Anand D. Sarwate — Curriculum Vitæ

Contact Information

Associate Professor
Department of Electrical and Computer Engineering
Rutgers, The State University of New Jersey
94 Brett Road
Piscataway, NJ 08854

Voice: +1.848.445.8516
Email: anand.sarwate@rutgers.edu
Web: http://adsarwate.github.io/

Research Interests

I am broadly interested in probability, statistics, and algorithms applied to problems in distributed systems, communications, and privacy and security.

Education

1/06–7/08 **University of California, Berkeley**, (Berkeley, California USA)
Ph.D., Electrical Engineering and Computer Sciences (awarded 12/2008)
Designated Emphasis in Communication, Computation and Statistics
Thesis: *Robust and adaptive communication under uncertain interference*
Advisor: Professor Michael Gastpar

8/02–12/05 **University of California, Berkeley**, (Berkeley, California USA)
M.S., Electrical Engineering and Computer Sciences (awarded 12/2005)
Thesis : *Observation uncertainty in Gaussian sensor networks*
Advisor: Professor Michael Gastpar

9/97–6/02 **Massachusetts Institute of Technology**, (Cambridge, Massachusetts USA)
B.S., Electrical Science and Engineering (awarded 6/2002)
B.S., Mathematics (awarded 6/2002)
Minor in Music
Minor in Theater Arts

Employment

1/14–present **Rutgers, The State University of New Jersey**, (Piscataway, New Jersey USA)
Associate Professor (7/20–present), Assistant Professor (1/14–6/20)

10/11–12/13 **Toyota Technological Institute at Chicago**, (Chicago, Illinois USA)
Research Assistant Professor

9/08–9/11 **University of California, San Diego**, (La Jolla, California USA)
Postdoctoral Researcher
Supervisors: Professors Alon Orlitsky, Tara Javidi, and Young-Han Kim

Awards and Honors

IEEE Information Theory Society Distinguished Lecturer, 2024–2025

Oustanding Engineering Professor, Rutgers School of Engineering, 2023

Board of Trustees Research Fellowship for Scholarly Excellence, 2020

A. Walter Tyson Assistant Professor Award, Rutgers School of Engineering, 2018

NSF CAREER Award, 2015

IEEE Senior Member

NIPS Reviewer Award, 2013

Demetri Angelakos Memorial Achievement Award, UC Berkeley Department of EECS, 2008

Samuel Silver Memorial Scholarship Award, UC Berkeley Department of EECS, 2007

National Defense Science and Engineering Graduate Fellowship, 2002–2005

MIT : Laya and Jerome B. Wiesner Student Art Award, Joseph Everingham Award (Theater), Philip Lowe Memorial Award (Music)

Selected Preprints

Preprints with published versions are omitted.

[1] M. Vargas, R. Cannon, A. Engel, A. D. Sarwate, and T. Chiang. *Understanding Generative AI Content with Embedding Models*. Tech. rep. arXiv:2408.10437 [cs.LG]. ArXiV, Aug. 2024. DOI: 10.48550/arXiv.2408.10437.

[2] S. Banerjee, T. Marrinan, R. Cannon, T. Chiang, and A. D. Sarwate. *Measuring model variability using robust non-parametric testing*. Tech. rep. arXiv:2406.08307 [stat.ML]. ArXiV, June 2024. DOI: 10.48550/arXiv.2406.08307.

[3] N. Sathyavageeswaran, R. D. Yates, A. D. Sarwate, and N. Mandayam. *Timely Offloading in Mobile Edge Cloud Systems*. Tech. rep. arXiv:2405.07274 [eess.SY]. ArXiV, May 2024. URL: https://arxiv.org/abs/2405.07274.

[4] E. Silk, S. Chakraborty, N. Dasgupta, A. D. Sarwate, A. Lumsdaine, and T. Chiang. *Minibatching Offers Improved Generalization Performance for Second Order Optimizers*. Tech. rep. arXiv:2307.11684 [cs.LG]. ArXiV, May 2023. DOI: 10.48550/arXiv.2307.11684.

[5] A. Engel, Z. Wang, A. D. Sarwate, S. Choudhury, and T. Chiang. *TorchNTK: A Library for Calculation of Neural Tangent Kernels of PyTorch Models*. Tech. rep. arXiv:2205.12372 [cs.LG]. ArXiV, May 2022. URL: https://arxiv.org/abs/2205.12372.

[6] K. E. Nikolakakis, D. S. Kalogerias, and A. D. Sarwate. *Optimal Rates for Learning Hidden Tree Structures*. Tech. rep. arXiv:1909.09596v4 [stat.ML]. ArXiV, Mar. 2021. URL: https://arxiv.org/abs/1909.09596.

