
Adam Davison Smith

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RESEARCH INTERESTS

Data privacy, Cryptography, Information theory, Machine learning,
Quantum computing, Theoretical computer science, Computer security.

EDUCATION

- ◇ Ph.D. in Computer Science — **Massachusetts Institute of Technology** September 2004
Thesis: *Maintaining Secrecy when Information Leakage is Unavoidable*
Advisor: **Madhu Sudan**
- ◇ S.M. in Computer Science — **Massachusetts Institute of Technology** September 2001
Thesis: *Multi-party Quantum Computation*
Advisor: **Madhu Sudan**
- ◇ B.Sc. in Mathematics and Computer Science — **McGill University** June 1999
Joint Honours, Governor General's Medal

EMPLOYMENT

- ◇ **Professor of Computer Science, Boston University** 2017–present
- ◇ Professor of Computer Science and Engineering, Pennsylvania State University July 2016–July 2017
- ◇ Associate Professor, Pennsylvania State University July 2010–June 2016
- ◇ Assistant Professor, Pennsylvania State University January 2007–June 2010
- ◇ Visiting Scientist, Institute for Pure and Applied Mathematics, UCLA Fall 2006
- ◇ Visiting Scientist, Massachusetts Institute of Technology Spring 2006
- ◇ Post-doctoral Fellow, Weizmann Institute of Science, Israel September 2004–August 2006
Mentor: **Moni Naor**

AWARDS

- ◇ *Eurocrypt Test of Time Award*, 2019. Awarded to *Fuzzy Extractors: How to Generate Strong Keys from Biometrics and Other Noisy Data* (*Eurocrypt* 2004, *SICOMP* 2008)
- ◇ Gödel Prize, 2017, awarded annually to an “outstanding paper in the area of theoretical computer science”. Awarded for *Calibrating Noise to Sensitivity in Private Data Analysis* (*TCC* 2006, *JPC* 2016).
- ◇ *Theory of Cryptography Test of Time Award*, 2016. Awarded to a paper published at the TCC Conference at least eight years before the award. Awarded to *Calibrating Noise to Sensitivity in Private Data Analysis* (*TCC* 2006) “for introducing the definition of differential privacy, and providing a solid mathematical foundation for a vast body of subsequent work on private data analysis.”
- ◇ US *Presidential Early Career Award for Scientists and Engineers* (PECASE), 2009. Awarded yearly to 100 junior scientists and engineers. My award was one of 20 (across all areas of science) sponsored by the National Science Foundation.

- ◇ US National Science Foundation *CAREER* Award, 2008.
- ◇ Runner-up, *2006 Privacy-Enabling Technology Award* for the paper “Calibrating Noise to Sensitivity in Private Data Analysis”.
- ◇ *Microsoft Graduate Fellowship*, 2003-2004.
- ◇ *1999 Governor General’s Bronze Medal* (highest GPA, Faculty of Science), McGill University.

TEACHING

- ◇ Algorithms in Society Spring 2020
- ◇ Introduction to the Analysis of Algorithms (at BU) Fall 2019
- ◇ Privacy in Machine Learning and Statistical Inference Fall 2018
- ◇ Computational Tools for Data Science Spring 2018
- ◇ Adaptive Data Analysis (<http://adaptivedataanalysis.com>) Fall 2017
- ◇ Algorithms and Data Structures (undergraduate) Spring 2007, Fall 2009, Spring 2012, Spring 2017
- ◇ Analysis of Algorithms (graduate) Fall 2008, Fall 2010, Fall 2014, Fall 2015
- ◇ Computational Tools for Data Science Spring 2018
- ◇ Cryptography (graduate) Fall 2007, Spring 2009, Spring 2011, Spring 2016
- ◇ Privacy in Statistical Databases (graduate) Fall 2007, Spring 2010, Fall 2012, Spring 2015
- ◇ Probabilistic Algorithms Fall 2016
- ◇ Pseudorandomness (graduate) Fall 2011
- ◇ TCS Seminar Spring 2008, Spring 2009, Fall 2012, Fall 2015, Spring 2016
- ◇ Privacy in Statistical Databases (graduate), Weizmann Institute of Science Spring 2005

Department-level teaching awards while at Penn State

- ◇ Spring 2015 Faculty Teaching Award
- ◇ 2012-2013 Joel and Ruth Spira Award for Teaching Excellence

GRADUATE STUDENTS

- ◇ Srivatsava Ranjit Ganta (co-advised with Raj Acharya), Ph.D. October 2008. Currently at Oracle.
- ◇ Laxman Vembar, M.S. September 2008.
- ◇ Ashwinkumar Gopalrathnam, M.S. (Electrical Engineering) September 2008.
- ◇ Abhradeep Guha Thakurta, Ph.D. May 2013. Currently assistant professor at University of California, Santa Cruz, on leave at Google.
- ◇ Megan Heysham, M.S. August 2013. Currently at Hitachi.
- ◇ Ye Zhang, Ph.D. June 2015. Currently at Google.
- ◇ Om Thakkar, Ph.D. August 2019. Currently at Google.
- ◇ Jiayu Zhang, Ph.D. expected 2021.
- ◇ Gavin Brown, Ph.D. expected 2021.
- ◇ Marika Swanberg, Ph.D. expected 2024.
- ◇ Meghan Sengupta, Ph.D. expected 2024.

