

# Ashwini Rao

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## Interests

Security, law, privacy, usability

## Education

Ph.D. <b>Software Engineering</b> Carnegie Mellon University	Started Fall 2012
M.S. <b>Information Security Technology and Management</b> Carnegie Mellon University, GPA 3.91/4.0	Spring 2011
M.Tech. <b>Computer Science and Engineering</b> Indian Institute of Technology Bombay, GPA 9.12/10.0	Spring 2005
B.E. <b>Computer Science and Engineering</b> University of Mysore, GPA 4.0/4.0	Spring 2001

## Awards/Honors

Selected for VMware Fearless Leader Student Summit (30 applicants selected)	Aug. 2015
Pittsburgh Newsmaker Award, Trib Total Media	Jan. 2014
Recognition at the Carnegie Mellon Presidential Inaugural Celebrations for making significant contributions to the university (150 students selected)	Nov. 2013
Best paper award finalist, 21 <sup>st</sup> IEEE Requirements Engineering Conference	Jul. 2013
Nicolas Minnici Graduate Fellowship	2011-2012
Prabhu and Poonam Goel Graduate Fellowship	2009-2010
Qualcomm QUALSTAR reward for outstanding contribution. Recognition for "Extraordinary effort to meet an unplanned milestone."	Jun. 2008
IIT Bombay Computer Science Department Scholarship	2003-2005
All India Rank 38 (99.8 percentile), Computer Sc. and Engg., GATE Exam	2002
All India Rank 49 (99.12 percentile), Computer Sc. and Engg., GATE Exam	2001
Graduated with distinction, BE Computer Science and Engineering	2001

## Media and Other Mentions

- 2016 "Researchers to FTC: We've got problems, potential solutions" [\[Slate\]](#) [\[IAPP Privacy Advisor\]](#)
- 2015 Spokeo, Inc. Vs Robins in the Supreme Court of the United States [\[Amicus Brief\]](#)
- 2014 Presidential Council of Advisors on Science and Technology report [\[Big Data and Privacy\]](#)

- 2014 "Who shares your data?" [\[Link Magazine\]](#)
- 2013 "Bad grammar make good password, research say" [\[NewScientist\]](#) [\[Scientific American\]](#) [\[SlashDot\]](#) [\[Ars Technica\]](#) [\[DailyMail\]](#) [\[CMU Homepage\]](#) [\[ACM TechNews\]](#)
- 2013 Radio interviews related to password research [\[NPR\]](#) [\[Federal News Radio\]](#)
- 2013 Pittsburgh Newsmaker [\[The Tribune Review\]](#)

### Meta-Curricular Activities

Participated in Facebook women in research workshop, Menlo Park, CA. Feb. 2016

Participated in VMware leadership summit for women in computer science, Palo Alto, CA. Aug. 2015

As part of [Data Privacy Day 2014](#), organized a CMU campus survey of perceptions of behavioral advertising. [Results announced](#) during keynote speech by Nicole Wong, Deputy US Chief Technology Officer.

Emergency Medical Responder (Licensed in Pennsylvania)

Elected class representative during master's program at IIT Bombay, 2003-04

### Student Travel Grants

ACM CCS Conference Student Travel Grant	\$500	Oct. 2015
ACM CCS Conference Student Travel Grant for Women	\$425	Oct. 2015
Carnegie Mellon GSA Conference Funding	\$500	Oct. 2015
ACM CODASPY Conference Travel Grant	\$800	Feb. 2013
Carnegie Mellon GSA Conference Funding	\$500	Feb. 2013
IEEE RE Conference Student Volunteer	Registration + other benefits	Sep. 2012

### Journal Publications

- [1] Breaux T.D., Hibshi H. and **Rao A.** *Eddy, A Formal Language for Specifying and Analyzing Data Flow Specifications for Conflicting Privacy Requirements*. Requirements Engineering, Vol. 19, Issue 3, Sep. 2014

### Conference Publications

- [2] Rao A., Schaub F., Sadeh N., Acquisti A. and Kang R. *Expecting the Unexpected: Understanding Mismatched Privacy Expectations Online*. (under review)
- [3] **Rao A.**, Schaub F. and Sadeh N. *What do they know about me? Contents and Concerns of Online Behavioral Profiles*. 6<sup>th</sup> ASE Conference on Privacy, Security, Risk and Trust (PASSAT), Dec. 2014. (Acceptance 14%)
- [4] **Rao A.**, Hibshi H., Breaux T. D., Lehker J-M. and Niu J. *Less is More? Investigating the Role of Examples in*

*Security Studies using Analogical Transfer*, 1<sup>st</sup> Symposium and Bootcamp on the Science of Security (HoTSoS), Apr. 2014

- [5] Breaux T.D. and **Rao A.**, *Formal Analysis of Privacy Requirements Specifications for Multi-Tier Applications (Best paper finalist)*, 21<sup>st</sup> IEEE Requirements Engineering Conference (RE), Jul. 2013. (*Acceptance 18%*)
- [6] **Rao A.**, Jha B., Kini G., *Effect of Grammar on Security of Long Passwords*, 3<sup>rd</sup> ACM Conference on Data and Application Security and Privacy (CODASPY), Feb. 2013. (*Acceptance 22%*)