Journal and Archival Conference Papers

[1] Y. Wu, Y. Li, Z. Dong, N. Sathyavageeswaran, and A. D. Sarwate. "Learning to Help in Multi-Class Settings". In: *The Thirteenth International Conference on Learning Representations*. Apr. 2025. URL: https://openreview.net/forum?id=NCgTbt2j1F.

[2] K. Rootes-Murdy, S. Panta, R. Kelly, J. Romero, Y. Quidé, M. J. Cairns, C. Loughland, V. J. Carr, S. V. Catts, A. Jablensky, M. J. Green, F. Henskens, D. Kiltschewskij, P. T. Michie, B. Mowry, C. Pantelis, P. E. Rasser, W. R. Reay, U. Schall, R. J. Scott, O. J. Watkeys, G. Roberts, P. B. Mitchell, J. M. Fullerton, B. J. Overs, M. Kikuchi, R. Hashimoto, J. Matsumoto, M. Fukunaga, P. S. Sachdev, H. Brodaty, W. Wen, J. Jiang, N. Fani, T. D. Ely, A. Lorio, J. S. Stevens, K. Ressler, T. Jovanovic, S. J. van Rooij, L. M. Federmann, C. Jockwitz, A. Teumer, A. J. Forstner, S. Caspers, S. Cichon, S. M. Plis, A. D. Sarwate, and V. D. Calhoun. "Cortical similarities in psychiatric and mood disorders identified in federated VBM analysis via COINSTAC". In: *Patterns* (May 2024), p. 100987. DOI: https://doi.org/10.1016/j.patter.2024.100987.

[3] A. W. Engel, Z. Wang, N. Frank, I. Dumitriu, S. Choudhury, A. Sarwate, and T. Chiang. "Faithful and Efficient Explanations for Neural Networks via Neural Tangent Kernel Surrogate Models". In: *The Twelfth International Conference on Learning Representations*. Vienna, Austria, May 2024. URL: https://openreview.net/forum?id=yKksu38BpM.

[4] Z. Wang, A. Engel, A. Sarwate, I. Dumitriu, and T. Chiang. "Spectral Evolution and Invariance in Linear-width Neural Networks". In: *Advances in Neural Information Processing Systems 36 (NeurIPS 2023)*. Curran Associates, Inc., Dec. 2023. URL: https://openreview.net/forum?id=gpqBGyKeKH.

[5] S. Costanza-Chock, K. Rose (editor), K. Henne, S. Mhlambi, and A. Sarwate. "Critical AI and Design Justice: An Interview with Sasha Costanza-Chock". In: *Critical AI* 1–2.1 (Oct. 2023). DOI: 10.1215/2834703X-10734036.

[6] B. Taki, A. D. Sarwate, and W. U. Bajwa. "Structured Low-Rank Tensor Models for Logistic Regression". In: *Transactions on Machine Learning Research* (Aug. 2023). URL: https://openreview.net/forum?id=qUxBs3Ln41.

[7] D. Martin, S. Basodi, S. Panta, K. Rootes-Murdy, P. Prae, A. D. Sarwate, R. Kelly, J. Romero, B. T. Baker, H. Gazula, J. Bockholt, J. A. Turner, N. B. Esper, A. R. Franco, S. Plis, and V. D. Calhoun. "Enhancing collaborative neuroimaging research: introducing COINSTAC Vaults for federated analysis and reproducibility". In: *Frontiers in Neuroinformatics* 17 (June 2023). DOI: 10.3389/fninf.2023.1207721.

[8] N. Tasnim, J. Mohammadi, A. D. Sarwate, and H. Imtiaz. "Approximating Functions with Approximate Privacy for Applications in Signal Estimation and Learning". In: *Entropy* 25.5 (May 2023), p. 825. DOI: 10.3390/e25050825.

[9] R. Islam, K. N. Keya, S. Pan, A. D. Sarwate, and J. R. Foulds. "Differential Fairness: An Intersectional Framework for Fair AI". In: *Entropy* 25.4 (Apr. 2023). ISSN: 1099-4300. DOI: 10.3390/e25040660.