POSTDOCTORAL FELLOWS

- ◇ Raef Bassily, September 2012–2015
- ◇ Jalaj Upadhyay, September 2015–August 2017
- ◇ Audra McMillan, July 2018–present

EXTERNAL FUNDING

- ◇ US National Science Foundation Award CCF-1763786. *AF: Medium: Foundations of Adaptive Data Analysis*. Role: PI for BU. June 2018-2021, \$260,000.
- ◇ US Census Bureau Collaborative Research Agreement. PI for Penn State (100%), \$400,000. Lead institution: Georgetown University.
- ◇ Google Faculty Research Award. *Privacy-preserving Deep Learning*. Role: Co-PI (50%). PI: Vitaly Shmatikov (Cornell). Fall 2016–2018, \$60,000.
- ◇ Sloan Foundation Research Award. Practical Algorithms for Interactive Private Data Analysis, with Applications to False Discovery Control. Role: Co-PI (50%). PI: Aaron Roth. Fall 2015–2018, \$494,015.
- ◇ US National Science Foundation Award #1447700. *BIGDATA: F: DKA: Scalable, Private Algorithms for Continual Data Analysis*. Role: PI (50%). Co-PI: Sofya Raskhodnikova. Fall 2014–2018, \$500,000.
- ◇ Google Faculty Research Award. Detailed Streaming Analytics: Privacy Measurement and Algorithms. Co-PI (50%). PI: Daniel Kifer. Fall 2013–2015, \$256,000.
- ◇ US National Science Foundation Award #1057312. *Workshop on Trustworthy Computing Program*, Role: PI (50%). Co-PI: Trent Jaeger. Fall 2010–2012, \$225,814.
- ◇ US National Science Foundation Award #0941553. *CDI Type II: Integrating Computational and Statistical Approaches to Data Privacy*, Role: Co-PI (33%). PI: Aleksandra Slavkovic. Co-PIs: John Abowd, Stephen Fienberg, Sofya Raskhodnikova. Fall 2010–2014, \$1,025,626.
- ◇ US National Science Foundation Award #0747294. *CAREER: Rigorous Foundations for Data Privacy*, Role: PI, Fall 2008–2014, \$400,000. Received *PECASE*, 2009.
- ◇ US National Science Foundation Award #0729171. *TF: Algorithmic and Learning-Theoretic Aspects of Data Privacy*, Role: PI (50%). Co-PI: Sofya Raskhodnikova. Fall 2007–2010, \$277,000.
- ◇ US Army Research Laboratory Collaborative Technology Alliance Award. *Quality-of-Information-Aware Networks for Tactical Applications (QUANTA)*. Role: Co-PI. PI: Thomas La Porta. Fall 2009–2014.
- ◇ US National Institutes of Health. *Penn State Clinical and Translational Science Institute*. Role: Senior personnel. PI: Lawrence Sinoway. June 2011–June 2013.

PROFESSIONAL ACTIVITIES

- ◇ Associate editor:
 - *Journal of Privacy and Confidentiality*, 2012–present.
 - *IEEE Transactions on Information Theory*, 2011-2014
 - Guest editor, *SIAM Journal on Computing* special issue for *STOC 2014* selected papers.
- ◇ Program Chair:
 - *Theory of Cryptography Conference (TCC 2016-B)*, Beijing, China, November 2016.
 - *International Conference on Information-Theoretic Security (ICITS) 2012*, Montreal, Canada, August 2012.

- ◇ Leader, Privacy and Security Connector, Northeast NSF Big Data Hub, 2015–
- ◇ Co-organizer:
 - Semester-long program on *Data Privacy: Foundations and Applications* at the Simons Institute for Theoretical Computer Science, UC Berkeley. <https://simons.berkeley.edu/privacy2019>
 - First and Second Workshops on Adaptive Data Analysis (held at *NIPS* 2016 and 2017). wadapt.org
 - *Institute for Applied Computational Science Symposium on Data Privacy*, Harvard University, Cambridge, MA, January 2015.
 - *Charles River Privacy Day*, Hariri Institute for Computation, Boston University, November 17, 2013.
 - *Charles River Workshop on Private Analysis of Social Networks*, Hariri Institute for Computation, Boston University, May 2014.
 - *Workshop on Differential Privacy Across Computer Science*, Center for Discrete Mathematics and Computer Science, Rutgers University, October 2012.
 - *Graduate summer school on cryptography and principles of computer security*, Penn State, June 2012.
 - *Workshop on Privacy and Financial Data*, Penn State, March 2012.
 - *NSF Workshop on the Future of Trustworthy Computing*, Arlington, VA, October 2010.
 - *Workshop on Statistical and Learning-Theoretic Challenges in Data Privacy*, Institute for Pure and Applied Mathematics, UCLA, February 2010.
- ◇ Program committee member:
 - Area chair, *COLT 2020*, Graz, Austria, July 2020.
 - *Eurocrypt 2020*, Zagreb, Croatia, May 2020.
 - *FAT* 2020*, Barcelona, Spain, January 2020.
 - Area Chair for privacy, *ACM Symposium on Computer and Communications Security (CCS)*, 2019
 - *IEEE Symposium on Security and Privacy (“Oakland”)*, 2018.
 - *Innovations in Theoretical Computer Science (ITCS) 2016*, Boston, MA, January 2016.
 - *Theory of Cryptography (TCC) 2016-A*, Tel Aviv, Israel, January 2016.
 - *16th Privacy Enhancing Technologies Symposium 2016*, July 2016.
 - *15th Privacy Enhancing Technologies Symposium 2015*, July 2015.
 - *Neural Information Processing Systems (NIPS) 2014*, Montreal, Canada, December 2014.
 - *ACM Symposium on the Theory of Computing (STOC) 2014*, New York, NY, June 2014.
 - *Theory of Cryptography Conference (TCC) 2014*, San Diego, CA, February 2014.
 - *Crypto 2013*, Santa Barbara, CA, August 2013.
 - *International Conference on Machine Learning (ICML) 2013*, Atlanta, GA, June 2013.
 - *Foundations of Computer Science (FOCS) 2011*, Palm Springs, CA, October 2011.
 - *Crypto 2011*, Santa Barbara, CA, August 2011.
 - *Information-theoretic Security (ICITS) 2011*, Amsterdam, The Netherlands, May 2011.
 - *Privacy-Enhancing Technologies (PETS) 2011*, Waterloo, Canada, July 2011.
 - *IEEE Security and Privacy 2010*, Oakland, CA, May 2010.
 - *Theory of Cryptography Conference (TCC) 2010*, Zurich, Switzerland, February 2010.
 - *Crypto 2009*, Santa Barbara, CA, August 2009.
 - *Cryptography and Network Security 2009*, Santa Barbara, CA, August 2009.
 - *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, January 2009.
 - *SCN 2008*, Amalfi, Italy, September 2008.
 - *Crypto 2008*, Santa Barbara, CA, August 2008.
 - *RSA Conference, Cryptographer’s Track (CT-RSA) 2008*, San Francisco, CA, February 2008.
 - *Crypto 2007*, Santa Barbara, CA, August 2007.

