Anrin Chakraborti

CONTACT INFORMATION

University of Illinois Chicago
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Chicago, IL 60607, USA

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RESEARCH INTERESTS

Applied cryptography, cloud computing, databases, system security, secure hardware.

EDUCATION

State University of New York at Stony Brook

Ph.D., Computer Science, August 2020

- Thesis Topic: *Scalable High-Throughput Systems for Data Access Privacy*
- Adviser: Professor Radu Sion

Jadavpur University, Kolkata, India

B.E., Computer Science & Engineering, June 2014

- Undergraduate Thesis Topic: *Coding Theory Approaches to Homomorphic Encryptipn*
- Undergraduate Thesis Adviser: Professor Gautam Kumar Pal

EMPLOYMENT

University of Illinois Chicago
Assistant Professor, Computer Science — August 2023 to current

Duke University
Postdoctoral Research Associate, Computer Science — October 2020 to June 2023
Adviser: Professor Michael K. Reiter

IBM Thomas J. Watson Research Center
Security Research Intern — May 2017 to Aug 2017
Mentors: Dr. Rick Boivie, Dr. Dimitrios Pendarakis

Network Security and Applied Cryptography Lab, Stony Brook University
Graduate Research Assistant — Aug 2014 to Aug 2020
Adviser: Professor Radu Sion

BOOK CHAPTERS

[1] A. Chakraborti, R. Curtmola, J. Katz, J. Nieh, A. Sadeghi, R. Sion, Y. Zhang. *Cloud Computing Security: Foundations and Research Directions*. Foundations and Trends in Privacy Security 2022. Now Publishers.

[2] A. Chakraborti, R. Sion. *Secure Data Outsourcing*. Encyclopedia of Cryptography, Security and Privacy 2021. Springer.

REFERRED JOURNAL PUBLICATIONS

[3] S. Bajaj, A. Chakraborti, R. Sion. *ConcurDB: Concurrent Query Authentication for Outsourced Databases*. IEEE Transactions on Knowledge and Data Engineering (**TKDE 2019**).

[4] S. Bajaj, A. Chakraborti, R. Sion. *Practical Foundations of History Independence*. IEEE Transactions on Information Forensics and Security (**TIFS 2015**)

REFEREED CONFERENCE PUBLICATIONS

[5] S. Pinjaja, B. Carbunar, A. Chakraborti, R. Sion. *INVISILINE: Invisible Plausibly-Deniable Storage*. IEEE Symposium on Security and Privacy (**Oakland 2024**).

[6] A. Chakraborti, G. Fanti, M. K. Reiter. *Distance-Aware Private Set Intersection*. Usenix Security Symposium (**Usenix Security 2023**).

[7] A. Chakraborti, D. Suciu, R. Sion. *Wink: Deniable Secure Messaging*. Usenix Security Symposium (**Usenix Security 2023**).

[8] A. Chakraborti, M. K. Reiter. *Privately Evaluating Region Overlaps with Applications to Collaborative Sensor Output Validation*. IEEE European Symposium on Security and Privacy (**Euro S&P 2023**).

[9] C. Chen, A. Chakraborti, R. Sion. *PEARL: Plausibly Deniable Flash Translation Layer using WOM Coding*. Usenix Security Symposium (**Usenix Security 2021**).

[10] A. Chakraborti, R. Sion. *SqORAM: Read-Optimized Sequential Write-Only ORAM*. Privacy-Enhancing Technologies Symposium (**PETS 2020**).

[11] C. Chen, A. Chakraborti, R. Sion. *INFUSE: Invisible Plausibly-Deniable File System for NAND flash*. Privacy-Enhancing Technologies Symposium (**PETS 2020**).

[12] A. Chakraborti, R. Sion. *ConcurORAM: High-Throughput Stateless Parallel Multi-Client ORAM*. ISOC Network and Distributed Systems Security Symposium (**NDSS 2019**).

[13] A. Chakraborti, A. J. Aviv, S. G. Choi, T. Mayberry, D. S. Roche, R. Sion. *rORAM: Efficient Range ORAM with $O(\log^2 N)$ Locality*. ISOC Network and Distributed Systems Security Symposium (**NDSS 2019**).

[14] C. Chen, A. Chakraborti, R. Sion. *PD-DM: A Block Device Mapper with Plausible Deniability*. Privacy-Enhancing Technologies Symposium (**PETS 2019**).