[10] H. Gazula, K. Rootes-Murdy, B. Holla, S. Basodi, Z. Zhang, E. Verner, R. Kelly, P. Murthy, A. Chakrabarti, D. Basu, S. Bhagyalakshmi Nanjayya, R. Lenin Singh, R. Lourembam Singh, K. Kalyanram, K. Kartik, K. Kalyanaraman, K. Ghattu, R. Kuriyan, S. S. Kurpad, G. J. Barker, R. D. Bharath, S. Desrivieres, M. Purushottam, D. P. Orfanos, E. Sharma, M. Hickman, M. Toledano, N. Vaidya, T. Banaschewski, A. L. W. Bokde, H. Flor, A. Grigis, H. Garavan, P. Gowland, A. Heinz, R. Brühl, J.-L. Martinot, M.-L. Paillére Martinot, E. Artiges, F. Nees, T. Paus, L. Poustka, J. H. Fröhner, L. Robinson, M. N. Smolka, H. Walter, J. Winterer, R. Whelan, J. A. Turner, A. D. Sarwate, S. M. Plis, V. Benegal, G. Schumann, V. D. Calhoun, and IMAGEN Consortium. "Federated Analysis in COINSTAC Reveals Functional Network Connectivity and Spectral Links to Smoking and Alcohol Consumption in Nearly 2,000 Adolescent Brains". In: *Neuroinformatics* 21 (Apr. 2023), pp. 287–301. DOI: 10.1007/s12021-022-09604-4.

[11] Y. Zhang, S. Vatedka, S. Jaggi, and A. D. Sarwate. "Quadratically Constrained Myopic Adversarial Channels". In: *IEEE Transactions on Information Theory* 68 (Aug. 2022), pp. 4901–4948. DOI: 10.1109/TIT.2022.3167554.

[12] S. Xiong, A. D. Sarwate, and N. B. Mandayam. "Network Traffic Shaping for Enhancing Privacy in IoT Systems". In: *IEEE/ACM Transactions on Networking* 30.3 (June 2022), pp. 1162–1177. DOI: 10.1109/TNET.2021.3140174.

[13] K. Rootes-Murdy, H. Gazula, E. Verner, R. Kelly, T. DeRamus, S. Plis, A. Sarwate, J. Turner, and V. Calhoun. "Federated Analysis of Neuroimaging Data: A Review of the Field". In: *Neuroinformatics* 20.2 (Apr. 2022), pp. 377–390. DOI: 10.1007/s12021-021-09550-7.

[14] F. Cangialosi, N. Agarwal, V. Arun, J. Jiang, S. Narayana, A. Sarwate, and R. Netravali. "Privid: Practical, Privacy-Preserving Video Analytics Queries". In: *Proceedings of the 19th USENIX Symposium on Networked Systems Design and Implementation (NSDI '22)*. Apr. 2022. URL: https://www.usenix.org/conference/nsdi22/presentation/cangialosi.

[15] D. K. Saha, V. D. Calhoun, Y. Du, Z. Fu, S. M. Kwon, A. D. Sarwate, S. R. Panta, and S. M. Plis. "Privacy-preserving quality control of neuroimaging datasets in federated environments". In: *Human Brain Mapping* 43 (Mar. 2022), pp. 2289–2310. DOI: 10.1002/hbm.25788.

[16] S. Basodi, R. Raja, B. Ray, H. Gazula, A. D. Sarwate, S. Plis, J. Liu, E. Verner, and V. D. Calhoun. "Decentralized Brain Age Estimation Using MRI Data". In: *Neuroinformatics* 20.4 (2022), pp. 981–990. DOI: 10.1007/s12021-022-09570-x.

[17] H. Gazula, K. Rootes-Murdy, B. Holla, S. Basodi, Z. Zhang, E. Verner, R. Kelly, P. Murthy, A. Chakrabarti, D. Basu, et al. "Federated analysis in COINSTAC reveals functional network connectivity and spectral links to smoking and alcohol consumption in nearly 2,000 adolescent brains". In: *Neuroinformatics* (2022), pp. 1–15.

[18] H. Imtiaz, J. Mohammadi, R. Silva, B. Baker, S. M. Plis, A. D. Sarwate, and V. D. Calhoun. "A Correlated Noise-Assisted Decentralized Differentially Private Estimation Protocol, and its Application to fMRI Source Separation". In: *IEEE Transactions on Signal Processing* 69 (Nov. 2021), pp. 6355–6370. DOI: 10.1109/TSP.2021.3126546.

[19] S. M. Kwon and A. D. Sarwate. "Learning Predictors from Multidimensional Data with Tensor Factorizations". In: *Aresty Rutgers Undergraduate Research Journal* 1.3 (Oct. 2021). DOI: 10.14713/arestyrurj.v1i3.165.