- *ACM Conference on Electronic Commerce (EC) 2007*, San Diego, CA, June 2007.
- *RSA Conference, Cryptographer’s Track (CT-RSA) 2007*, San Francisco, CA, February 2007.
- *Formal and Computational Cryptography Workshop (FCC) 2006*, Venice, Italy, June 2006.
- *Theory of Cryptography Conference (TCC) 2006*, New York, NY, March 2006.
- *Crypto 2005*, Santa Barbara, CA, August 2005.

◇ Reviewer for several journals and conferences

LECTURE NOTES

- ◇ A. Roth and A. Smith. Algorithmic Foundations of Adaptive Data Analysis. Fall 2017. <https://adaptivedataanalysis.com/>

EDITED VOLUMES

- ◇ M. Hirt and A. Smith, editors. *Proceedings of the Fourteenth Theory of Cryptography Conference (TCC 2016), Beijing, China, October 31–November 3, 2016*, Springer.
- ◇ A. Smith, editor. *Proceedings of the Sixth International Conference on Information-Theoretic Security (ICITS 2012), Montreal, QC, Canada, August 15–17, 2012*. Springer, LNCS Volume 7412, 2012.

PUBLICATIONS IN REFEREED JOURNALS (Note: By default, authors are listed in **alphabetical** order. Papers where the author order is based on contribution are marked with *.)

- ◇ * J. Lei, A.-S. Charest, A. Slavkovic, A. Smith, S. Fienberg. Differentially private model selection with penalized and constrained likelihood. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, Vol. 181, No. 3, p. 609–633, 2018.
- ◇ A. McMillan, A. Smith. When is non-trivial estimation possible for graphons and stochastic block models? *Information and Inference*, Vol. 7, No. 2, June 2018.
- ◇ C. Dwork, F. McSherry, K. Nissim, A. Smith. Calibrating Noise to Sensitivity in Private Data Analysis. *J. Privacy and Confidentiality*, Vol. 7, No. 3, 2016.
- ◇ V. Guruswami, A. Smith. Optimal-Rate Code Constructions for Computationally Simple Channels. *J. ACM*, Vol. 63, No. 4, 2016.
- ◇ C. Gentry, J. Groth, Y. Ishai, C. Peikert, A. Sahai, A. Smith. Using Fully Homomorphic Hybrid Encryption to Minimize Non-interactive Zero-Knowledge Proofs. *J. Cryptology*, Vol. 28, No. 4, 2015.
- ◇ V. Karwa, S. Raskhodnikova, A. Smith, G. Yaroslavtsev. Private Analysis of Graph Structure. *ACM Trans. Database Syst.*, Vol. 39, No. 3, 2014.
- ◇ S. P. Kasiviswanathan, A. Smith. On the ‘Semantics’ of Differential Privacy: A Bayesian Formulation. *Journal of Privacy and Confidentiality*, Vol. 6, No. 1, 2014.
- ◇ Y. Dodis, B. Kanukurthi, J. Katz, L. Reyzin, and A. Smith: Robust Fuzzy Extractors and Authenticated Key Agreement From Close Secrets. *IEEE Transactions on Information Theory*, Vol. 58, No. 9, p. 6207–6222, 2012.
- ◇ S. P. Kasiviswanathan, H. Lee, K. Nissim, S. Raskhodnikova and A. Smith. What Can We Learn Privately? *SIAM Journal on Computing*, Vol. 40, No. 3, p. 793–826, 2011.
- ◇ * M. Tomamichel, R. Renner, C. Schaffner, A. Smith. Leftover Hashing Against Quantum Side Information. *IEEE Transactions on Information Theory*, Vol. 57, No. 8, p. 5524–5535, 2011.

- ◇ J. Katz, J. S. Shin, A. Smith. Parallel and Concurrent Security of the HB and HB+ Protocols. *Journal of Cryptology*, Vol. 23, No. 3, p. 402–421, 2010.
- ◇ S. Raskhodnikova, D. Ron, A. Shpilka and A. Smith. Strong Lower Bounds for Approximating Distribution Support Size and the Distinct Elements Problem. *SIAM Journal on Computing*, Vol. 39, No. 3, pp. 813–842, 2009.
- ◇ M. Naor, G. Segev and A. Smith. Tight Bounds for Unconditional Authentication Protocols in the Manual Channel and Shared Key Models. *IEEE Transactions on Information Theory*, Vol. 54, No. 6, pp. 2408–2425, 2008.
- ◇ Y. Dodis, R. Ostrovsky, L. Reyzin and A. Smith. Fuzzy Extractors: How to Generate Strong Keys from Biometrics and Other Noisy Data. *SIAM Journal on Computing*, Vol. 38, No. 1, 2008.

PUBLICATIONS IN REFEREED CONFERENCES (Note: By default, authors are listed in **alphabetical** order. Papers where the author order is based on contribution are marked with *.)

