

# Vinod Vaikuntanathan

## CURRICULUM VITAE

Date of Revision: July 12, 2024

### A BIOGRAPHICAL INFORMATION

#### A.1 Personal Information

**Address:** 32 Vassar St G-696, Cambridge, MA 02139, USA.

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**Phone (Office):** +1 617 324 8444

**Homepage:** <http://people.csail.mit.edu/vinodv>

**Other Information:** U.S. Citizen.

#### A.2 Degrees

##### **Ph.D. in Computer Science (with a minor in Mathematics), 2009.**

Aug 2005–Feb 2009      *Massachusetts Institute of Technology*, Cambridge, MA, USA.

Thesis Advisor: Shafi Goldwasser

Thesis: Randomized Algorithms for Reliable Broadcast.

##### **S.M. in Computer Science, 2005.**

Sep 2003–Aug 2005      *Massachusetts Institute of Technology*, Cambridge, MA, USA.

Thesis Advisor: Shafi Goldwasser

Thesis: Distributed Computing with Imperfect Randomness.

##### **B.Tech. in Computer Science (with a minor in Physics), 2003.**

Jul 1999–Jun 2003      *Indian Institute of Technology*, Madras, India.

Thesis Advisor: Pandurangan Chandrasekaran

Thesis: On a Computational Notion of Secret Sharing.

#### A.3 Employment

##### **Ford Professor of Engineering**

July 2024–present      *Massachusetts Institute of Technology*, Cambridge, MA, USA.

##### **Full Professor of EECS**

Feb 2021–present      *Massachusetts Institute of Technology*, Cambridge, MA, USA.

##### **Associate Professor of EECS (with tenure)**

July 2018–Jan 2021      *Massachusetts Institute of Technology*, Cambridge, MA, USA.

**Associate Professor of EECS (without tenure)**

July 2015–June 2018      *Massachusetts Institute of Technology*, Cambridge, MA, USA.

**Steven and Renée Finn Career Development Assistant Professor of EECS**

Sept 2013–June 2015      *Massachusetts Institute of Technology*, Cambridge, MA, USA.

**Assistant Professor of Computer Science**

July 2011–Nov 2014      *University of Toronto*, Toronto, ON, Canada.

**Researcher**

July 2010–June 2011      *Microsoft Research*, Redmond, WA, USA.

**Josef Raviv Postdoctoral Fellow**

Sept 2008–June 2010      *IBM Research*, Hawthorne, NY, USA.

## A.4 Consulting Record

**Co-Founder and Chief Cryptographer**

Jan 2017–present      1 day/week      *Duality Technologies Inc.*, Cambridge, MA, USA.

**Consultant**

Dec 2016–Nov 2017      1 day/month      *Algorand*, Cambridge, MA, USA.

## A.5 Honors

- **CRYPTO 2024 Best Paper Award**, 2024.
- **Macvicar Faculty Fellow**, 2024.
- **Distinguished Alumnus Award**, IIT Madras, 2024.
- **Simons Investigator Award**, 2023.
- **CRYPTO 2023 Test of Time Award**, 2023.  
*for the paper “A Framework for Efficient and Composable Oblivious Transfer”.*
- **Gödel Prize**, 2022.
- **Blavatnik National Award for Young Scientists (Finalist)**, 2022.
- **FOCS 2021 Test of Time Award**, 2022.  
*for the paper “Efficient Fully Homomorphic Encryption from Standard LWE”.*
- **Thornton Family Faculty Research Innovation Fellow**, 2022.
- **Harold E. Edgerton Faculty Achievement Award**, MIT, 2018.
- **DARPA Young Faculty Award**, 2018.

- **Ruth and Joel Spira Award for Excellence in Teaching**, MIT, 2016.
- **Amnon Pazy Memorial Award**, US-Israel Binational Science Foundation, 2015.
- **NSF CAREER Award**, 2014.
- **Microsoft Faculty Fellowship**, 2014.
- **Alfred P. Sloan Research Fellowship**, 2013.
- **Connaught New Researcher Award**, University of Toronto, 2013.
- **Dean's Excellence Award**, University of Toronto, 2012.
- **George M. Sprowls Award** for the best Ph.D. thesis in Computer Science, MIT, 2009.  
(Nominated by the MIT EECS department for the ACM Doctoral Dissertation Competition)
- **IBM Joseph Raviv Postdoctoral Fellowship**, 2008–2010.
- **MIT Akamai Presidential Fellowship**, 2003–2004.
- **Papers Invited to Special Issues**
  1. Zvika Brakerski, Rotem Tsabary, Vinod Vaikuntanathan and Hoeteck Wee. *Private Constrained PRFs (and More) from Lattices*. Invited to the [Journal of Cryptology](#), special issue on selected papers from the Theory of Cryptography (TCC) 2017 conference.
  2. Sergey Gorbunov, Vinod Vaikuntanathan and Hoeteck Wee. *Predicate Encryption for Circuits from Standard Lattices*. Invited to the [Journal of Cryptology](#), special issue on selected papers from the CRYPTO 2015 conference.
  3. Ran Canetti, Justin Holmgren, Abhishek Jain and Vinod Vaikuntanathan. *Succinct Garbling and Indistinguishability Obfuscation for RAM Programs*. Invited to the [SIAM Journal of Computing](#), special issue on selected papers from the ACM Symposium on the Theory of Computing (STOC) 2015.
  4. Sergey Gorbunov, Vinod Vaikuntanathan and Hoeteck Wee. *Attribute-based Encryption for Circuits*. Invited to the [SIAM Journal of Computing](#), special issue on selected papers from the ACM Symposium on the Theory of Computing (STOC) 2013.
  5. Shafi Goldwasser, Yael Kalai, Raluca Ada Popa, Vinod Vaikuntanathan and Nikolai Zeldovich. *Succinct Functional Encryption and Applications: Reusable Garbled Circuits and Beyond*, Invited to the [SIAM Journal of Computing](#), special issue on selected papers from the ACM Symposium on the Theory of Computing (STOC) 2013.
  6. Melissa Chase, Seny Kamara, Andrew Putnam, Timothy Sherwood, Dan Shumow and Vinod Vaikuntanathan. *An Inspection-Resistant On-Chip Memory Architecture*, Invited to the [IEEE Micro Top Picks 2013](#) special issue on selected papers from Computer Architecture conferences. First appeared in the *Proceedings of the International Conference on Computer Architecture (ISCA)*, 2012.
  7. Zvika Brakerski, Craig Gentry and Vinod Vaikuntanathan. *Leveled Fully Homomorphic Encryption without Bootstrapping*. Invited to the [ACM Transactions on Computing Theory](#), special issue on selected papers from the Innovations in Theoretical Computer Science (ITCS) conference 2012.