[20] G. R. Kurri, V. M. Prabhakaran, and A. D. Sarwate. "Coordination Through Shared Randomness". In: *IEEE Transactions on Information Theory* 67.8 (Aug. 2021), pp. 4948–4974. DOI: 10.1109/TIT.2021.3091604.

[21] K. E. Nikolakakis, D. S. Kalogerias, A. D. Sarwate, and O. Sheffet. "Quantile Multi-Armed Bandits: Optimal Best-Arm Identification and a Differentially Private Scheme". In: *IEEE Journal on Selected Areas in Information Theory* 2.2 (June 2021), pp. 534–548. DOI: 10.1109/JSAIT.2021.3081525.

[22] K. E. Nikolakakis, D. S. Kalogerias, and A. D. Sarwate. "Predictive Learning on Hidden Tree-Structured Ising Models". In: *Journal of Machine Learning Research* 22.59 (Apr. 2021), pp. 1–82. URL: https://jmlr.org/papers/v22/19-149.html.

[23] H. Gazula, B. Holla, Z. Zhang, J. Xu, E. Verner, R. Kelly, S. Jain, R. D. Bharath, G. J. Barker, D. Basu, A. Chakrabarti, K. Kalyanram, K. Kumaran, L. Singh, R. Kuriyan, P. Murthy, V. Benega, S. M. Plis, A. D. Sarwate, J. A. Turner, G. Schumann, and V. D. Calhoun. "Decentralized Multisite VBM Analysis During Adolescence Shows Structural Changes Linked to Age, Body Mass Index, and Smoking: a COINSTAC Analysis". In: *Neuroinformatics* (Jan. 2021). DOI: 10.1007/s12021-020-09502-7.

[24] H. Gazula, R. Kelly, J. Romero, E. Verner, B. T. Baker, R. F. Silva, H. Imtiaz, D. K. Saha, R. Raja, J. A. Turner, A. D. Sarwate, S. M. Plis, and V. D. Calhoun. "COINSTAC: Collaborative Informatics and Neuroimaging Suite Toolkit for Anonymous Computation". In: *Journal of Open Source Software* 5.54 (Oct. 2020), p. 2166. DOI: 10.21105/joss.02166.

[25] D. M. Bittner, A. E. Brito, M. Ghassemi, S. Rane, A. D. Sarwate, and R. N. Wright. "Understanding Privacy-Utility Tradeoffs Using Differentially Private Online Active Learning". In: *Journal of Privacy and Confidentiality* 10.2 (June 2020). DOI: 10.29012/jpc.720.

[26] M. Ghassemi, Z. Shakeri, A. D. Sarwate, and W. U. Bajwa. "Learning Mixtures of Separable Dictionaries for Tensor Data: Analysis and Algorithms". In: *IEEE Transactions on Signal Processing* 68.1 (Jan. 2020), pp. 33–48. DOI: 10.1109/TSP.2019.2952046.

[27] T. Hazan, F. Orabona, A. D. Sarwate, S. Maji, and T. Jaakkola. "High Dimensional Inference with Random Maximum A-Posteriori Perturbations". In: *IEEE Transactions on Information Theory* 65.10 (Oct. 2019), pp. 6539–6560. DOI: 10.1109/TIT.2019.2916805.

[28] K. Nikolakakis, D. Kalogerias, and A. D. Sarwate. "Learning Tree Structures from Noisy Data". In: *Proceedings of the Twenty-Second International Conference on Artificial Intelligence and Statistics (AISTATS)*. Ed. by K. Chaudhuri and R. Salakhutdinov. Vol. 89. Proceedings of Machine Learning Research. Naha, Okinawa, Japan: PMLR, Apr. 2019, pp. 1771–1782. URL: http://proceedings.mlr.press/v89/nikolakakis19a.html.

[29] B. Baker, A. Abrol, R. F. Silva, E. Damaraju, A. D. Sarwate, V. D. Calhoun, and S. M. Plis. "Decentralized Temporal Independent Component Analysis: Leveraging fMRI Data in Collaborative Settings". In: *NeuroImage* 186 (Feb. 2019), pp. 557–569. DOI: 10.1016/j.neuroimage.2018.10.072.

[30] H. Imtiaz and A. D. Sarwate. "Distributed Differentially-Private Algorithms for Matrix and Tensor Factorization". In: *IEEE Journal of Selected Topics in Signal Processing* 12.6 (Dec. 2018), pp. 1449–1464. DOI: 10.1109/JSTSP.2018.2877842.

[31] K. Kalantari, L. Sankar, and A. D. Sarwate. "Robust Privacy-Utility Tradeoffs under Differential Privacy and Hamming Distortion". In: *IEEE Transactions on Information Forensics and Security* 13.11 (Nov. 2018), pp. 2816–2830. DOI: 10.1109/TIFS.2018.2831619.