- ◇ R. Rogers, A. Roth, A. Smith, N. Srebro, O. Thakkar, B. E. Woodworth. Guaranteed Validity for Empirical Approaches to Adaptive Data Analysis. *AISTATS 2020*.
- ◇ C. Canonne, G. Kamath, A. McMillan, A. Smith, J. Ullman. The structure of optimal private tests for simple hypotheses. *ACM Symposium on the Theory of Computation (STOC 2019)*, p. 310–321, June 2019.
- ◇ Albert Cheu, Adam D. Smith, Jonathan Ullman, David Zeber, Maxim Zhilyaev. Distributed Differential Privacy via Shuffling. In *EUROCRYPT (1) 2019*, p. 375–403.
- ◇ R. Canetti, A. Cohen, N. Dikkala, G. Ramnarayan, S. Scheffler, A. Smith. From Soft Classifiers to Hard Decisions: How fair can we be? In *ACM Fairness, Accountability and Transparency (FAT*) 2019*, p. 309–318.
- ◇ A. Cheu, A. Smith, J. Ullman, D. Zeber, M. Zhilyaev. Distributed Differential Privacy via Shuffling. *EUROCRYPT 2019 (1)*, 375–403, April 2019.
- ◇ * B. E. Woodworth, J. Wang, A. Smith, B. McMahan, N. Srebro. Graph Oracle Models, Lower Bounds, and Gaps for Parallel Stochastic Optimization. *NeurIPS 2018*, 8505–8515, December 2018. (Spotlight presentation.)
- ◇ J. Ullman, A. Smith, K. Nissim, U. Stemmer, T. Steinke. The Limits of Post-Selection Generalization. *NeurIPS 2018*, 6402–6411, December 2018.
- ◇ C. Borgs, J. Chayes, A. Smith, I. Zadik. Revealing network structure, confidentially: Improved Rates for Node-private Graphon Estimation. In *Foundations of Computer Science (FOCS)*, October 2018.
- ◇ A. Smith, A. Thakurta, J. Uphadhyay. Is Interaction Necessary for Distributed Private Learning? In *IEEE Symposium on Security and Privacy*, May 2017.
- ◇ S. Raskhodnikova, A. Smith. High-dimensional Lipschitz Extensions and Node-Private Degree Distributions. In *Foundations of Computer Science (FOCS)*, October 2016.
- ◇ R. Rogers, A. Roth, A. Smith, O. Thakkar. Max-Information, Differential Privacy, and Post-Selection Hypothesis Testing. In *Foundations of Computer Science (FOCS)*, October 2016.
- ◇ B. Fuller, L. Reyzin, A. Smith. When are Fuzzy Extractors Possible? In *ASIACRYPT*, December 2016.
- ◇ R. Bassily, K. Nissim, A. Smith, T. Steinke, U. Stemmer, J. Ullman. Algorithmic Stability for Adaptive Data Analysis. In *48th Annual ACM Symposium on the Theory of Computing (STOC)*, June 2016.
- ◇ R. Canetti, B. Fuller, O. Paneth, L. Reyzin, A. Smith. Reusable Fuzzy Extractors via Digital Lockers. In *Advances in Cryptology—EUROCRYPT 2016*, May 2016.

- ◇ C. Borgs, J. Chayes, A. Smith. Private Graphon Estimation in Sparse Graphs. In *Neural Information Processing Systems (NeurIPS)*, December 2015.
- ◇ C. Dwork, A. Smith, T. Steinke, J. Ullman, S. Vadhan. Robust Traceability From Trace Amounts. In *Foundations of Computer Science (FOCS)*, October 2015.
- ◇ R. Bassily, A. Smith. Local, Private, Efficient Protocols for Succinct Histograms. In *47th Annual ACM Symposium on the Theory of Computing (STOC)*, June 2015.
- ◇ A. Smith, Y. Zhang. On the Regularity of Lossy RSA: Improved Bounds and Applications to Padding-Based Encryption. In *Theory of Cryptography Conference (TCC)*, March 2015.
- ◇ A. Blum, J. Morgenstern, A. Sharma, A. Smith. Privacy-Preserving Public Information for Sequential Games. In *Innovations in Theoretical Computer Science (ITCS)*, January 2015.
- ◇ R. Bassily, A. Smith, A. Thakurta. Differentially Private Empirical Risk Minimization: Efficient Algorithms and Tight Error Bounds. In *Foundations of Computer Science (FOCS)*, October 2014.
- ◇ R. Bassily, A. Smith. Causal Erasure Channels. In *Symposium on Discrete Algorithms (SODA)*, January 2014.
- ◇ R. Bassily, A. Groce, J. Katz, A. Smith. Coupled-Worlds Privacy: Exploiting Adversarial Uncertainty in Statistical Data Privacy. In *Foundations of Computer Science (FOCS)*, October 2013.
- ◇ A. Smith, A. Thakurta. Differentially Private Feature Selection via Stability Arguments, and the Robustness of the Lasso. In *Computational Learning Theory (COLT)*, June 2013.
- ◇ M. Lewko, A. O’Neill, A. Smith. Regularity of Lossy RSA and Applications. In *Advances in Cryptology — EUROCRYPT 2013*, May 2013.
- ◇ S. P. Kasiviswanathan, K. Nissim, S. Raskhodnikova, and A. Smith. Analyzing Graphs with Node Differential Privacy. In *Theory of Cryptography (TCC)*, p. 457-476, 2013.
- ◇ S. P. Kasiviswanathan, M. Rudelson, A. Smith. The Power of Linear Reconstruction Attacks. In *24th Annual ACM Symposium on Discrete Algorithms (SODA)*, January 2013.
- ◇ D. Kifer, A. Smith and A. Thakurta. Differentially Private Convex Optimization for Empirical Risk Minimization with Applications to High-dimensional Regression. In *25th Conference on Learning Theory (COLT 2012)*, June 2012.
- ◇ S. Hallgren, A. Smith, F. Song. Classical Cryptographic Protocols in a Quantum World. In *Advances in Cryptology—CRYPTO 2011*, p. 411–428, August 2011.
- ◇ V. Karwa, S. Raskhodnikova, A. Smith, G. Yaroslavtsev. Private Analysis of Graph Structure. In *37th International Conference on Very Large Databases (PVLDB)*, Vol. 4, No. 11, p. 1146–1157, 2011.
- ◇ A. Smith. Privacy-preserving Statistical Estimation with Optimal Convergence Rates. In *43rd Annual ACM Symposium on the Theory of Computing (STOC)*, 813–822, June 2011.
- ◇ V. Guruswami, A. Smith. Codes for Computationally Simple Channels: Explicit Constructions with Optimal Rate. In *51st Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, p. 723–732, October 2010.
- ◇ E. Kiltz, A. O’Neill, A. Smith. Instantiability of RSA-OAEP under Chosen-Plaintext Attack. In *Advances in Cryptology—CRYPTO 2010*, p. 295–313, August 2010.
- ◇ R. Bhaskar, S. Laxman, A. Smith, A. G. Thakurta. Discovering Frequent Patterns in Sensitive Data. In *16th ACM SIGKDD Symp. Knowledge Discovery and Data Mining (KDD)*, p. 503–512, July 2010.
- ◇ S. Kasiviswanathan, M. Rudelson, A. Smith, J. Ullman. The Price of Privately Releasing Contingency Tables and the Spectra of Random Matrices with Correlated Rows. In *42nd Annual ACM Symposium on the Theory of Computing (STOC)*, p. 775–784, June 2010.