8. Zvika Brakerski and Vinod Vaikuntanathan. *Efficient Fully Homomorphic Encryption from (Standard) Learning with Errors*. Invited to the [SIAM Journal of Computing](#), special issue on selected papers from the IEEE Foundations of Computer Science Conference (FOCS) 2011.
9. Jonathan Katz and Vinod Vaikuntanathan. *Round-Optimal Password-Based Authenticated Key Exchange*. Invited to the [Journal of Cryptology](#), special issue on selected papers from the Theory of Cryptography Conference (TCC) 2011.
10. Marten van Dijk, Craig Gentry, Shai Halevi and Vinod Vaikuntanathan. *Fully Homomorphic Encryption from the Integers*. Invited to the [Journal of Cryptology](#) for the top 3 papers from Eurocrypt 2010.
11. Craig Gentry, Chris Peikert and Vinod Vaikuntanathan, *Trapdoors for Hard Lattices and New Cryptographic Constructions*. Invited to the [Theory of Computing Journal](#), special issue on selected papers from the ACM Symposium on the Theory of Computing (STOC) 2008.
12. Susan Hohenberger, Guy Rothblum, Abhi Shelat and Vinod Vaikuntanathan, *Securely Obfuscating Re-Encryption*. Invited to the [Journal of Cryptology](#), special issue on selected papers from the Theory of Cryptography Conference (TCC) 2007.
13. S. Goldwasser, M. Sudan and V. Vaikuntanathan, *Distributed Computing with Imperfect Randomness*. Invited to the [Distributed Computing Journal](#), special issue on selected papers from the International Conference on Distributed Computing (DISC) 2005.

## A.6 Research Interests

Theoretical and Applied Cryptography, Quantum Computing, Complexity Theory.

# B SCHOLARLY AND PROFESSIONAL WORK

## B.1 Refereed Publications

### B.1.1 Conference Publications

1. Seyoon Ragavan and Vinod Vaikuntanathan: Space-Efficient and Noise-Robust Quantum Factoring. 44<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2024.
2. Surya Mathialagan, Spencer Peters and Vinod Vaikuntanathan: Adaptively Sound Zero-Knowledge SNARKs for UP. 44<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2024.
3. Aparna Gupte and Vinod Vaikuntanathan: How to Construct Quantum FHE, Generically. 44<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2024.
4. James Bartusek, Zvika Brakerski and Vinod Vaikuntanathan: Quantum State Obfuscation from Classical Oracles. Proceedings of the 56<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2024.

5. Zhengzhong Jin, Yael Kalai, Alex Lombardi and Vinod Vaikuntanathan: SNARG under LWE via Propositional Proofs. Proceedings of the 56<sup>th</sup> Annual ACM Symposium on Theory of Computing (STOC) 2024.
6. Daniele Micciancio and Vinod Vaikuntanathan: SoK: Learning With Errors, Circular Security, and Fully Homomorphic Encryption. 27<sup>th</sup> IACR International Conference on Practice and Theory in Public-Key Cryptography (PKC) 2024.
7. Prabhanjan Ananth, Alexander Poremba and Vinod Vaikuntanathan: Revocable Cryptography from Learning with Errors. 21<sup>st</sup> Theory of Cryptography Conference (TCC) 2023.
8. Tianren Liu, Angelos Pelecanos, Stefano Tessaro and Vinod Vaikuntanathan: Layout Graphs, Random Walks and the t-wise Independence of SPN Block Ciphers. 43<sup>rd</sup> Annual International Cryptology Conference (CRYPTO) 2023.
9. Benny Applebaum, Amos Beimel, Yuval Ishai, Eyal Kushilevitz, Tianren Liu and Vinod Vaikuntanathan: Succinct Computational Secret Sharing. Proceedings of the 55<sup>th</sup> Annual ACM Symposium on Theory of Computing (STOC) 2023.
10. Divesh Aggarwal, Huck Bennett, Zvika Brakerski, Alexander Golovnev, Rajendra Kumar, Zeyong Li, Spencer Peters, Noah Stephens-Davidowitz and Vinod Vaikuntanathan: Lattice Problems Beyond Polynomial Time. Proceedings of the 55<sup>th</sup> Annual ACM Symposium on Theory of Computing (STOC) 2023.
11. Yael Kalai, Alex Lombardi, Vinod Vaikuntanathan and Daniel Wichs: Boosting Batch Arguments and RAM Delegation. Proceedings of the 55<sup>th</sup> Annual ACM Symposium on Theory of Computing (STOC) 2023.
12. Yael Kalai, Alex Lombardi, Vinod Vaikuntanathan and Lisa Yang: Quantum Advantage from Any Non-Local Game. Proceedings of the 55<sup>th</sup> Annual ACM Symposium on Theory of Computing (STOC) 2023.
13. Yael Kalai, Alex Lombardi and Vinod Vaikuntanathan: SNARGs and PPAD Hardness from the Decisional Diffie-Hellman Assumption. 42<sup>nd</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques (EUROCRYPT) 2023.
14. Alexandra Henzinger, Matt Hong, Henry Corrigan-Gibbs, Sarah Meiklejohn and Vinod Vaikuntanathan: One Server for the Price of Two: Simple and Fast Single-Server Private Information Retrieval. 32<sup>nd</sup> Usenix Security Symposium 2023.
15. Rashmi Agrawal, Leo de Castro, Chiraag Juvekar, Anantha Chandrakasan, Vinod Vaikuntanathan and Ajay Joshi: MAD: Memory-Aware Design Techniques for Accelerating Fully Homomorphic Encryption. 56<sup>th</sup> IEEE/ACM International Symposium on Microarchitecture (MICRO) 2023.
16. Rashmi Agrawal, Leo de Castro, Guowei Yang, Chiraag Juvekar, Rabia Yazicigil, Anantha Chandrakasan, Vinod Vaikuntanathan and Ajay Joshi: FAB: An FPGA-based Accelerator for Bootstrappable Fully Homomorphic Encryption. IEEE International Symposium on High-Performance Computer Architecture (HPCA) 2023.

17. Vinod Vaikuntanathan, Hoeteck Wee and Daniel Wichs: Witness Encryption and Null-IO from Evasive LWE. 28<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security ([ASIACRYPT](#)) 2022.
18. Aparna Gupte and Neekon Vafa and Vinod Vaikuntanathan: Continuous LWE is as Hard as LWE & Applications to Learning Gaussian Mixtures. 63<sup>rd</sup> IEEE Annual Symposium on Foundations of Computer Science ([FOCS](#)) 2022.
19. Shafi Goldwasser and Michael P. Kim and Vinod Vaikuntanathan and Or Zamir: Planting Undetectable Backdoors in Machine Learning Models. 63<sup>rd</sup> IEEE Annual Symposium on Foundations of Computer Science ([FOCS](#)) 2022.
20. Lalita Devadas and Rishab Goyal and Yael Kalai and Vinod Vaikuntanathan: Rate-1 Non-Interactive Arguments for Batch-NP and Applications. 63<sup>rd</sup> IEEE Annual Symposium on Foundations of Computer Science ([FOCS](#)) 2022.
21. Rishab Goyal and Vinod Vaikuntanathan: Locally Verifiable Signature and Key Aggregation. 42<sup>nd</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2022.
22. James Bartusek, Yael Kalai, Alex Lombardi, Fermi Ma, Giulio Malavolta, Vinod Vaikuntanathan, Thomas Vidick and Lisa Yang: Succinct Classical Verification of Quantum Computation. 42<sup>nd</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2022.
23. Leo de Castro, Carmit Hazay, Yuval Ishai, Vinod Vaikuntanathan and Muthu Venkatasubramanian: Asymptotically Quasi-Optimal Cryptography. 41<sup>st</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2022.
24. Alex Lombardi and Vinod Vaikuntanathan: New Constructions of Multi-Input Correlation-Intractable Hash Functions. 13<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2022.
25. Zvika Brakerski and Vinod Vaikuntanathan: Lattice-Inspired Broadcast Encryption and Succinct Ciphertext Policy ABE. 13<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2022.
26. Lalita Devadas, Willy Quach, Vinod Vaikuntanathan, Hoeteck Wee and Daniel Wichs: Succinct LWE Sampling, Random Polynomials and Obfuscation. 19<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2021.
27. Yael Kalai, Vinod Vaikuntanathan and Rachel Zhang: Somewhere Statistical Soundness, Post-Quantum Security, and SNARGs for P. 19<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2021.
28. Zvika Brakerski, Noah Stephens-Davidowitz and Vinod Vaikuntanathan: On the Hardness of Average-case  $k$ -SUM. 25<sup>th</sup> International Workshop Randomization and Approximation Techniques in Computer Science ([RANDOM](#)) 2021.
29. Tianren Liu, Stefano Tessaro and Vinod Vaikuntanathan: The  $t$ -wise Independence of Substitution-Permutation Networks. 41<sup>st</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2021.
30. Alex Grilo, Huijia Lin, Fang Song and Vinod Vaikuntanathan: Oblivious Transfer is in MiniQCrypt. 40<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2021.