[32] Z. Shakeri, A. D. Sarwate, and W. U. Bajwa. "Identifiability of Kronecker-Structured Dictionaries for Tensor Data". In: *IEEE Journal of Selected Topics in Signal Processing* 12.5 (Oct. 2018), pp. 1047–1062. DOI: 10.1109/JSTSP.2018.2838092.

[33] A. Lalitha, T. Javidi, and A. D. Sarwate. "Social Learning and Distributed Hypothesis Testing". In: *IEEE Transactions on Information Theory* 64.9 (Sept. 2018), pp. 6161–6179. DOI: 10.1109/TIT.2018.2837050.

[34] Z. Shakeri, W. U. Bajwa, and A. D. Sarwate. "Minimax Lower Bounds on Dictionary Learning for Tensor Data". In: *IEEE Transactions on Information Theory* 64.4 (Apr. 2018), pp. 2706–2726. DOI: 10.1109/TIT.2018.2799931.

[35] A. Bijral, A. D. Sarwate, and N. Srebro. "Data Dependent Convergence For Consensus Stochastic Optimization". In: *IEEE Transactions on Automatic Control* 62.9 (Sept. 2017), pp. 4483–4498. DOI: 10.1109/TAC.2017.2671377.

[36] J. Ming, E. Verner, A. Sarwate, R. Kelly, C. Reed, T. Kahleck, R. Silva, S. Panta, J. Turner, S. Plis, and V. Calhoun. "COINSTAC: Decentralizing the future of brain imaging analysis". In: *F1000Research* 6.1512 (Aug. 2017). DOI: 10.12688/f1000research.12353.1.

[37] N. D. Goldstein and A. D. Sarwate. "Privacy, security, and the public health researcher in the era of electronic health record research". In: *Online Journal of Public Health Informatics* 8.3 (Dec. 2016), e207. DOI: 10.5210/ojphi.v8i3.7251.

[38] S. Plis, A. D. Sarwate, D. Wood, C. Dieringer, D. Landis, C. Reed, S. R. Panta, J. A. Turner, J. M. Shoemaker, K. W. Carter, P. Thompson, K. Hutchison, and V. D. Calhoun. "COINSTAC: A Privacy Enabled Model and Prototype for Leveraging and Processing Decentralized Brain Imaging Data". In: *Frontiers in Neuroscience* 10.365 (Aug. 2016). DOI: 10.3389/fnins.2016.00365.

[39] C. Huang, L. Sankar, and A. D. Sarwate. "Designing Incentive Schemes For Privacy-Sensitive Users". In: *Journal of Privacy and Confidentiality* 7.1 (Mar. 2016), pp. 99–127. URL: http://repository.cmu.edu/jpc/vol7/iss1/5/.

[40] S. Song, K. Chaudhuri, and A. D. Sarwate. "Learning from Data with Heterogeneous Noise using SGD". In: *Proceedings of the Eighteenth International Conference on Artificial Intelligence and Statistics (AISTATS)*. Ed. by G. Lebanon and S. V. N. Vishwanathan. Vol. 38. Proceedings of Machine Learning Research. San Diego, California, USA: PMLR, May 2015, pp. 894–902. URL: http://jmlr.org/proceedings/papers/v38/song15.html.

[41] A. D. Sarwate and T. Javidi. "Distributed Learning of Distributions via Social Sampling". In: *IEEE Transactions on Automatic Control* 60.1 (Jan. 2015), pp. 34–45. DOI: 10.1109/TAC.2014.2329611.

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[43] F. Orabona, T. Hazan, A. D. Sarwate, and T. Jaakkola. "On Measure Concentration of Random Maximum A-Posteriori Perturbations". In: *Proceedings of the 31st International Conference on Machine Learning (ICML)*. Ed. by E. P. Xing and T. Jebara. Vol. 32. JMLR Workshop and Conference Proceedings. Beijing, China: PLMR, June 2014, pp. 432–440. URL: http://jmlr.org/proceedings/papers/v32/orabona14.html.

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[45] S. Sabato, A. D. Sarwate, and N. Srebro. "Auditing: Active Learning with Outcome-Dependent Query Costs". In: *Advances in Neural Information Processing Systems (NIPS) 26*. Ed. by C. Burges, L. Bottou, M. Welling, Z. Ghahramani, and K. Weinberger. Curran Associates, Inc., Dec. 2013, pp. 512–520. URL: http://papers.nips.cc/paper/4956-auditing-active-learning-with-outcome-dependent-query-costs.

