Amir Rahmati

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Research Interests

- Security and Privacy
- Emerging Technologies
- Internet of Things & Cyber-Physical Systems
- Approximate Computing

Work Experience

- **Visiting Scholar, KNOX Security, Samsung Research America**, (2017-Present)
- **Consultant, Abbott Laboratories**, (2017)
  Abbott Laboratories is one of the largest manufacturers of medical devices. I'm working with Abbott's research & development team on the design of their next generation of medical devices and cloud platform.

Education

- **University of Michigan**, (2015-2017) Advisor: Prof. Atul Prakash
  - Ph.D. in Computer Science and Engineering.
  Thesis Title: Attacking and Defending Emerging Computer Systems Using the Memory Remanence Effect
- **University of Michigan**, (2013-2014) Advisor: Prof. Kevin Fu
  - M.S.E. in Computer Science and Engineering.
- **University of Massachusetts Amherst**, (2011-2012) Advisor: Prof. Kevin Fu
  Graduate Student in Computer Science Department, Transferred to the University of Michigan in Jan 2013.
- **Sharif University of Technology**, (2007-2011) Advisor: Prof. Seyed-Ghassem Miremadi
  - B.Sc. in Computer Engineering

Teaching Experience

- **University of Michigan** (2015-2017)
  - Primary instructor for Computer & Network Security
  - Graduate student instructor for Major Design, and Distributed Systems
- **University of Massachusetts Amherst** (2011)
  Lab instructor for Computer Literacy
- **Sharif University of Technology** (2009-2011)
  Teaching assistant for Digital System Design, Operating Systems, and Discrete Structures

Publications

20. *"IFTTT vs. Zapier: A Comparative Study of Trigger-Action Programming Frameworks"*, **Amir Rahmati**, Earlence Fernandes, Jaeyeon Jung, Atul Prakash, In preprint (arXiv:1709.02788)
19. *"Securing Trigger-Action Platforms"*, Earlence Fernandes, **Amir Rahmati**, Jaeyeon Jung, Atul Prakash, In 2017 USENIX Summit on Hot Topics in Security (HotSec'17). Vancouver, BC, August 2017
18. *"Internet of Things Security Research: A Rehash of Old Ideas or New Intellectual Challenges?"*, Earlence Fernandes, **Amir Rahmati**, Kevin Eykholt, Atul Prakash, In IEEE Security & Privacy, July 2017
17. *"Support for Security and Safety of Programmable IoT Systems"*, Alex Gyori, Earlence Fernandes, **Amir Rahmati**, Atul Prakash and Darko Marinov, In ISSTA 2017 Workshop on Testing Embedded and Cyber-Physical Systems (TECPS'17). Santa Barbara, CA, July 2017
16. *"Heimdall: A Privacy-Respecting Implicit Preference Collection Framework"*, **Amir Rahmati**, Earlence Fernandes, Kevin Eykholt, Xinheng Chen, Atul Prakash, In the 15^{th} ACM International Conference on Mobile Systems, Applications, and Services (MobiSys'17). Niagara Falls, NY, June 2017
15. *"The Security Implications of Permission Models of Smart Home Application Frameworks"*, Earlence Fernandes, **Amir Rahmati**, Jaeyeon Jung, Atul Prakash, In IEEE Security & Privacy, April 2017
14. *"ContexIoT: Towards Providing Contextual Integrity to Appified IoT Platforms"*, Yunhan Jack Jia, Qi Alfred Chen, Shiqi Wang, **Amir Rahmati**, Earlence Fernandes, Z. Morley Mao, Atul Prakash, In Proceedings of the 21^{st} Network and Distributed System Security Symposium (NDSS'17). San Diego, CA, March 2017
13. *"Towards Comprehensive Repositories of Opinions"*, Han Zhang, Kasra Edalat Nejad, **Amir Rahmati**, Harsha V. Madhyastha In 15^{th} ACM Workshop on Hot Topics in Networks (HotNets'16). Atlanta, GA, November 2016
12. *"Techniques for Timekeeping Without a Clock"*, Josiah Hester, **Amir Rahmati**, Daniel Holcomb, Kevin Fu, Jacob Sorber In Transactions on Embedded Computing Systems (TECS'16).

