

Amit Datta

Snap Inc.
2850 Ocean Park Boulevard
Santa Monica, CA 90405, USA

amitdatta.com
linkedin.com/in/dattaamit/
amit.datta@snap.com

Education

Carnegie Mellon University, Pittsburgh, PA Mar 2018

Ph.D., Electrical and Computer Engineering

Advisor: Prof. Anupam Datta

Thesis: *Fairness and Privacy Violations in Black-Box Personalization Systems: Detection and Defenses*

Indian Institute of Technology, Kharagpur, India Aug 2012

B. Tech (Hons), Computer Science and Engineering (GPA: 9.45/10.00)

Advisor: Prof. Debdeep Mukhopadhyay

Thesis: *Towards a Faster Fully Homomorphic Encryption Scheme*

Experience

Privacy Engineer, Snap Inc., Santa Monica, CA Mar 2018 –

- Design and develop privacy enhancing technologies for Snapchat users.

Graduate Research Assistant, Carnegie Mellon University, Pittsburgh, PA Sep 2012 – Feb 2018

- Developed an experimental methodology to detect information flow in blackbox systems.
- Built a tool to evaluate fairness and privacy properties in Google's advertising system.
- Explored legal liability of ad platform in serving ads in a discriminatory manner.
- Evaluated effectiveness of privacy enhancing technologies against browser fingerprinting.

Research Intern, Technicolor Research, Los Altos, CA Summer 2015

- Worked on improving private aggregation protocols.
- Successfully carried out a cryptanalysis attack on a published protocol.

Research Intern, Microsoft Research, Bangalore, India Summer 2014

- Worked on identifying data-flows in Microsoft's big data platform using only data-logs without access to the scripts generating the logs.
- Used C# and Scope to implement my techniques on Microsoft's internal big data platform.

Research Intern, MPI for Software Systems, Saarbruecken, Germany Summer 2011 & 2012

- Devised a new Asynchronous Verifiable Secret Sharing protocol with a communication complexity of $O(\kappa n^2)$, thereby improving the then best-known complexity of $O(\kappa n^3)$.

Undergraduate Research Assistant, IIT Kharagpur, India Aug 2008 – May 2012

Towards a Faster Fully Homomorphic Encryption Scheme

- Proposed a new technique to improve the running times of Gentry's Fully Homomorphic Encryption Scheme by parallelizing the most costly operation using the CUDA architecture.

Differential Cache Attacks on Block Ciphers

- Deployed an enhanced cache trace attack on CLEFIA using the differential property of the s-boxes in the cipher and the diffusion properties of the linear transformations of the underlying Feistel structures.
- Extended cache attack to the block cipher CAMELLIA.

Publications

- *Discrimination in Online Advertising: A Multidisciplinary Inquiry*. Amit Datta, Anupam Datta, Deirdre K. Mulligan, Jael Makagon, Michael Tschantz. In the Fairness Accountability and Transparency Conference (**FAT***), Feb 2018.
- *Cryptanalysis of a Privacy-Preserving Aggregation Protocol*. Amit Datta, Marc Joye. In the IEEE Transactions on Dependable and Secure Computing (**TDSC**), Jan 2016.
- *Influence in Classification via Cooperative Game Theory*. Amit Datta, Anupam Datta, Ariel Procaccia, Yair Zick. In the Twenty-Fourth International Joint Conference on Artificial Intelligence (**IJCAI**), Aug 2015.
- *A Methodology for Information Flow Experiments*. Michael Tschantz, Amit Datta, Anupam Datta, Jeannette Wing. In the Twenty Eight IEEE Computer Security Foundations Symposium (**CSF**), July 2015.
- *Automated experiments on ad privacy settings: A tale of opacity, choice, and discrimination*. Amit Datta, Michael Tschantz, Anupam Datta. In the proceedings on Privacy Enhancing Technologies (**PETS**), June 2015.
- *Asynchronous Computational VSS with Reduced Communication Complexity*. Michael Backes, Amit Datta, Aniket Kate. In Topics in Cryptology (**CT-RSA**), Feb 2013.
- *An Enhanced Differential Cache Attack on CLEFIA for Large Cache Lines*. Chester Rebeiro, Rishabh Poddar, Amit Datta, Debdeep Mukhopadhyay. In Progress in Cryptology (**IndoCrypt**), Dec 2011.
- *A Cache Trace Attack on CAMELLIA*. Rishabh Poddar, Amit Datta, Chester Rebeiro. In the Intl' Conf. on Security Aspects in Info. Tech., High-Performance Computing and Networking (**InfoSecHiComNet**), Oct 2011.

Honors and Awards

- **Third place winner**, 3-Minute-Thesis (3MT) Competition, CMU. 2016
- **Dean's Tuition Fellowship**, Carnegie Institute of Technology, CMU 2012 – 2013
- **Singapore Technologies Engineering Scholarship**, IIT Kharagpur, India 2009 – 2012
- **Research Fellowship**, Max Planck Institute for Software Systems, Saarbruecken, Germany 2011, 2012
- **Certificate of Merit**, Ramakrishna Mission Vidyalaya, Narendrapur, Kolkata, India 2006, 2007, 2008
- **Gold Medal**, Ramakrishna Mission Vidyalaya, Narendrapur, Kolkata, India 2006, 2007
- Ranked 18th all over India in the **National Science Olympiad** 2008
- Ranked 6th in the **Regional Business Plan Competition**, Eastern Region, India 2007

Technical Skills

- **Programming Languages:** Python (proficient), C , C++, C#, Java (prior experience)
- **Database Management Systems:** MySQL, SQL Server 2005 (prior experience)
- **Web Development:** HTML, JavaScript, CSS, PHP (prior experience)
- **Productivity Applications:** \LaTeX , SVN, Git (proficient)

Professional Activities and Service

- **External Reviewer** for ACM Transactions on Internet Tech., Privacy Enhancing Technologies Symposium
- **Sub-reviewer** for IEEE Security & Privacy, Network and Dist. System Security Symposium, ACM Conference on Computer and Comm. Security, Workshop on Privacy in the Electronic Society
- **Teaching Assistant**, Foundations of Privacy (Graduate level), Carnegie Mellon University 2013, 2014
- **President** (2015), **Vice President** (2014), **Treasurer** (2013), Indian Graduate Student Association, CMU
- **Member**, International Students Concerns Task Force, Graduate Student Assembly, CMU 2016
- **Chair**, CyLab Events Committee, Carnegie Mellon University 2015 - Present

Relevant Coursework

Carnegie Mellon University

- Introduction to Computer Security, Foundations of Privacy, Network Security, Applied Cryptography, Formal Foundations of Software Security, Intermediate Statistics, Advanced Statistical Theory, Machine Learning

Indian Institute of Technology, Kharagpur

- Cryptography and Network Security, Foundations of Cryptography, Probability and Statistics, Machine Learning