[46] K. Chaudhuri, A. D. Sarwate, and K. Sinha. "A Near-Optimal Algorithm for Differentially-Private Principal Components". In: *Journal of Machine Learning Research* 14 (Sept. 2013), pp. 2905–2943. URL: http://jmlr.org/papers/volume14/chaudhuri13a/chaudhuri13a.pdf.

[47] A. D. Sarwate and K. Chaudhuri. "Signal processing and machine learning with differential privacy: theory, algorithms, and challenges". In: *IEEE Signal Processing Magazine* 30.5 (Sept. 2013), pp. 86–94. DOI: 10.1109/MSP.2013.2259911.

[48] X. Jiang, A. D. Sarwate, and L. Ohno-Machado. "Privacy Technology to Share Data for Comparative Effectiveness Research : a systematic review". In: *Medical Care* 51.8 Suppl. 3 (Aug. 2013), S58–S65. DOI: 10.1097/MLR.0b013e31829b1d10.

[49] B. K. Dey, S. Jaggi, M. Langberg, and A. D. Sarwate. "Upper Bounds on the Capacity of Binary Channels with Causal Adversaries". In: *IEEE Transactions on Information Theory* 59.6 (June 2013), pp. 3753–3763. DOI: 10.1109/TIT.2013.2245721.

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[52] S. A. Vinterbo, A. D. Sarwate, and A. Boxwala. "Protecting Count Queries in Study Design". In: *Journal of the American Medical Informatics Association* 19.5 (Sept. 2012), pp. 750–757. DOI: 10.1136/amiajnl-2011-000459.

[53] A. D. Sarwate and M. Gastpar. "List-Decoding for the Arbitrarily Varying Channel Under State Constraints". In: *IEEE Transactions on Information Theory* 58.3 (Mar. 2012), pp. 1372–1384. DOI: 10.1109/TIT.2011.2178153.

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Book Chapters and Monographs

[1] B. K. Dey, S. Jaggi, M. Langberg, A. D. Sarwate, and Y. Zhang. "Codes for Adversaries: Between Worst-Case and Average-Case Jamming". In: *Foundations and Trends® in Communications and Information Theory* 21.3-4 (Dec. 2024), pp. 300–588. ISSN: 1567-2190. DOI: 10.1561/0100000112.

[2] A. D. Sarwate. "Machine learning with differential privacy". In: *Handbook of Sharing Confidential Data Differential Privacy, Secure Multiparty Computation, and Synthetic Data*. Ed. by J. Drechsler, D. Kifer, J. Reiter, and A. Slavkovic. Chapman & Hall/CRC Handbooks of Modern Statistical Methods. Boca Raton, FL, USA: CRC Press, Oct. 2024. Chap. 7, pp. 91–114.

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Conference Papers

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Research Support

PNNL — PNNL-642052 : *$70,000*, 9/1/2022–6/30/2024
Statistical Interference Generates Knowledge for Artificial Learners (SIGNAL)
PI: Anand D. Sarwate
This project uses statistical techniques to understand the variability of training ML/AI models.

NSF — CNS-2148104 : *$1,000,000*, 5/1/2022–4/30/2025
RINGS: REALTIME: Resilient Edge-cloud Autonomous Learning with Timely Inferences
PI: Anand D. Sarwate, Co-PIs: Dipankar Raychaudhuri, Waheed Bajwa, Roy D. Yates
This project studies how to design real-time operation, online decision-making, and offline training of real-time ML-based applications that are resilient to data, application, user, and system changes.

NIH — 2R01DA040487 : *$623,113*, 9/30/2020–6/30/2025
COINSTAC 2.0: Decentralized, Scalable Analysis of Loosely Coupled Data
PI: Vince Calhoun (Georgia State), subcontract to Rutgers (PI: Anand D. Sarwate)
This is a continuation of the COINSTAC project (see below) to develop a system for automated and privacy-sensitive statistical analyses of data from neuroimaging researchers studying the same condition at different sites.

NSF — CCF-1910110 : *$499,976*, 10/1/2019–9/30/2022
CIF: Small: ESTRELLA: Exploiting Structure in Tensors for Representation, Estimation, and Limits of Learning Algorithms
PI: Anand D. Sarwate, Co-PI: Waheed Bajwa
This project pursues a comprehensive theory to simplify the measurement, storage, and statistical modeling of tensor-structured data.