11. *"Applying the Opacified Computation Model to Enforce Information Flow Policies in IoT Applications"*, **Amir Rahmati**, Earlence Fernandes, Atul Prakash, In Proceedings of the 1^{st} IEEE Cybersecurity Development Conference (SecDev'16) . Boston, MA, November 2016
10. *"FlowFence: Practical Data Protection for Emerging IoT Application Frameworks"*, Earlence Fernandes, Justin Paupore, **Amir Rahmati**, Daniel Simionato, Mauro Conti, Atul Prakash, In Proceedings of the 25^{th} USENIX Security Symposium (USENIX Sec'16). Austin, TX, August 2016
9. *"Approximate Flash Storage: A Feasibility Study"*, **Amir Rahmati**, Matthew Hicks, Atul Prakash, In the Workshop on Approximate Computing Across the System Stack (WAX'16). Atlanta, GA, April 2016
8. *"Context-Specific Access Control: Conforming Permissions With User Expectations"*, **Amir Rahmati**, Harsha V. Madhyastha In 5^{th} ACM CCS Workshop on Security and Privacy in Smartphones and Mobile Devices (CCS'SPSM). Denver, CO, October 2015
7. *"Probable Cause: The Deanonymizing Effects of Approximate DRAM"*, **Amir Rahmati**, Matthew Hicks, Daniel Holcomb, Kevin Fu, In 42^{nd} Int. Symposium on Computer Architecture (ISCA'15). Portland, OR, June 2015
6. *"Malware Prognosis: How to Do Malware Research in Medical Domain"*, Sai R. Gouravajhala, **Amir Rahmati**, Peter Honeyman, and Kevin Fu, In USENIX Workshop on Health Information Technologies (Health Tech'14). San Diego, CA, August 2014
5. *"Reliable Physical Unclonable Functions using Data Retention Voltage of SRAM Cells"*, Xiaolin Xu, **Amir Rahmati**, Daniel Holcomb, Kevin Fu, Wayne Burleson, In IEEE Transactions on CAD: Special Section on Hardware Security and Trust (TCAD).
4. *"Refreshing Thoughts on DRAM: Power Saving vs. Data Integrity"*, **Amir Rahmati**, Matthew Hicks, Daniel Holcomb, Kevin Fu, In the Workshop on Approximate Computing Across the System Stack (WACAS'14). Salt Lake City, UT, March 2014
3. *"WattsUpDoc: Power Side Channels to Nonintrusively Discover Untargeted Malware on Embedded Medical Devices"*, Shane Clark, Benjamin Ransford, **Amir Rahmati**, Shane Guineau, Jacob Sorber, Wenyuan Xu, Kevin Fu, In USENIX Workshop on Health Information Technologies (Health Tech'13). Washington, D.C., August 2013
2. *"TARDIS: Time and Remanence Decay in SRAM to Implement Secure Protocols on Embedded Devices without Clocks"*, **Amir Rahmati**, Mastooreh Salajegheh, Daniel Holcomb, Jacob Sorber, Wayne Burleson, Kevin Fu, In Proceedings of the 21^{st} USENIX Security Symposium (USENIX Sec'12). Bellevue, WA, August 2012
1. *"DRV-Fingerprinting: Using Data Retention Voltage of SRAM Cells for Chip Identification"*, Daniel Holcomb, **Amir Rahmati**, Mastooreh Salajegheh,Wayne Burleson, Kevin Fu, In The 8^{th} Workshop On RFID Security And Privacy 2012 (RFIDsec'12). Nijmegen, The Netherlands, July 2012

Selected Posters and Invited Talks

V. **IoT Security and Privacy: An Academic Perspective**
   - Invited Panel at IEEE CNS 2017.

IV. **Stigmalware: Investigating the Prevalence of Malware in the Clinical Domain.**
   - 35th Annual IEEE Symposium on Security and Privacy (IEEE S&P'14). April 2014

III. **Ahem: Additively Homomorphic Encryption for the Moo**
   - Workshop on Cryptographic Hardware and Embedded Systems (CHES'13), August 2013

II. **Using Side Channels To Do Good**
   - Workshop on Cryptographic Hardware and Embedded Systems (CHES'13), August 2013

I. **Time and Remanence Decay in SRAM**
   - MIT Security Seminar series, Cambridge, MA, October 2012
   - 3^{rd} Annual Pay-as-you-Go Workshop, Amherst, MA, July 2012
   - 33^{rd} Annual IEEE Symposium on Security and Privacy (IEEE S&P'12), May 2012

Services

- **PC Member:** SEMS'17, SecCPS'17, SafeThings'17
- **Reviewer:** DSN'17, ICC'17, INFOCOM'17, CHI'17, IEEE MoST'17, NDSS'16, Micro's Top Picks'15, USENIX Sec'14, '13, '12, Canadian Journal of Electrical & Computer Engineering, Journal of Wireless Networks (WINET)
- **PC Meeting Secretary:** USENIX Sec'14, '13
- **Student Volunteer:** MobiSys'17, ASPLOS'14, USENIX Sec'12

Honors and Awards

- **Student Travel Grant Recipient:** MobiSys'17, RWC'16, SecDev'16, CCS'15, ISCA'15, IEEE S&P'15, SOUPS'14, ASPLOS'14, CHES'13, IEEE S&P'13, USENIX Sec'12
- Ranked **1st** at the **Sharif Freshmen ACM Challenge** (2007)
  Programming contest held for the freshmen entering Sharif University.
- Member of The **National Organization for Development of Exceptional Talents** (2000-Present)
  The organization is responsible for a number of schools across Iran and trains the top students on a more advanced level on every field of study.

Activities

- **Manager** of University of Michigan **Systems Reading Group (SRG)** (2015-2016)
- **Presenter** in Security (SECRIT), Systems (SRG), and Advanced Architecture (ACAL) Reading Group, University of Michigan (2013-2017)
- **Elected Head** of the Computer Engineering Dept. **Student Scientific Chapter (SSC)** (2010)
  SSC is the student committee concerned with directing the department extra-curriculum activities.
- **Computer & IT Editor and freelancer** for Sharif Daily, Sharif's official newspaper (2009-2010)
  Writing has always been attractive to me and I have written several articles for the science page of Sharif Daily newspaper. I was also the editor of Computer & IT page for a three month term.
- **Technical Manager** - 11th ACM/ICPC - Asia Region (2009)
  I directed and managed the IT team to assemble, setup, and manage over 100 PC workstations and their network for the contest, many from individual components, on a very short timeframe (5 days). It proved to be a strong technical and management challenge requiring 24x7 attention and devotion.