31. Alex Lombardi and Vinod Vaikuntanathan: PPAD-Hardness and VDFs based on Iterated Squaring, in the Standard Model. 40<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2020.
32. Alexander Golovnev, Siyao Guo, Thibaut Horel, Sunoo Park and Vinod Vaikuntanathan: Data Structures Meet Cryptography: 3SUM with Preprocessing. Proceedings of the 52<sup>nd</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2020.
33. Yevgeniy Dodis, Vinod Vaikuntanathan, Daniel Wichs: Extracting Randomness from Extractor-Dependent Sources. 39<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2020.
34. Alex Lombardi, Vinod Vaikuntanathan, Daniel Wichs: Statistical ZAPR Arguments from Bilinear Maps. 39<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2020.
35. Marshall Ball, Elette Boyle, Akshay Degwekar, Apoorvaa Deshpande, Alon Rosen, Vinod Vaikuntanathan, Prashant Nalini Vasudevan: Cryptography from Information Loss. 11<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2020, *pp.* 81:1-81:27.
36. Noah Stephens-Davidowitz and Vinod Vaikuntanathan: SETH-Hardness of Coding Problems. 60<sup>th</sup> IEEE Annual Symposium on Foundations of Computer Science ([FOCS](#)) 2019, *pp.* 287–301.
37. Prabhanjan Ananth and Vinod Vaikuntanathan: Optimal Bounded-Collusion Secure Functional Encryption. 17<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2019, *pp.* 174–198.
38. Yilei Chen, Minki Hhan, Vinod Vaikuntanathan and Hoeteck Wee: Matrix PRFs: Constructions, Attacks and Applications to Obfuscation. 17<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2019, *pp.* 55–80.
39. Alex Lombardi, Vinod Vaikuntanathan and Thuy-Duong Vuong: Lattice Trapdoors and IBE from Middle-Product LWE. 17<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2019, *pp.* 24–54.
40. Akshay Degwekar, Preetum Nakkiran, Vinod Vaikuntanathan: Computational Limitations in Robust Classification and Win-Win Results. 32<sup>nd</sup> Conference on Learning Theory ([COLT](#)) 2019, *pp.* 994–1028.
41. Melissa Chase, Yevgeniy Dodis, Yuval Ishai, Daniel Kraschewski, Tianren Liu, Rafail Ostrovsky, Vinod Vaikuntanathan: Reusable Non-Interactive Secure Computation. 39<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2019, *pp.* 462–488.
42. Zvika Brakerski, Vadim Lyubashevsky, Vinod Vaikuntanathan and Daniel Wichs: Learning Parity with Noise, Smoothing for Codes, Worst-case to Average-case Reductions and Cryptography. 38<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2019, *pp.* 619–635.
43. Thibaut Horel, Sunoo Park, Silas Richelson and Vinod Vaikuntanathan: How to Subvert Backdoored Encryption. 10<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2019, *pp.* 42:1–42:20.

44. Elette Boyle, Rio Lavigne and Vinod Vaikuntanathan: Adversarially Robust Property-Preserving Hash Functions. 10<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2019, pp. 16:1–16:20.
45. Yilei Chen, Vinod Vaikuntanathan, Brent Waters, Hoeteck Wee and Daniel Wichs: Traitor-Tracing from LWE Made Simple and Attribute-Based. 16<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2018, pp. 341–369.
46. Yilei Chen, Vinod Vaikuntanathan and Hoeteck Wee: GGH15 Beyond Permutation Branching Programs: Proof, Attacks and Candidates. 38<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2018, pp. 577–607.
47. Chiraag Juvekar, Vinod Vaikuntanathan and Anantha Chandrakasan: GAZELLE: A Low Latency Framework for Secure Neural Network Inference. 27<sup>th</sup> [Usenix Security Symposium](#) 2018, pp. 1651–1669.
48. Tianren Liu and Vinod Vaikuntanathan: Breaking the Circuit-Size Barrier in Secret Sharing. Proceedings of the 50<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2018, pp. 699–708.
49. Zvika Brakerski, Alex Lombardi, Gil Segev and Vinod Vaikuntanathan: Anonymous IBE, Leakage Resilience and Circular Security from New Assumptions. 37<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2018, pp. 535-564.
50. Tianren Liu, Vinod Vaikuntanathan and Hoeteck Wee: Towards Breaking the Exponential Barrier for General Secret Sharing. 37<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2018, pp. 567-596.
51. Itay Berman, Ron D. Rothblum and Vinod Vaikuntanathan. Zero-Knowledge Proofs of Proximity. 9<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2018, pp. 1-20.
52. Nir Bitansky, Akshay Degwekar and Vinod Vaikuntanathan: Structure vs. Hardness Through the Obfuscation Lens. 37<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2017, pp. 696-723.
53. Tianren Liu, Vinod Vaikuntanathan and Hoeteck Wee: Conditional Disclosure of Secrets via Non-linear Reconstruction. 37<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2017, pp. 758-790.
54. Nir Bitansky and Vinod Vaikuntanathan: A Note on Perfect Correctness by Derandomization. 36<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2017, pp. 592-606.
55. Frank Wang, Catherine Yun, Shafi Goldwasser, Vinod Vaikuntanathan and Matei Zaharia: Splinter: Practical Private Queries on Public Data. 14<sup>th</sup> USENIX Symposium on Networked Systems Design and Implementation ([NSDI](#)) 2017, pp. 299-313.
56. Benny Applebaum, Naama Haramaty, Yuval Ishai, Eyal Kushilevitz and Vinod Vaikuntanathan: Low-Complexity Cryptographic Hash Functions. 8<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2017, pp. 1-31.