- ◇ Y. Dodis, J. Katz, A. Smith and S. Walfish. Composability and On-Line Deniability of Authentication. In *Theory of Cryptography Conference (TCC)*, p. 146–162, March 2009.
- ◇ S. P. Kasiviswanathan, H. Lee, K. Nissim, S. Raskhodnikova and A. Smith. What Can We Learn Privately? In *48th Annual Symposium on Foundations of Computer Science (FOCS)*, p. 531–540, October 2008.
- ◇ I. Damgård, Y. Ishai, M. Krøigaard, J. B. Nielsen, A. Smith: Scalable Multiparty Computation with Nearly Optimal Work and Resilience. In *Advances in Cryptology — CRYPTO 2008*, p. 241–261, August 2008.
- ◇ S. R. Ganta, S. P. Kasiviswanathan and A. Smith. Composition Attacks and Auxiliary Information in Data Privacy. In *14th ACM International Conference on Knowledge Discovery and Data Mining (KDD)*, p. 531–540, August 2008.
- ◇ V. Goyal, P. Mohassel and A. Smith. Efficient Two- and Multi-party Computation Protocols for Covert Adversaries. In *Advances in Cryptology — EUROCRYPT 2008*, p. 289–306, April 2008.
- ◇ * W. Enck, K. Butler, T. Richardson, P. McDaniel and A. Smith. Defending Against Attacks on Main Memory Persistence. In *24th Annual Computer Security Applications Conference (ACSAC)*, p. 65–74, December 2008.
- ◇ S. Raskhodnikova, D. Ron, A. Shpilka and A. Smith. Strong Lower Bounds for Approximating Distribution Support Size and the Distinct Elements Problem. In *47th Annual Symposium on Foundations of Computer Science (FOCS)*, p. 559–569, October 2007.
- ◇ S. Raskhodnikova, D. Ron, R. Rubinfeld and A. Smith. Sublinear Algorithms for Approximating String Compressibility. In *11th International Workshop on Randomization and Computation (RANDOM)*, August 2007.
- ◇ K. Nissim, S. Raskhodnikova and A. Smith. Smooth Sensitivity and Sampling in Private Data Analysis. In *39th Annual ACM Symposium on Theory of Computing (STOC)*, June 2007, pp. 75–84.
- ◇ A. Smith. Scrambling Errors Using Few Random Bits: Optimal Information Reconciliation and Better Private Codes. In *18th Annual ACM Symposium on Discrete Algorithms (SODA)*, January 2007, pp. 472–479.
- ◇ M. Ben-Or, C. Crépeau, D. Gottesman, A. Hassidim, and A. Smith. Secure Multiparty Quantum Computation with (Only) a Strict Honest Majority. In *47th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 2006, pp. 249–260.
- ◇ M. Naor, G. Segev and A. Smith. Tight Bounds for Unconditional Authentication Protocols in the Manual Channel and Shared Key Models. In *Advances in Cryptology — CRYPTO 2006*, August 2006, Springer LNCS 4117, pp. 214–231.
- ◇ Y. Dodis, J. Katz, L. Reyzin and A. Smith. Robust Fuzzy Extractors and Authenticated Key Agreement from Close Secrets. In *Advances in Cryptology — CRYPTO 2006*, August 2006, Springer LNCS 4117, pp. 232–250.
- ◇ C. Dwork, F. McSherry, K. Nissim and A. Smith. Calibrating Noise to Sensitivity in Private Data Analysis. In *Theory of Cryptography 2006*, March 2006, Springer LNCS 3876, pp. 265–284.
- ◇ X. Boyen, Y. Dodis, J. Katz, R. Ostrovsky and A. Smith. Secure Remote Authentication Using Biometrics. In *Advances in Cryptology — EUROCRYPT 2005*, May 2005, Springer LNCS 3494, pp. 147–163.
- ◇ S. Chawla, C. Dwork, F. McSherry, A. Smith and H. Wee. Toward Privacy in Public Databases. In *Theory of Cryptography Conference (TCC)*, Cambridge, MA, February 2005, Springer LNCS 3378, pp. 363–385.
- ◇ C. Crépeau, D. Gottesman and A. Smith. Approximate Quantum Error-Correcting Codes and Secret-Sharing Schemes. In *Advances in Cryptology — EUROCRYPT 2005*, Springer LNCS 3494, May 2005, pp. 285–301.