NSF — CCF-1909468: *$250,000*, 10/1/2019–9/30/2022
CIF: Small: Collaborative Research: Between Shannon and Hamming
PI: Anand D. Sarwate, Co-PI: Michael Langberg (U. Buffalo)
This proposal studies fundamental coding strategies communication over channels in which the interference lies between the average and worst-case models.

NSF — SaTC-1617849: *$500,000.00*, 9/1/2016–8/31/2020
TWC: Small: PERMIT: Privacy-Enabled Resource Management for IoT Networks
PI: Anand D. Sarwate, Co-PI: Narayan Mandayam
This proposal studies how privacy, utility, and bandwidth affect each other in networked data collection and information processing systems.

Verisign — Gift: *$25,000*, 11/2015
Differential Privacy, Multi-target Search, and Anomaly Detection
PIs: Rebecca Wright, Anand D. Sarwate Gift through DIMACS Center to work on applied and theoretical privacy.

DHS — Subcontract from CICCADA: *$125,000*, 10/1/2015–6/30/2016
PIs: Rebecca Wright, Anand D. Sarwate
DPAD: Differentially Private Anomaly Detection

This work seeks to understand how and when we can safely detect anomalies in private data.

NSF — CCF-1525276: *$160,000.00*, 9/1/2015–8/31/2017
CIF: Small: Active data screening for efficient feature learning
PI: Waheed Bajwa, Co-PI: Anand D. Sarwate
This proposal develops methods for screening samples to use for dictionary learning algorithms to balance representation accuracy and computational efficiency.

NIH — 1R01DA040487-01A1: *$692,575*, 07/01/2015–04/30/2020
COINSTAC: Decentralized, Scalable Analysis of Loosely Coupled Data
PI: Vince Calhoun (Georgia State), subcontract to Rutgers (PI: Anand D. Sarwate)
This proposal is to develop a system for automated and privacy-sensitive statistical analyses of data from neuroimaging researchers studying the same condition at different sites.

NSF — CCF-1453432: *$540,000.00*, 7/1/2015–6/30/2020
CAREER: Privacy-preserving learning for distributed data
PI: Anand D. Sarwate
This proposal develops key design principles for making practical privacy-preserving distributed learning algorithms and validate them in collaboration with neuroimaging researchers. The results will identify new challenges for information processing and machine learning in general distributed systems.

DARPA/Navy — N66001-15-C-4070: *$1,013.723*, 3/15/2015–3/14/2020
Jana: Ensuring Secure, Private and Flexible Data Access
PI: David Archer (Galois, Inc.), subcontract to Rutgers (PI: Rebecca Wright, co-PIs: Anand D. Sarwate, David Cash)
This project is about building a secure database system that uses secure multiparty computing and privacy-preserving algorithms to hold and process queries on data held by multiple parties.

ARL — CTA on Robotics: *$125,526*, 4/16/2014–4/15/2015
Subaward from General Dynamics to Rutgers (PI: Waheed Bajwa, Co-PIs: Athina Petropulu, Anand Sarwate)
Active Feature Learning and Classifier Training for Object Recognition
This work was to develop active learning approaches for feature learning for object recognition in rich data such as video. Subaward from General Dynamics.

NSF — CCF-1218331: *$208,426*, 9/1/2012–4/30/2014
CIF: Small: Collaborative Research: Inference by social sampling
PI: Tara Javidi (UCSD), Co-PI: Anand D. Sarwate
This work investigates communication and networking paradigms that can enable a network of individual agents to collaboratively estimate distributions over high dimensional spaces, even when individual observations are severely limited in accuracy, space, or time.

AcademyHealth — EDM Forum: *$5,000*, 11/2011
PI: Xiaoqian Jiang (UCSD), co-PIs: Anand D. Sarwate (TTI-Chicago), Lucila Ohno-

Machado (UCSD)
Review of Technologies to Protect Patient Privacy When Sharing Data for Comparative Effectiveness Research
Commissioned paper for a systematic review of privacy-preserving methods for sharing data for medical research.