57. Ran Canetti, Srinivasan Raghuraman, Silas Richelson and Vinod Vaikuntanathan: Chosen-Ciphertext Secure Fully Homomorphic Encryption. 20<sup>th</sup> IACR International Conference on Practice and Theory in Public-Key Cryptography (**PKC**) 2017, *pp.* 213-240.
58. Alex Lombardi and Vinod Vaikuntanathan: Limits on the Locality of Pseudorandom Generators and Applications to Indistinguishability Obfuscation. 15<sup>th</sup> Theory of Cryptography Conference (**TCC**) 2017, *pp.* 119-137.
59. Zvika Brakerski, Rotem Tsabary, Vinod Vaikuntanathan and Hoeteck Wee: Private Constrained PRFs (and More) from LWE. 15<sup>th</sup> Theory of Cryptography Conference (**TCC**) 2017, *pp.* 264-302.
60. Ranjit Kumaresan, Vinod Vaikuntanathan and Prashant Nalini Vasudevan: Improvements to Secure Computation with Penalties. Proceedings of the 2016 ACM SIGSAC Conference on Computer and Communications Security (**CCS**), *pp.* 406-417.
61. Huijia Lin and Vinod Vaikuntanathan: Indistinguishability Obfuscation from DDH-Like Assumptions on Constant-Degree Graded Encodings. 57<sup>th</sup> IEEE Annual Symposium on Foundations of Computer Science (**FOCS**) 2016, *pp.* 11-20.
62. Zvika Brakerski and Vinod Vaikuntanathan. Circuit-ABE from LWE: Unbounded Attributes and Semi-adaptive Security. 36<sup>th</sup> Annual International Cryptology Conference (**CRYPTO**) 2016, *pp.* 363-384.
63. Akshay Degwekar, Vinod Vaikuntanathan and Prashant Nalini Vasudevan. Fine-Grained Cryptography. 36<sup>th</sup> Annual International Cryptology Conference (**CRYPTO**) 2016, *pp.* 533-562.
64. Aloni Cohen, Justin Holmgren, Ryo Nishimaki, Vinod Vaikuntanathan and Daniel Wichs. Watermarking cryptographic capabilities. Proceedings of the 48<sup>th</sup> Annual ACM Symposium on Theory of Computing (**STOC**) 2016, *pp.* 1115-1127.
65. Frank Wang, James Mickens, Nikolai Zeldovich and Vinod Vaikuntanathan. Sieve: Cryptographically Enforced Access Control for User Data in Untrusted Clouds. 13<sup>th</sup> USENIX Symposium on Networked Systems Design and Implementation (**NSDI**) 2016, *pp.* 611-626.
66. Zvika Brakerski, Vinod Vaikuntanathan, Hoeteck Wee and Daniel Wichs. Obfuscating Conjunctions under Entropic Ring LWE. 7<sup>th</sup> Innovations in Theoretical Computer Science (**ITCS**) 2016, *pp.* 147-156.
67. Nir Bitansky, Shafi Goldwasser, Abhishek Jain, Omer Paneth, Vinod Vaikuntanathan and Brent Waters. Time-Lock Puzzles from Randomized Encodings. 7<sup>th</sup> Innovations in Theoretical Computer Science (**ITCS**) 2016, *pp.* 345-356.
68. Nir Bitansky, Zvika Brakerski, Yael Tauman Kalai, Omer Paneth and Vinod Vaikuntanathan: 3-Message Zero Knowledge Against Human Ignorance. 14<sup>th</sup> Theory of Cryptography Conference (**TCC**) 2016B, *pp.* 57-83.
69. Nir Bitansky and Vinod Vaikuntanathan: Indistinguishability Obfuscation: From Approximate to Exact. 13<sup>th</sup> Theory of Cryptography Conference (**TCC**) 2016A, *pp.* 67-95.

70. Tianren Liu and Vinod Vaikuntanathan: On Basing Private Information Retrieval on NP-Hardness. 13<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2016A, *pp.* 372-386.
71. Nir Bitansky and Vinod Vaikuntanathan: Indistinguishability Obfuscation from Functional Encryption. 56<sup>th</sup> IEEE Annual Symposium on Foundations of Computer Science ([FOCS](#)) 2015, *pp.* 171-190.
72. Sergey Gorbunov, Vinod Vaikuntanathan and Hoeteck Wee: Predicate Encryption for Circuits from LWE. 35<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2015, *pp.* 503-523.
73. Prabhanjan Ananth, Zvika Brakerski, Gil Segev and Vinod Vaikuntanathan: From Selective to Adaptive Security in Functional Encryption. 35<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2015, *pp.* 657-677.
74. Ran Canetti, Justin Holmgren, Abhishek Jain and Vinod Vaikuntanathan: Succinct Garbling and Indistinguishability Obfuscation for RAM Programs. Proceedings of the 47<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2015, *pp.* 429-437.
75. Sergey Gorbunov, Vinod Vaikuntanathan and Daniel Wichs: Leveled Fully Homomorphic Signatures from Standard Lattices. Proceedings of the 47<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2015, *pp.* 469-477.
76. Vinod Vaikuntanathan and Prashant Nalini Vasudevan: Secret Sharing and Statistical Zero Knowledge. 21<sup>st</sup> International Conference on the Theory and Application of Cryptology and Information Security ([ASIACRYPT](#)) 2015, *pp.* 656-680.
77. Zvika Brakerski and Vinod Vaikuntanathan: Constrained Key-Homomorphic PRFs from Standard Lattice Assumptions - Or: How to Secretly Embed a Circuit in Your PRF. 12<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2015, *pp.* 1-30.
78. Aloni Cohen, Shafi Goldwasser and Vinod Vaikuntanathan: Aggregate Pseudorandom Functions and Connections to Learning. 12<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2015, *pp.* 61-89.
79. Ran Canetti, Huijia Lin, Stefano Tessaro and Vinod Vaikuntanathan: Obfuscation of Probabilistic Circuits and Applications. 12<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2015, *pp.* 468-497.
80. Dan Boneh, Craig Gentry, Sergey Gorbunov, Shai Halevi, Valeria Nikolaenko, Gil Segev, Vinod Vaikuntanathan and Dhinakaran Vinayagamurthy: Fully Key-Homomorphic Encryption, Arithmetic Circuit ABE and Compact Garbled Circuits. 33<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2014, *pp.* 533-556.
81. Zvika Brakerski and Vinod Vaikuntanathan: Lattice-based FHE as secure as PKE. 6<sup>th</sup> Innovations in Theoretical Computer Science ([ITCS](#)) 2014, *pp.* 1-12.
82. Shafi Goldwasser, Yael Kalai, Raluca Ada Popa, Vinod Vaikuntanathan and Nikolai Zeldovich: Overcoming the Worst Case Curse for Cryptographic Constructions. 33<sup>rd</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2013, *pp.* 536-553.

