in Intrusion Detection, Ottawa, Ontario, Canada, September 2010.
- *Improving Signature Matching using Ordered Binary Decision Diagrams*
Security Workshop, Telecordia Technologies, New Jersey, USA, March 2010.

TECHNICAL SKILLS

Programming: C, C++, Java, JavaScript, HTML, CSS, Prolog, UNIX shell script, Python.
Framework: node.js, Jalangi, Caffe, IBM WALA, Maqetta, CUDD, Ruby on Rails, J2EE, Apache Axis, ASP.NET.
Database Systems: MySQL, Oracle, MS SQL Server.
Tools: Matlab, L^AT_EX, Eclipse, MS Visual Studio.NET and other common productivity packages.
Version Control Systems: Git, CVS, SVN.
Operating Systems: Linux, Apple Mac OS, Android, Tizen and Microsoft Windows.

SERVICES

- Member, Program Committee, Research track, OOPSLA 2017
- Member, Poster Committee, Poster track, ICSE 2016
- Member, Program Committee, Vision and Reflections track, FSE 2016
- SubReviewer, Research track, FSE 2016

AWARDS AND HONORS

- Best paper Award, ISEC 2015.
- ACM SIGSOFT CAPS Award, 2013.
- Microsoft scholarship for Grace Hopper 2013, Minneapolis, MN, USA.
- ACM Student Research Competition Travel Award, Grace Hopper 2013, 2012.
- LinkedIn scholarship for Grace Hopper 2012, Baltimore, MD, USA.
- ACM SIGPLAN PAC travel grant to attend ECOOP 2012, 11-16 June, Beijing, China.
- Student Attendance Scholarship for RAID 2010, Ottawa, Canada. Awarded to only 3 students.
- Travel grant for CRA-W Graduate Cohort Workshop, 23-24 April, 2010, Bellevue, WA, USA.
- Deans Merit list Award. 2004-06. Awarded to exceptional GPA holder.
- University Merit Scholarship. 2003-06. Awarded to few top ranked students.

OTHER ACTIVITIES

- Vice-President, Computer Science Graduate Student Society (CSGSS), Rutgers, 2010-2011.
- Member, Rutgers Women in Computer Science (RUWICS), Rutgers, 2010-2015.
- Member, ACM, ACM SIGSOFT.

REFERENCES

Available on request.