Editorships

10/21–ongoing	Associate Editor, IEEE Transactions on Information Theory
1/20–ongoing	Consulting Associate Editor, IEEE Open Journal of Signal Processing (OJSP)
1/15–12/18	Associate Editor, IEEE Transactions on Signal and Information Processing over Networks

Professional Service

2021–2026	Member, Board of Governors, IEEE Information Theory Society
2017–2022	Member, Machine Learning for Signal Processing Technical Committee, IEEE Signal Processing Society
1/15–1/19	Online Editor, IEEE Information Theory Society
01/14–12/14	Online Associate Editor, IEEE Information Theory Society
10/08–12/10	Member, Student Committee, IEEE Information Theory Society
2007–2009	Member, Ad Hoc Committee on Online Content and Services, IEEE Information Theory Society

Conference and Workshop Organization

2024	Co-Organizer, DIMACS Workshop on Modeling Randomness in Neural Network Training
2024	Tutorials Co-Chair, 2024 IEEE International Workshop on Machine Learning for Signal Processing (MLSP 2024)
2023	Finance Chair, 2023 North American School of Information Theory (NASIT 2023)
2022	Online Platform Co-Chair, 2022 IEEE International Symposium on Information Theory (ISIT 2022)
2019	Technical Program Chair, 2019 North American School of Information Theory (NASIT 2019)
2019	Chair, Simons Center Workshop on Privacy and the Science of Data Analysis, Simons Institute for Theoretical Computer Science
2018	Co-Organizer, Algorithmic Challenges for Protecting Privacy for Biomedical Data, Institute for Pure and Applied Mathematics (IPAM)

2016 Co-Organizer, Program on the Nexus of Information and Computation Theories: Secrecy and Privacy, Institute Henri Poncaré

Program Committees (last 5 years)

2024 Technical Program Committee, 2024 IEEE International Symposium on Information Theory (ISIT 2024)

2023 Technical Program Committee, 2023 IEEE International Symposium on Information Theory (ISIT 2023)

2022 Technical Program Committee, Workshop on the Theory and Practice of Differential Privacy (TPDP 2022)

2022 Technical Program Committee, 2022 IEEE International Symposium on Information Theory (ISIT 2022)

2022 Technical Program Committee, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2022)

2021 Technical Program Committee, 2021 IEEE International Symposium on Information Theory (ISIT 2021)

2021 Technical Program Committee, 2021 IEEE International Symposium on Information Theory (ISIT 2021)

2021 Technical Program Committee, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2021)

2020 Technical Program Committee, Workshop on the Theory and Practice of Differential Privacy (TPDP 2020)

2020 Technical Program Committee, IEEE International Workshop on Machine Learning for Signal Processing (MLSP 2020)

2020 Technical Program Committee, NeurIPS 2020 Workshop on Privacy Preserving Machine Learning - PriML and PPML Joint Edition

2020 Technical Program Committee, ICLR 2020 Workshop on Trustworthy ML

2020 Senior Area Chair, Conference on Learning Theory (COLT 2020)

2020 Technical Program Committee, 2020 IEEE International Symposium on Information Theory (ISIT 2020)

2020 Technical Program Committee, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2020)

Peer Reviewing

IEEE Transactions : Information Theory, Signal Processing, Automatic Control, Information Forensics and Security, Communications, Wireless Communications, Vehicular

Technology, Computational Biology and Bioinformatics, Parallel and Distributed Systems, Smart Grid, Network Science and Engineering, Signal and Information Processing over Networks, Dependable and Secure Computing

IEEE Journal of Selected Areas in Information Theory, IEEE Journal of Selected Areas in Communication, IEEE Journal of Selected Topics in Signal Processing, IEEE Open Journal of Signal Processing, IEEE Signal Processing Magazine, IEEE Signal Processing Letters, IEEE Communications Letters,

Journal of Machine Learning Research (JMLR), Machine Learning

Journal of the American Statistical Association (JASA), Statistical Science, Mathematical Statistics and Learning

Journal of Privacy and Confidentiality

Bernoulli, Random Structures and Algorithms, Queueing Systems : Theory and Applications

Problems of Information Transmission, Entropy

IEEE/ACM Transactions on Networks, ACM Transactions on Sensor Networks, EURASIP Journal on Wireless Communications and Networking, IEEE Open Journal of Signal Processing

SIAM Journal on Matrix Analysis and Applications (SIMAX)

AMS Mathematical Reviews

Conferences : ISIT (2007–2024), ITW (2008, 2010, 2013–2022), ICASSP (2024), MLSP (2023), EUSIPCO (2018), SPAWC (2018), GlobalSIP (2015–2017), CAMSAP (2017), DSLW (2022), Asilomar (2024) COLT (2011, 2012, 2020), STOC (2010), SODA (2015), NIPS (2012–2016), ICML (2012–2016), AISTATS (2012, 2013, 2017–2019), TPDP (2024, 2018, 2020), ICC (2012), Infocom (2012), Globecom (2007, 2009), WiOpt (2015), DCOSS (2015), PIMRC (2007) CDC (2009, 2012), ACC (2013, 2024), ACM Richard Tapia Celebration of Diversity in Computing Poster Track (2019),

February 17, 2025