83. Shweta Agrawal, Sergey Gorbunov, Vinod Vaikuntanathan and Hoeteck Wee: Functional Encryption: New Perspectives and Lower Bounds. 33<sup>rd</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2013, *pp.* 500-518.
84. Mark Braverman, Faith Ellen, Rotem Oshman, Toniann Pitassi and Vinod Vaikuntanathan: A Tight Bound for Set Disjointness in the Message-Passing Model. 54<sup>th</sup> IEEE Annual Symposium on Foundations of Computer Science ([FOCS](#)) 2013, *pp.* 668-677.
85. Shafi Goldwasser, Yael Kalai, Raluca Ada Popa, Vinod Vaikuntanathan and Nikolai Zeldovich: Succinct Functional Encryption and Applications: Reusable Garbled Circuits and Beyond. Proceedings of the 45<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2013, *pp.* 555-564.
86. Sergey Gorbunov, Vinod Vaikuntanathan and Hoeteck Wee: Attribute-based Encryption for Circuits. Proceedings of the 45<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2013, *pp.* 545-554.
87. Shweta Agrawal, Yevgeniy Dodis, Vinod Vaikuntanathan and Daniel Wichs: On Continual Leakage of Discrete Log Representations. 19<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security ([ASIACRYPT](#)) 2013, *pp.* 401-420.
88. Sergey Gorbunov, Vinod Vaikuntanathan and Hoeteck Wee: Functional Encryption with Bounded Collusions from Multiparty Computation. 32<sup>nd</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2012, *pp.* 162-179.
89. Adriana Lopez-Alt, Eran Tromer and Vinod Vaikuntanathan: On-the-Fly Multiparty Computation on the Cloud via Multi-Key Homomorphic Encryption. Proceedings of the 44<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2012, *pp.* 1219-1234.
90. Gilad Asharov, Abhishek Jain, Adriana Lopez-Alt, Eran Tromer, Vinod Vaikuntanathan and Daniel Wichs: Multiparty Computation with Low Communication, Computation and Interaction via Threshold FHE. Annual International Conference on the Theory and Applications of Cryptographic Techniques ([EUROCRYPT](#)) 2012, *pp.* 483-501.
91. Shweta Agrawal, Xavier Boyen, Vinod Vaikuntanathan, Panagiotis Voulgaris and Hoeteck Wee: Functional Encryption for Threshold Functions (or Fuzzy IBE) from Lattices. 15<sup>th</sup> IACR International Conference on Practice and Theory in Public-Key Cryptography ([PKC](#)) 2012, *pp.* 280-297.
92. Ran Canetti, Dana Dachman-Soled, Vinod Vaikuntanathan and Hoeteck Wee: Efficient Password Authenticated Key Exchange via Oblivious Transfer. 15<sup>th</sup> IACR International Conference on Practice and Theory in Public-Key Cryptography ([PKC](#)) 2012, *pp.* 449-466.
93. Bryan Parno, Mariana Raykova and Vinod Vaikuntanathan: How to Delegate and Verify in Public: Verifiable Computation from Attribute-based Encryption. 9<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2012, *pp.* 422-439.
94. Nishanth Chandran, Melissa Chase and Vinod Vaikuntanathan: Functional Re-encryption and Collusion-Resistant Obfuscation. 9<sup>th</sup> Theory of Cryptography Conference ([TCC](#)) 2012, *pp.* 404-421.

95. Zvika Brakerski, Craig Gentry and Vinod Vaikuntanathan: Leveled Fully Homomorphic Encryption without Bootstrapping. 4<sup>th</sup> Innovations in Theoretical Computer Science (ITCS) 2012, pp. 309-325.
96. Jonathan Valamehr, Melissa Chase, Seny Kamara, Andrew Putnam, Daniel Shumow, Vinod Vaikuntanathan and Timothy Sherwood: Inspection resistant memory: Architectural support for security from physical examination. 39<sup>th</sup> International Symposium on Computer Architecture (ISCA) 2012, pp. 130-141.
97. Zvika Brakerski and Vinod Vaikuntanathan: Efficient Fully Homomorphic Encryption from Standard LWE. 52<sup>nd</sup> IEEE Annual Symposium on Foundations of Computer Science (FOCS) 2011, pp. 97-106.
98. Shweta Agrawal, David Mandell Freeman and Vinod Vaikuntanathan: Functional Encryption for Inner Product Predicates from Learning with Errors. 17<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security (ASIACRYPT) 2011, pp. 21-40.
99. Zvika Brakerski and Vinod Vaikuntanathan: Fully Homomorphic Encryption from Ring LWE and Security for Key Dependent Messages. 31<sup>st</sup> Annual International Cryptology Conference (CRYPTO) 2011, pp. 505-524.
100. Jonathan Katz and Vinod Vaikuntanathan: Round-Optimal Password-Based Authenticated Key Exchange. 8<sup>th</sup> Theory of Cryptography Conference (TCC) 2011, pp. 293-310.
101. Dov Gordon, Jonathan Katz and Vinod Vaikuntanathan: A Group Signature Scheme from Lattice Assumptions. 16<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security (ASIACRYPT) 2010, pp. 395-412.
102. Craig Gentry, Shai Halevi and Vinod Vaikuntanathan:  $i$ -hop Homomorphic Encryption and Re-randomizable Yao Circuits. 30<sup>th</sup> Annual International Cryptology Conference (CRYPTO) 2010, pp. 155-172.
103. Marten van Dijk, Craig Gentry, Shai Halevi and Vinod Vaikuntanathan: Fully Homomorphic Encryption from the Integers. 29<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques (EUROCRYPT) 2010, pp. 24-43.
104. Sebastian Faust, Tal Rabin, Leonid Reyzin, Eran Tromer and Vinod Vaikuntanathan: Protecting Circuits from Leakage: the Computationally-Bounded and Noisy Cases. 29<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques (EUROCRYPT) 2010, pp. 135-156.
105. Craig Gentry, Shai Halevi and Vinod Vaikuntanathan: A Simple BGN-Type Cryptosystem from LWE. 29<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques (EUROCRYPT) 2010, pp. 506-522.
106. Zvika Brakerski, Yael Tauman Kalai, Jonathan Katz and Vinod Vaikuntanathan: Overcoming the Hole in the Bucket: Public-Key Cryptography Resilient to Continual Memory Leakage. 51<sup>st</sup> IEEE Annual Symposium on Foundations of Computer Science (FOCS) 2010, pp. 501-510.

107. Shafi Goldwasser, Yael Kalai, Chris Peikert and Vinod Vaikuntanathan: Robustness of the Learning with Errors Assumption. 1<sup>st</sup> Innovations in Theoretical Computer Science (ITCS) 2010, pp. 230-240.
108. Yevgeniy Dodis, Shafi Goldwasser, Yael Tauman Kalai, Chris Peikert and Vinod Vaikuntanathan: Public-Key Encryption Schemes with Auxiliary Inputs. 7<sup>th</sup> Theory of Cryptography Conference (TCC) 2010, pp. 361-381.
109. Jonathan Katz and Vinod Vaikuntanathan: Smooth Projective Hashing and Password-Based Authenticated Key Exchange from Lattices. 15<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security (ASIACRYPT) 2009, pp. 636-652.
110. Jonathan Katz and Vinod Vaikuntanathan: Signature Schemes with Bounded Leakage Resilience. 15<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security (ASIACRYPT) 2009, pp. 703-720.
111. Adi Akavia, Shafi Goldwasser and Vinod Vaikuntanathan: Simultaneous Hardcore Bits and Cryptography against Memory Attacks. 6<sup>th</sup> Theory of Cryptography Conference (TCC) 2009, pp. 474-495.
112. Cynthia Dwork, Moni Naor, Guy N. Rothblum and Vinod Vaikuntanathan: How Efficient Can Memory Checking Be? 6<sup>th</sup> Theory of Cryptography Conference (TCC) 2009, pp. 503-520.
113. Zvika Brakerski, Shafi Goldwasser, Guy N. Rothblum and Vinod Vaikuntanathan: Weak Verifiable Random Functions. 6<sup>th</sup> Theory of Cryptography Conference (TCC) 2009, pp. 558-576.
114. Omkant Pandey, Rafael Pass and Vinod Vaikuntanathan: Adaptive One-Way Functions and Applications. 28<sup>th</sup> Annual International Cryptology Conference (CRYPTO) 2008, pp. 57-74.
115. Chris Peikert and Vinod Vaikuntanathan: Noninteractive Statistical Zero-Knowledge Proofs for Lattice Problems. 28<sup>th</sup> Annual International Cryptology Conference (CRYPTO) 2008, pp. 536-553.
116. Chris Peikert, Vinod Vaikuntanathan and Brent Waters: A Framework for Efficient and Composable Oblivious Transfer. 28<sup>th</sup> Annual International Cryptology Conference (CRYPTO) 2008, pp. 554-571.
117. Craig Gentry, Chris Peikert and Vinod Vaikuntanathan: Trapdoors for Hard Lattices and New Cryptographic Constructions. Proceedings of the 40<sup>th</sup> Annual ACM Symposium on Theory of Computing (STOC) 2008, pp. 197-206.
118. Susan Hohenberger, Guy Rothblum, Abhi Shelat and Vinod Vaikuntanathan: Securely Obfuscating Re-encryption. 4<sup>th</sup> Theory of Cryptography Conference (TCC) 2007, pp. 233-252.
119. Hao Chen, Ronald Cramer, Shafi Goldwasser, Robbert de Haan and Vinod Vaikuntanathan: Secure Computation from Random Error Correcting Codes. 26<sup>th</sup> Annual International Conference on the Theory and Applications of Cryptographic Techniques (EUROCRYPT) 2007, pp. 291-310.