[15] A. Chakraborti, C. Chen, R. Sion. *DataLair: Efficient Block Storage with Plausible Deniability against Multi-Snapshot Adversaries*. Privacy Enhancing Technologies Symposium (**PETS 2017**).

[16] A. Chakraborti, B. Jain, J. Kasiak, T. Zhang, D. Porter, R. Sion. *dm-x: Protecting Volume-Level Integrity for Cloud Volumes and Local Block Devices*. ACM Asia-Pacific Workshop on Systems (**ApSys 2017**).

TECHNICAL REPORTS

[17] A. Chakraborti, R. Boivie, Z. Gu, M. Kayaalp, A. Lamba, D. Pendarakis. *A Cloud-Based Service That Protects End-User Devices from Malware in Email Attachments and Web Links*. **IBM Technical Report**.

INVITED TECHNICAL POSTERS

[18] A. Chakraborti, R. Sion, *ConcurORAM: High-Throughput Parallel Multi-Client ORAM*. ACM Conference on Computer and Communications Security (**CCS 2016**).

[19] A. Chakraborti, C. Chen, R. Sion. *DataLair: A Storage Block Device with Plausible Deniability*. ACM Conference on Computer and Communications Security (**CCS 2016**).

[20] S. Bajaj, A. Chakraborti, R. Sion. *ConcurDB: Concurrent Query Authentication for Outsourced Databases*. Usenix Annual Technical Conference (**Usenix ATC 2015**).

INVITED TALKS

- *PEARL: Plausibly Deniable Flash Translation Layer using WOM Coding*. Usenix Security Symposium 2021. Virtual conference. August 2021.
- *SqORAM: Read-Optimized Sequential Write-Only ORAM*. Privacy Enhancing Technologies Symposium (PETS) 2020. Virtual conference. June 2020.
- *Data Access Privacy on Untrusted Clouds*. Department of Computer Science, Georgia Institute of Technology, Georgia, USA. January 2020.
- *Data Access Privacy on Untrusted Clouds*. MIT CSAIL, Boston, USA. August 2019.
- *rORAM: Range Oblivious RAM with Locality*. Security and Privacy Seminar. Cornell University, New York, USA. August 2019.
- *Scalable Systems for Data Access Privacy*. Washington University in St. Louis department colloquium. St Louis, Missouri, USA. March 2019.

- *rORAM: Efficient Range ORAM with Locality*. ISOC Network and Distributed System Security Symposium (NDSS) 2019. San Diego, California, USA. February 2019.
- *ConcurORAM: High Throughput Parallel Multi-Client ORAM*. ISOC Network and Distributed System Security Symposium (NDSS) 2019. San Diego, California, USA. February 2019.
- *rORAM: Range Oblivious RAM with Locality*. DC Area Anonymity, Privacy and Security Seminar. Georgetown University, Washington D.C., USA. 2018.
- *dm-x: Protecting Volume-Level Integrity for Cloud Volumes and Local Block Devices.* ACM Asia-Pacific Workshop on Systems (ApSys) 2017. Indian Institute of Technology (IIT), Mumbai, India. August 2017.
- *DataLair: Efficient Block Storage with Plausible Deniability against Multi-Snapshot Adversaries*. Privacy Enhancing Technologies Symposium (PETS) 2017. University of Minnesota, Minneapolis, Minnesota, USA. June 2017.

TEACHING EXPERIENCE

University of Illinois at Chicago

- Instructor, CS 488: Introduction to Cryptography.
- Instructor, CS 594: Topics in Applied Cryptography

SERVICE

Referee Service

- IEEE Transaction on Knowledge and Data Engineering (TKDE)
- IEEE Transaction on Cloud Computing (TCC)
- IEEE Transactions on Dependable and Secure Computing (TDSC)

Program Committee

- The ACM Web Conference (TheWebConf) 2023, 2022, 2021, 2020.
- European Symposium on Research in Computer Security (ESORICS) 2022, 2023
- IEEE International Conference on Distributed Computing Systems (ICDCS) 2021
- The ACM Cloud Computing Security Workshop (CCSW) 2022, 2021, 2020, 2019

External Reviewer

- ACM Computer and Communications Security Symposium (CCS) 2020, 2019
- IACR Theory of Cryptography Conference (TCC) 2018
- Usenix Security Symposium (Usenix Security) 2018