### Workshop Publications

- [7] Ruchkin I., **Rao A.**, Dionisio D. N., Chaki S. and Garlan D. *Eliminating Inter-Domain Vulnerabilities in Cyber-Physical Systems: An Analysis Contracts Approach*. 1<sup>st</sup> ACM Workshop on Cyber-Physical Systems Security and Privacy (CPS-SPC), Denver, USA, Oct. 2015.
- [8] Leon P.G., **Rao A.**, Schaub F., Marsh A., Cranor L.F. and Sadeh N. *Privacy and Behavioral Advertising: Towards Meeting Users' Preferences*, 2<sup>nd</sup> SOUPS Workshop on Privacy Personas and Segmentation (PPS), Jul. 2015
- [9] Breaux T.D., Hibshi H., **Rao A.** and Lehker J-M., *Towards a Framework for Pattern Experimentation: Understanding empirical validity in requirements engineering patterns*, 2<sup>nd</sup> IEEE Workshop on Requirements Engineering Patterns (RePa), Sep. 2012

### Non-peer Reviewed Publications

- [10] Rao A., Schaub F., Sadeh N., Acquisti A. and Kang R. *Expecting the Unexpected: Understanding Mismatched Privacy Expectations Online*. Federal Trade Commission PrivacyCon Conference, Jan 2016.
- [11] Leon P., **Rao A.**, Schaub F., Marsh A., Cranor L. and Sadeh N. *Why People are (Un)willing to Share Information with Online Advertisers*. Technical Report, Carnegie Mellon University, May 2015.
- [12] Karthikeyan S., Feng S., **Rao A.** and Sadeh N. *Smartphone Fingerprint Authentication versus PINs: A Usability Study*. CyLab Technical Report, Carnegie Mellon University, Jul. 2014.
- [13] Breaux T.D. and **Rao A.** *Managing Risk in Mobile Applications With Formal Security Policies*. Annual Acquisition Research Symposium, Naval Post Graduate School, Apr. 2013.
- [14] **Rao A.** *Compression in Memory Constrained DBMSs*. M.Tech. Thesis, Indian Institute of Technology Bombay, Mumbai, India, Jun. 2005.

### Research Experience

**Research Assistant**, CERT Forensics Team and CyLab  
Carnegie Mellon University, Pittsburgh, PA

Aug. 2009-May. 2012

Worked on password security. Developed tool to extract AES and Serpent encryption keys from RAM dumps for Truecrypt whole disk encryption. Assisted with One-Click fraud research by writing scripts to

run DNS blacklist tests

**Scientist 'B'**, Network Security Group

Jun. 2002-Jun. 2003

Center for Artificial Intelligence and Robotics, Defense Research and Development Organization, Bangalore, India

Worked on mobile IPSec VPN client, IP packet interceptor, TLS proxy client and server

## Industry Experience

**Engineer/Sub-lead**, BREW Integration Team

Nov. 2007-Jul. 2009

Qualcomm Incorporated, San Diego, CA

Integrated BREW Mobile Platform code on Snapdragon platform. Debugged phone freeze, crash and boot up issues. Managed 2/3 engineers as sub-lead. Ensured timely releases to target team

**Software Engineer**, Architecture Team

Oct. 2005-Oct. 2007

Appian Corporation, Reston, VA

Worked on database inter-gateway communication, hot backup recovery, checkpointing, corrupt transaction log recovery in Business Process Management Suite

## Teaching Experience

**Teaching Assistant**, 15421/08731 Information Security and Privacy

Fall 2013

Carnegie Mellon University, Pittsburgh, PA

Gave a guest lecture, graded assignments, held office hours

**Teaching Assistant**, 18731 Network Security

Spring 2011

Carnegie Mellon University, Pittsburgh, PA

Graded assignments, held office hours

**Teaching Assistant**, CS684 Embedded Systems

Spring 2005

IIT Bombay, Mumbai, India

Graded assignments

**Teaching Assistant**, CS631 Relational Database Systems

Fall 2004

IIT Bombay, Mumbai, India

Graded assignments and course projects, held office hours

**Teaching Assistant**, CS390 Microprocessors and Interfaces Lab

Spring 2004

IIT Bombay, Mumbai, India

Graded assignments, conducted labs

**Teaching Assistant**, CS347 Operating Systems

Fall 2003

IIT Bombay, Mumbai, India

Graded assignments

**Lecturer**, Computer Science and Engineering

Aug. 2001-May. 2002

National Institute of Engineering, Mysore, India

Taught undergraduate courses on Unix programming and client server programming

### **Computer Skills**

Languages: C (advanced); Python, Assembly (intermediate); R, Perl, Java, SQL, HTML (beginner)

Tools: JMP, Weka, Wireshark, JTag, digital forensic tools, static analysis tools

### **Miscellaneous**

Citizen of India and Permanent Resident of United States