120. Rafael Pass, Abhi Shelat and Vinod Vaikuntanathan: Relations Among Notions of Non-malleability for Encryption. 13<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security ([ASIACRYPT](#)) 2007, *pp.* 519-535.
121. Ronald Cramer, Goichiro Hanaoka, Dennis Hofheinz, Hideki Imai, Eike Kiltz, Rafael Pass, Abhi Shelat and Vinod Vaikuntanathan: Bounded CCA2-Secure Encryption. 13<sup>th</sup> International Conference on the Theory and Application of Cryptology and Information Security ([ASIACRYPT](#)) 2007, *pp.* 502-518.
122. Rafael Pass, Abhi Shelat and Vinod Vaikuntanathan: Construction of a Non-malleable Encryption Scheme from Any Semantically Secure One. 26<sup>th</sup> Annual International Cryptology Conference ([CRYPTO](#)) 2006, *pp.* 271-289.
123. Shafi Goldwasser, Elan Pavlov and Vinod Vaikuntanathan: Fault-Tolerant Distributed Computing in Full-Information Networks. 47<sup>th</sup> IEEE Annual Symposium on Foundations of Computer Science ([FOCS](#)) 2006, *pp.* 15-26.
124. Michael Ben-Or, Elan Pavlov and Vinod Vaikuntanathan: Byzantine agreement in the full-information model in  $O(\log n)$  rounds. Proceedings of the 38<sup>th</sup> Annual ACM Symposium on Theory of Computing ([STOC](#)) 2006, *pp.* 179-186.
125. Shafi Goldwasser, Madhu Sudan and Vinod Vaikuntanathan: Distributed Computing with Imperfect Randomness. 19<sup>th</sup> International Conference on Distributed Computing ([DISC](#)) 2005, *pp.* 288-302.
126. Charles W. O'Donnell and Vinod Vaikuntanathan: Information Leak in the Chord Lookup Protocol. 4<sup>th</sup> International Conference on Peer-to-Peer Computing ([P2P](#)) 2004, *pp.* 28-35.
127. Vinod Vaikuntanathan, Arvind Narayanan, K. Srinathan, C. Pandu Rangan and Kwangjo Kim: On the Power of Computational Secret Sharing. 4<sup>th</sup> International Conference on Cryptology in India ([INDOCRYPT](#)) 2003, *pp.* 162-176.
128. S. Amitanand, I. Sanketh, K. Srinathan, V. Vinod and C. Pandu Rangan: Distributed consensus in the presence of sectional faults. 22<sup>nd</sup> ACM Symposium on Principles of Distributed Computing ([PODC](#)) 2003, *pp.* 202-210.

### **B.1.2 Journal Publications**

1. Nir Bitansky and Vinod Vaikuntanathan: A Note on Perfect Correctness by Derandomization. [Journal of Cryptology](#), Volume 35, Number 1, pp. 18, 2022.
2. Nir Bitansky, Akshay Degwekar and Vinod Vaikuntanathan: Structure Versus Hardness Through the Obfuscation Lens. [SIAM Journal of Computing](#), Volume 50, Issue 1, pp. 98–144, 2021.
3. Leo de Castro, Andrew W. Lo, Taylor Reynolds, Fransisca Susan, Vinod Vaikuntanathan, Daniel J. Weitzner and Nicolas Zhang: SCRAM: A Platform for Securely Measuring Cyber Risk. [Harvard Data Science Review](#), 2020.

4. Marcelo Blatt, Alexander Gusev, Yuriy Polyakov, Kurt Rohloff and Vinod Vaikuntanathan: Optimized Homomorphic Encryption Solution for Secure Genome-Wide Association Studies. [BMC Medical Genomics](#), Volume 13(7), 2020.
5. Aloni Cohen, Justin Holmgren, Ryo Nishimaki, Vinod Vaikuntanathan and Daniel Wichs: Watermarking Cryptographic Capabilities. [SIAM Journal of Computing](#), Volume 47, Issue 6, pp. 2157–2202, 2018.
6. Nir Bitansky and Vinod Vaikuntanathan: Indistinguishability Obfuscation from Functional Encryption. [Journal of the ACM](#), Volume 65, Number 6, pp. 39:1–39:37, 2018.
7. Nir Bitansky, Ran Canetti, Sanjam Garg, Justin Holmgren, Abhishek Jain, Huijia Lin, Rafael Pass, Sidharth Telang and Vinod Vaikuntanathan: Indistinguishability Obfuscation for RAM Programs and Succinct Randomized Encodings. [SIAM Journal of Computing](#), Volume 47, Number 3, pp. 1123-1210, 2018.
8. Adriana López-Alt, Eran Tromer and Vinod Vaikuntanathan: Multikey Fully Homomorphic Encryption and Applications. [SIAM Journal of Computing](#), Volume 46, Number 6, pp. 1827-1892, 2017.
9. Yuriy Polyakov, Kurt Rohloff, Gyana Sahu and Vinod Vaikuntanathan: Fast Proxy Re-Encryption for Publish/Subscribe Systems. [ACM Transactions on Privacy and Security](#), Volume 20, Number 4, pp. 14:1-14:31, 2017.
10. Alhassan Khedr, P. Glenn Gulak and Vinod Vaikuntanathan: SHIELD: Scalable Homomorphic Implementation of Encrypted Data-Classifiers. [IEEE Transactions on Computers](#), Volume 65, Number 9, pp. 2848-2858, 2016.
11. Sergey Gorbunov, Vinod Vaikuntanathan and Hoeteck Wee: Attribute-Based Encryption for Circuits. [Journal of the ACM](#), Volume 62, Number 6, pp. 45:1-45:33, 2015.
12. Sebastian Faust, Tal Rabin, Leonid Reyzin, Eran Tromer and Vinod Vaikuntanathan: Protecting Circuits from Computationally Bounded and Noisy Leakage. [SIAM Journal of Computing](#), Volume 43, Number 5, pp. 1564-1614, 2014.
13. Zvika Brakerski and Vinod Vaikuntanathan: Efficient Fully Homomorphic Encryption from (Standard) LWE. [SIAM Journal of Computing](#), Volume 43, Number 2, pp. 831-871, 2014.
14. Zvika Brakerski, Craig Gentry and Vinod Vaikuntanathan: (Leveled) Fully Homomorphic Encryption without Bootstrapping. [Transactions on Computing Theory](#), Volume 6, Number 3: 13, 2014.
15. Jonathan Katz and Vinod Vaikuntanathan: Round-Optimal Password-Based Authenticated Key Exchange. [Journal of Cryptology](#), Volume 26, Number 4, pp. 714-743, 2013.
16. Jonathan Kaveh Valamehr, Melissa Chase, Seny Kamara, Andrew Putnam, Daniel Shumow, Vinod Vaikuntanathan, Timothy Sherwood: Inspection-Resistant Memory Architectures. [IEEE Micro](#), Volume 33, Number 3, pp. 48-56, 2013.
17. Susan Hohenberger, Guy Rothblum, Abhi Shelat and Vinod Vaikuntanathan: Securely Obfuscating Re-encryption. [Journal of Cryptology](#), Volume 24, Number 4, 2011.