- ◇ Y. Dodis and A. Smith. Correcting Errors Without Leaking Partial Information. In *37th Annual ACM Symposium on Theory of Computing (STOC)*, May 2005, pp. 654–663.
- ◇ Y. Dodis and A. Smith. Entropic Security and the Encryption of High Entropy Messages. In *Theory of Cryptography 2005*, Cambridge, MA, February 2005, Springer LNCS 3378, pp. 556–577.
- ◇ A. Ambainis and A. Smith. Small Pseudo-Random Families of Matrices: Derandomizing Approximate Quantum Encryption. In *8th International Workshop on Randomization and Computation (RANDOM)*, August 2004, Springer LNCS 3122, pp. 249–260.
- ◇ Y. Dodis, L. Reyzin and A. Smith. Fuzzy Extractors: How to Generate Strong Keys from Biometrics and Other Noisy Data. In *Advances in Cryptology — EUROCRYPT 2004*, May 2004, Springer LNCS 3027, pp. 523–540. Updated version available as IACR Eprint 2003/235.
- ◇ C. Dwork, R. Shaltiel, A. Smith and L. Trevisan. List-Decoding of Linear Functions and Analysis of a Two-Round Zero-Knowledge Argument. In *Theory of Cryptography 2004*, February 2004, Springer LNCS 2951, pp. 101–120.
- ◇ R. Ostrovsky, C. Rackoff and A. Smith. Efficient Consistency Proofs for General Queries on a Committed Database. In *31st International Colloquium on Automata, Languages and Complexity (ICALP)*, Turku, Finland, July 2004, Springer LNCS 3142, pp. 1041–1053.
- ◇ J. Katz, R. Ostrovsky, and A. Smith. Round Efficiency of Multi-party Computation with a Dishonest Majority. In *Advances in Cryptology — EUROCRYPT 2003*, May 2003, Springer LNCS 2656, pp. 578–595.
- ◇ C. Peikert, A. Shelat and A. Smith. Lower Bounds for Collusion-Secure Fingerprinting. In *14th Annual ACM Symposium on Discrete Algorithms (SODA)*, January 2003, pp. 472–479.
- ◇ A. Ambainis, A. Smith and K. Yang. Extracting Quantum Entanglement. In *17th Annual IEEE Conference on Computational Complexity (CCC)*, May 2002, pp. 103–112.
- ◇ H. Barnum, C. Crépeau, D. Gottesman, A. Smith and A. Tapp. Authentication of Quantum Messages. In *42nd Annual Symposium on Foundations of Computer Science (FOCS)*, November 2002, pp. 449–458.
- ◇ M. Fitzi, D. Gottesman, M. Hirt, T. Holenstein and A. Smith. Detectable Byzantine Agreement Secure Against Faulty Majorities. In *21st Annual ACM Symposium on Principles of Distributed Computing (PODC)*, July 2002, pp. 118–126.
- ◇ C. Crépeau, D. Gottesman and A. Smith. Secure Multi-party Quantum Computation. In *34th Annual ACM Symposium on Theory of Computing (STOC)*, May 2002, pp. 643–652.
- ◇ M. Liskov, A. Lysyanskaya, S. Micali, L. Reyzin and A. Smith. Mutually Independent Commitments. In *Advances in Cryptology — ASIACRYPT 2001*, December 2001, Springer LNCS 2248, pp. 385–401.
- ◇ G. Di Crescenzo, J. Katz, R. Ostrovsky and A. Smith. Efficient and Non-interactive Non-malleable Commitment. In *Advances in Cryptology — EUROCRYPT 2001*, May 2001, Springer LNCS 2045, pp. 40–59. Also available as IACR Eprint 2001/032.
- ◇ Y. Dodis, A. Sahai and A. Smith. On Perfect and Adaptive Security in Exposure-Resilient Cryptography. In *Advances in Cryptology — EUROCRYPT 2001*, May 2001, Springer LNCS 2045, pp. 301–324.

NON-REFEREED INVITED PAPERS

- ◇ A. Smith. What Can Cryptography Do for Coding Theory? In *International Conference on Cryptography and Network Security (CANS)*, December 2009.
- ◇ A. Smith. Integrating Differential Privacy with Statistical Theory. In *International Conference on Information-theoretic Security (ICITS)*, December 2009.

BOOK CHAPTERS

- ◇ S. Raskhodnikova, A. Smith. Private Analysis of Graph Data. In M.-Y. Kao, *Encyclopedia of Algorithms*, 2nd edition, Springer, 2015, 6 pages.
- ◇ Y. Dodis, L. Reyzin and A. Smith. Fuzzy Extractors. In P. Tuyls, editor, *Security with Noisy Data*, Springer-Verlag, 2008.

TALKS AND PRESENTATIONS

Invited Plenary Conference Presentations:

- ◇ *12th China International Conference on Information Security and Cryptology (INSCRYPT 2016)*, Beijing, China, November 4–6, 2016.
- ◇ *Cryptology and Network Security Conference 2009*, Kanazawa, Japan, December 2009.
- ◇ *International Conference on Information-Theoretic Security 2009*, Shizuoka, Japan, December 2009.

Invited Tutorials:

- ◇ *North American School on Information Theory*, Boston, MA, July 2019.
- ◇ *Differential Privacy and Multiarty Computation Workshop*, Boston University, June 2018
- ◇ *Bar-Ilan Winter School on Cryptography*, Ramat Gan, Israel, February 2017.
- ◇ *Park City Mathematics Institute*, Midway, UT, July 2016.
- ◇ *Isaac Newton Institute Workshop on Data Linkage and Anonymization*, July 2016.
- ◇ *DIMACS/Columbia Workshop on Cryptography and Big Data*, December 2015.
- ◇ *Advances in Cryptography — CRYPTO 2012*, Santa Barbara, CA, August 2012.
- ◇ *DIMACS Workshop on Data Privacy*, Rutgers University, February 2008.