### B.1.3 Workshops and Other Refereed Publications

- [OR1] Michael Naehrig, Kristin E. Lauter and Vinod Vaikuntanathan: Can homomorphic encryption be practical? Proceedings of the ACM Cloud Computing Security Workshop (CCSW) 2011, pp. 113-124.
- [OR2] Vinod Vaikuntanathan: Brief announcement: broadcast in radio networks in the presence of byzantine adversaries. 24<sup>th</sup> ACM Symposium on Principles of Distributed Computing (PODC) 2005, pp. 167.
- [OR3] K. Srinathan, V. Vinod and C. Pandu Rangan: Brief announcement: efficient perfectly secure communication over synchronous networks. 22<sup>nd</sup> ACM Symposium on Principles of Distributed Computing (PODC) 2003, pp. 252.

## B.2 Non-Refereed Publications

### B.2.1 Theses

- [T1] “Randomized Algorithms for Reliable Broadcast”, Ph.D. Thesis, Massachusetts Institute of Technology, Advisor: Shafi Goldwasser, 2009.
- [T2] “Distributed Computing with Imperfect Randomness”, S.M. (Masters) Thesis, Massachusetts Institute of Technology, Advisor: Shafi Goldwasser, 2005.
- [T3] “On a Computational Notion of Secret Sharing”, B.Tech. (Bachelors) Thesis, Indian Institute of Technology, Advisor: Pandurangan Chandrasekaran, 2003.

### B.2.2 Invited Papers

- [IP1] Vinod Vaikuntanathan: Some Open Problems in Information-Theoretic Cryptography. 37<sup>th</sup> IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2017, pp. 1-7.
- [IP2] Vinod Vaikuntanathan: How to Compute on Encrypted Data. 13<sup>th</sup> International Conference on Cryptology in India (INDOCRYPT) 2012, pp. 1-15.
- [IP3] Vinod Vaikuntanathan: Computing Blindfolded: New Developments in Fully Homomorphic Encryption. 52<sup>nd</sup> IEEE Annual Symposium on Foundations of Computer Science (FOCS) 2011, pp. 5-16.
- [IP4] Vinod Vaikuntanathan: New Developments in Leakage-Resilient Cryptography. 14<sup>th</sup> IACR International Conference on Practice and Theory in Public-Key Cryptography (PKC) 2011, pp. 283.

## B.3 Patents

- [Pat1] Panagiotis Voulgaris and Vinod Vaikuntanathan. *Attribute Based Encryption Using Lattices*. US Patent Number 9,503,264. Issue date: November 2016.
- [Pat2] Shai Halevi, Craig Gentry and Vinod Vaikuntanathan. *Efficient Homomorphic Encryption Scheme for Bilinear Forms*. US Patent Number 9,252,954. Issue date: February 2016.



- [Pat3] Nishanth Chandran, Melissa Chase, Kristin Lauter and Vinod Vaikuntanathan. *User-Controlled Data Encryption with Obfuscated Policy*. US Patent Number 9,077,525. Issue date: July 2015.
- [Pat4] Panagiotis Voulgaris and Vinod Vaikuntanathan. *Non-Interactive Verifiable, Delegated Computation*. US Patent Number 8,594,329. Issue date: November 2013.
- [Pat5] Kristin Lauter, Elisabeth Malmskog, Michael Naehrig and Vinod Vaikuntanathan. *Digital signatures with error polynomials*. US Patent Number 8,677,135. Issue Date: June 2012.
- [Pat6] Alhassan Khedr, Glenn Gulak and Vinod Vaikuntanathan. *Systems, Devices and Processes for Homomorphic Encryption*. US Patent Application No. 14/634,787. Canada.
- [Pat7] Kurt Rohloff and Vinod Vaikuntanathan. *Device, System and Method for Fast and Secure Proxy Re-Encryption*. US Patent Application No. 15/366,850. USA.
- [Pat8] Shafi Goldwasser and Vinod Vaikuntanathan. *Device, System and Method for Token-Based Outsourcing of Computations*. US Patent Application No. 62/515,153. USA.

#### B.4 Plenary and Other Selected Invited Lectures

- [L1] *Cryptographic Lemons (and Lemonades?) in Machine Learning*, National University of Singapore CS Research Week, Singapore, January 2023.
- [L2] *Secure Collaboration: From Theory to Practice*, CMU SCS Distinguished Lecture, Pittsburgh, PA, September 2018.
- [L3] *The Past Five Years of Program Obfuscation*, Invited Tutorial at the ACM Symposium on the Theory of Computing (STOC), Los Angeles, CA, June 2018.
- [L4] *Program Obfuscation and Random CSPs: The Love-Hate Relationship*, TCS+ Invited Talk, 2018.
- [L5] *Lattices and Cryptography: A Match made in Heaven*, IST Austria Institute Colloquium, Vienna, Austria, October 2017.
- [L6] *The Many Problems in Information-Theoretic Cryptography*, FSTTCS 2017 Plenary Lecture, Kanpur, India, December 2017.
- [L7] *The Many Faces of Garbled Circuits*, Plenary Lecture at PKC 2016, Taipei, Taiwan, March 2016.
- [L8] *Computing on Encrypted Data: FHE and More*, Plenary Lecture at Africacrypt 2016, Fes, Morocco, April 2016.
- [L9] *Lattices and Cryptography: A Match Made in Heaven*, Plenary Lecture at the Post-Quantum Cryptography (PQC) Conference, Waterloo, Canada, October 2014.
- [L10] *Lattices, Cryptography and Computing with Encrypted Data*, Plenary Lecture at the Algebra, Codes and Networks Conference, Bordeaux, France, June 2014.