Invited Seminar and Workshop Presentations:

- ◇ Joint Statistical Meetings, Philadelphia, PA, August 2020.
- ◇ Information Theory and Applications (ITA) Workshop, San Diego, CA, February 2020
- ◇ Distinguished Lecture Series, George Mason University, Fairfax, VA, October 2019.
- ◇ Data Cooperatives Workshop, Georgetown University, Washington, DC, October 2019.
- ◇ Theoretical Computer Science Seminar, California Institute of Technology, Pasadena, CA, May 2019.
- ◇ Distinguished Lecture Series, Reed College, Portland, OR, April 2019.
- ◇ Simons Institute Workshop on Privacy and the Science of Data Analysis, Berkeley, CA, March 2019.
- ◇ Census Collaborative Agreement Workshop, Harvard University, October 2018
- ◇ University of Pennsylvania Warren Center Seminar, November 2018
- ◇ Differential Privacy Deployed Workshop, Harvard University, September 2018.
- ◇ Simons Institute Workshop on Adaptive Data Analysis, Berkeley, CA, July 2018.
- ◇ University of Illinois at Urbana-Champaign Computer Science Colloquium, May 2018.
- ◇ Banff Center Workshop on the Mathematical Foundations of Data Privacy, May 2018.
- ◇ Research on Tap, Boston University, November 2017.
- ◇ Simons Institute Workshop on Data Privacy, from Foundations to Applications, May 2017.

- ◇ *Privacy, Information, and Generalization in Adaptive Data Analysis*
 - University of Maryland Computer Science Colloquium, April 2017
 - McGill University Computer Science Colloquium, March 2017
 - Boston University Computer Science colloquium, February 2017
 - University of Michigan Computer Science colloquium, November 2016.
 - International Conference on Information Security and Cryptology (INSCRYPT), November 2016.
 - Johns Hopkins University Theoretical Computer Science Seminar, October 2016.
 - Google Workshop on Mobile Privacy and Security, Seattle, WA, September 2016.
- ◇ *Discussion—Recent advances in foundations of data privacy*
 - Joint Statistical Meetings, Chicago, IL,, August 1, 2016.
- ◇ *Algorithmic Stability in Adaptive Data Analysis*
 - Penn State Stochastic Modeling and Computing Seminar, February 2016
 - Penn State Probability Seminar, September 2015
- ◇ *Robust Traceability from Trace Amounts*
 - Dagstuhl Workshop on Genomic Privacy, Wadern, Germany, October 2015
 - Penn State Genomics Seminar, September 2015
- ◇ *Google and academic research: directions for interaction*
 - Google Security Summit, Mountain View, CA, March 17, 2015
- ◇ *Fourier’s Magnet: Better Algorithms for Finding “Needles in a Haystack”*
 - Microsoft Research, Bangalore, India, January 29, 2015
- ◇ *Private Analysis of Graphs*
 - New York Area Theory Day, Columbia University, NY, April 25, 2014
 - Indian Institute of Technology, Delhi, India, February 2014
 - Tata Institute for Fundamental Research, Mumbai, India, February 2014
- ◇ *Coding, Causality, Complexity, Cryptography*
 - Allerton Conference on Communications and Control, Monticello, IL, October 2013
- ◇ *Rigorous Foundations for Privacy in Statistical Databases*
 - Microsoft Research Colloquium, June 22, 2016
 - University of Maryland Cybersecurity Seminar, May 18, 2016
 - Institute for Statistical Sciences, Kolkata, India, January 27, 2015
 - Rutgers University, New Brunswick, NJ, April 29, 2014
 - Boston University, Boston, MA, November 15, 2013
 - Global Signal and Information Processing Conference, Austin, TX, October 2013
 - Rao Prize Workshop on Statistics, Pennsylvania State University, October 2013
 - University of Texas Computer Science Colloquium, Austin, TX, October 2012
 - Center for Applied Cybersecurity Research Seminar, Indiana University, Bloomington, IN, April 2012
 - Brown University Computer Science Colloquium, Providence, RI, February 2012
 - Northeastern University Computer Science Colloquium, Boston, MA, February 2012
- ◇ *Integrating Differential Privacy with Statistical Theory*
 - Theoretical Computer Science Seminar, University of Pennsylvania, Philadelphia, PA, September 2011.
 - Computer Science Colloquium, Cornell University, Ithaca, NY, September 2010.
 - Department of Statistics Colloquium, Carnegie-Mellon University, Pittsburgh, PA, March 2010.
 - Computer Science Colloquium, University of Massachusetts at Amherst, March 2010.
 - Eastern Great Lakes Workshop on Theoretical Computer Science, Buffalo, NY, October 2009.

- ◇ *Codes for Computationally Simple Channels*
 - *Information Theory Workshop (ITW)*, Dublin, Ireland, September 2010.
- ◇ *Lower Bounds on Data Privacy*
 - Algorithms & Combinatorics Seminar, Carnegie Mellon University, September 2009.
- ◇ *Pinning Down Privacy*
 - Steklov Institute, Saint-Petersburg, Russia, June 2009. - DIMACS Workshop on Internet Privacy: Facilitating Seamless Data Movement with Appropriate Controls, Rutgers University, September 2008.
 - Google Research, New York, NY, March 2008.
 - Department of Statistics Colloquium, Penn State, January 2008.
 - Workshop on Data Privacy, Weizmann Institute of Science, Israel, July 2006.
- ◇ *What Can We Learn Privately?*
 - MIT Cryptography and Information Security Seminar, February 2008.
 - Microsoft-CMU Mindswap on Data Privacy, Pittsburgh, PA, October 2007.
- ◇ *Calibrating Noise to Sensitivity in Private Data Analysis*
 - C.S.-Statistics Workshop on Privacy and Confidentiality, Bertinoro, Italy, July 2005.
 - Tel Aviv University, Israel, January 2006.
 - Simon Fraser University, Canada, February 2006.
 - Federal Institute of Technology (ETH), Zürich, Switzerland, March 2006.
 - Harvard University, March 2006.
 - Massachusetts Institute of Technology, March 2006.
 - California Institute of Technology, December 2006.
 - Penn State University, January 2007.
 - Carnegie Mellon University, April 2007.
- ◇ *Cryptography with Quantum Data*
 - IPAM Workshop on Foundations of Zero-Knowledge and Multi-party Computation, UCLA, November 2006.
 - Perimeter Institute for Theoretical Physics, Canada, June 2007.
- ◇ *Interaction and Local Storage in Private Data Analysis*
 - IPAM Workshop on Locally Decodable Codes and Privacy-Preserving Data Mining, UCLA, October 2006.
- ◇ *Cryptography with Noisy Secrets*
 - Microsoft Research SVC, Mountain View, CA, May 2005.
 - University of British Columbia, Canada, February 2006.
 - Penn State University, February 2006.
 - Bell Labs (Lucent Technologies), NJ, March 2006.
 - University of Waterloo, Canada, March 2006.
 - University of Michigan, Ann Arbor, March 2006.
 - SRI (Stanford Research Institute) International, Menlo Park, CA, March 2006.
- ◇ *Evolving Notions of Security for Quantum Protocols* (tutorial presentation)
 - Classical and Quantum Information Security Workshop, Pasadena, CA, December 2005.
- ◇ *Correcting Errors without Leaking Partial Information*
 - Haifa University, Haifa, Israel, March 2005.
 - Technion (Israel Institute of Technology), Haifa, Israel, March 2005.
 - Weizmann Institute of Science, Rehovot, Israel, April 2005.
 - Princeton University, May 2005.