- [L11] *Computing on Encrypted Data: New Frontiers*, Keynote Speech at the Financial Cryptography Conference, Workshop on Applied Homomorphic Cryptography (WAHC), Okinawa, Japan, April 2013.
- [L12] *Computing on Encrypted Data*, Plenary Lecture at the Indocrypt Conference, Kolkata, India, December 2012.
- [L13] *Fully Homomorphic Encryption*, a five day lecture series at the McGill-Bellairs Cryptography Workshop, Barbados, March 2012.
- [L14] *Computing Blindfolded: New Developments in Fully Homomorphic Encryption*, Invited Tutorial at the IEEE Foundations of Compute Science (FOCS) conference, Palm Springs, CA, October 2011.
- [L15] *Leakage Resilient Cryptography*, Plenary Lecture at the Public Key Cryptography (PKC) Conference, Taormina, Italy, March 2011.
- [L16] *Leakage Resilient Cryptography*, Invited Talk at the Barriers in Computational Complexity Workshop II, Princeton, NJ, August 2010.

## C Teaching and Advising

### C.1 Teaching

- *6.875: Cryptography and Cryptanalysis* MIT, Spring 2018, 2017.
- *6.876: Advanced Cryptography* MIT, Fall 2018, Fall 2017, Fall 2015.
- *6.046: Design and Analysis of Algorithms* MIT, Fall 2016, Spring 2016.
- *6.006: Introduction to Algorithms* MIT, Fall 2014, Spring 2014, Spring 2019.
- *6.892: Computing on Encrypted Data* MIT, Fall 2013.
- *CSC 2419: Topics in Cryptography*. University of Toronto, Winter 2013.
- *MAT 302: Introduction to Algebraic Cryptography*. University of Toronto Mississauga, Winter 2012, Winter 2013.
- *CSC 2414: Topics in Discrete Applied Mathematics: Lattices in Cryptography and Cryptanalysis*. University of Toronto, Fall 2011.

### C.2 Graduate Advising

- *Aparna Gupte*, 2023–present
- *Seyoon Ragavan*, 2023–present
- *Rachel Zhang*, 2021–present
- *Neekon Vafa*, 2020–present

- *Lalita Devadas*, 2020–present
- *Surya Mathialagan*, 2020–present
- *Leo de Castro*, 2019–present
- *Alex Lombardi*, Ph.D. MIT 2022. First job: Assistant Professor at Princeton University.
- *Kristen LaVigne*, Ph.D. 2020. First job: Researcher at Apple.
- *Aikaterini Sotiraki*, Ph.D. 2020. First job: Assistant Professor at Yale University.
- *Tianren Liu*, Ph.D. MIT 2019. First job: Assistant Professor at Peking University.
- *Prashant Vasudevan*, Ph.D. MIT 2018. First job: Assistant Professor at National University of Singapore.
- *Itay Berman*, Ph.D. MIT 2019. First job: D.E. Shaw.
- *Akshay Degwekar*, Ph.D. MIT 2019. First job: Two Sigma.
- *Sergey Gorbunov*, Ph.D. MIT 2015. First job: Assistant Professor at University of Waterloo.

### C.3 Postdoctoral Advising

- *Jonathan Shafer*, 2024–present.
- *Jiahui Liu*, 2023–present.
- *Alexander Poremba*, co-hosted with Peter Shor, 2023–present.
- *Zhengzhong Jin*, 2022–2024. Now Assistant Professor, Northeastern University.
- *Rishab Goyal*, 2020–2022. Now Assistant Professor, University of Wisconsin-Madison.
- *Noah Stephens-Davidowitz*, 2018-2020.  
Now Assistant Professor, Cornell University.
- *Xiao Wang*, 2018-present.  
Now Assistant Professor, Northwestern University.
- *Prabhanjan Ananth*, 2017-present.  
Now Assistant Professor, University of California Santa Barbara.
- *Omer Paneth*, co-hosted with Shafi Goldwasser, 2016-19.  
Now Assistant Professor, Tel-Aviv University.
- *Ron Rothblum*, co-hosted with Shafi Goldwasser, 2017-18.  
Now Assistant Professor, Technion.
- *Nir Bitansky*, 2014-17.  
Now Assistant Professor, Tel-Aviv University.

- *Ranjit Kumaresan*, 2015-16.  
Now Researcher, Microsoft Research Redmond.
- *Silas Richelson*, 2015-17.  
Now Assistant Professor, University of California Riverside.
- *Mark Zhandry*, 2014-15.  
Now Assistant Professor, Princeton University.

## D Service

### D.1 Conference Program Committees

- *FOCS* 2017.  
IEEE Foundations of Computer Science.
- *STOC* 2014.  
ACM Symposium on the Theory of Computing.
- *CRYPTO* 2010, 2012, 2014.  
International Cryptology Conference.
- *EUROCRYPT* 2012, 2018.  
Annual Eurocrypt Conference.
- *PODC* 2019.  
ACM Symposium on Principles of Distributed Computing.
- *TCC* 2010, 2012, 2014, 2016A, 2016B, 2018.  
IACR Theory of Cryptography Conference.
- *ITCS* 2014, 2019.  
Innovations in Theoretical Computer Science.
- *ICALP* 2017.  
International Colloquium on Automata, Languages and Programming.
- *ASIACRYPT* 2010, 2013.  
International Conference on the Theory and Application of Cryptology and Information Security.
- *PKC* 2013.  
Public Key Cryptography Conference.
- *WAHC* 2013, 2018.  
Workshop on Applied Homomorphic Cryptography.
- *SCN* 2010.  
Conference on Security and Cryptography for Networks.

## D.2 Workshop Organization

- Workshop Co-organizer.  
*Lattice Algorithms and Cryptography (LATCA) 2018*, Bertinoro, Italy.
- Workshop Organizer.  
*Homomorphic Encryption Standardization Workshop 2018*, Cambridge, MA.
- Conference Organizer.  
*Innovations in Theoretical Computer Science ITCS 2018*, Cambridge, MA.
- Workshop Co-organizer.  
*Lattice-based Cryptography Workshop at FSTTCS 2017*, Kanpur, India.
- Workshop Co-organizer.  
*Perspectives on Complexity Theory and Cryptography*, IISc, Bangalore, India.
- Workshop Co-organizer.  
*Semester on Nexus of Computation and Information Theories*, Institut Henri Poincaré.
- Workshop Co-organizer.  
*IACR Asiacrypt 2013 Lattice Cryptography Workshop*, Bangalore, India.

**Other Service:** Committee Member, Privacy and Security Sub-Committee of Gov. Charlie Baker's Digital Health Initiative, Commonwealth of Massachusetts.

## D.3 University Service

- Chair, *Sprowls Award Committee*. MIT, 2018.
- Co-chair, *EECS MasterWorks*. MIT, 2017, 2018, 2019.
- Member, *EECS Graduate Admissions Committee*. MIT, 2013, 2014, 2015, 2016.
- Member, *CS Sprowls Ph.D. Thesis Award Committee*. MIT, 2014, 2016, 2017.
- Co-chair, *Simons Graduate Fellowship Selection Committee*. MIT, 2014.
- Chair, *Theory Postdoctoral Search Committee*. University of Toronto, 2012, 2013.
- Member, *Graduate Affairs Committee*, University of Toronto, 2011, 2012.
- Member, *University of Toronto Chair Search Committee*, University of Toronto, 2012.
- Member, *Faculty Search Committee*, University of Toronto, 2013.
- Member, *Communications Committee*, University of Toronto, 2011.