- ◇ *Toward Privacy in Public Databases*
 - Workshop on Secure Multiparty Protocols, Amsterdam, The Netherlands, October 2004.
 - Ben-Gurion University, Israel, November 2004.
 - Tel-Aviv University, Israel, November 2004.
 - Hebrew University of Jerusalem, Israel, January 2005.
 - Boston University, February 2005.
 - New York University, February 2005.
- ◇ *Fuzzy Extractors: Generating Strong Keys from Biometric Data*
 - University of Waterloo, Canada, February 2004.
 - Toyota Technological Institute, Chicago, IL, March 2004.
 - Intel Research, Berkeley, CA, March 2004.
 - University of Victoria, Canada, March 2004.
 - DIMACS Workshop on Data Privacy, March 2004.
 - Tel-Aviv University, Israel, April 2004.
 - University of Montreal, Canada, May 2004.
 - University of Toronto, Canada, May 2004.
 - Bar-Ilan University, Israel, March 2005.
- ◇ *Secrecy of High-Entropy Sources — Protecting All Partial Information*
 - MIT Cryptography and Information Security Seminar, September 2003.
 - McGill University, October 2003.
 - Weizmann Institute of Science, Israel, November 2003.
 - Hebrew University of Jerusalem, Israel, November 2003.
 - Tel-Aviv University, Israel, November 2003.
- ◇ *Round Efficiency of Multi-party Computation with a Dishonest Majority*
 - Massachusetts Institute of Technology, December 2002.
- ◇ *List-Decoding and Two-Round Zero-Knowledge*
 - Microsoft Research SVC, Mountain View, CA, August 2002.
- ◇ *Detectable Byzantine Agreement Secure Against a Faulty Majority*
 - Microsoft Research SVC, Mountain View, CA, July 2002.
- ◇ *Secure Multi-party Quantum Computation*,
 - *Workshop on Quantum Cryptography*, NEC Research, Princeton, NJ, December 1999.
 - *Quantum Information Processing*, Yorktown Heights, NY, January 2002.
 - *Barbados Workshop on Quantum Cryptography*, Barbados, May 2002.
- ◇ *Efficient and Non-Interactive Non-Malleable Commitment*
 - McGill University, December 2001.
- ◇ *Range Queries on a Committed Database*
 - Telcordia Technologies, NJ, August 2000.
- ◇ *On Perfect and Adaptive Security in Exposure-Resilient Cryptography*.
 - Telcordia Technologies, NJ, July 2000.
- ◇ *Quantum and Classical Secret-Sharing*
 - Massachusetts Institute of Technology, December 1999.

Conference Presentations:

- ◇ *Privacy-preserving Statistical Estimators with Optimal Convergence Rates*
 - *STOC 2011*, San Jose, CA, 2011.

- ◇ *Codes for Computationally Simple Channels*
- *FOCS 2010*, Las Vegas, NV, 2010.
- ◇ *Integrating Differential Privacy with Statistical Theory*
- *American Statistical Association Joint Statistical Meetings*, Washington, DC, 2009.
- ◇ *Strong Lower Bounds for Distribution Support Size and String Compressibility*
- *IEEE Symposium on the Foundations of Computer Science (FOCS) 2007*, Providence, RI, October 2007.
- ◇ *Scrambling Adversarial Errors Using Few Random Bits*
- *ACM-SIAM Symposium on Discrete Algorithms*, New Orleans, LA, January 2007.
- ◇ *Calibrating Noise to Sensitivity in Private Data Analysis*
- *Theory of Cryptography Conference (TCC) 2006*, New York, NY, March 2006.
- ◇ *Correcting Errors without Leaking Partial Information*
- *ACM Symposium on the Theory of Computing (STOC)*, Baltimore, MD, May 2005.
- ◇ *Entropic Security and the Encryption of High Entropy Messages*
- *Theory of Cryptography Conference (TCC) 2005*, Cambridge, MA, February 2005.
- ◇ *Small Pseudo-Random Families of Matrices and Approximate Quantum Encryption*
- *8th International Workshop on Randomization and Computation (RANDOM)*, August 2004.
- ◇ *List-Decoding of Linear Codes and Two-Round Zero-Knowledge Arguments*
- *Theory of Cryptography Conference (TCC) 2004*, Cambridge, MA, February 2004.
- ◇ *Round Efficiency of Multi-party Computation with a Dishonest Majority*
- *Advances in Cryptology — Eurocrypt 2003*, May 2003.
- ◇ *Detectable Byzantine Agreement Secure Against a Faulty Majority*
- *ACM Symposium on the Principles of Distributed Computing (PODC)*, July 2002.
- ◇ *Secure Multi-party Quantum Computation*,
- *ACM Symposium on the Theory of Computing (STOC)*, May 2002.
- ◇ *On Perfect and Adaptive Security in Exposure-Resilient Cryptography*
- *Advances in Cryptology — Eurocrypt 2001*, May 2001.