

Lalitha Sankar

Electrical, Computer, and Energy Engineering

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EDUCATION:

Ph.D. in Electrical Engineering, Rutgers University, Piscataway, NJ Oct. 2007
Advisor: **Narayan Mandayam**
Dissertation: *Relay Cooperation in Multiaccess Networks*

M.S. in Electrical Engineering, University of Maryland Baltimore County, Baltimore, MD Aug. 1994

B.Tech. in Engineering Physics, Indian Institute of Technology, Bombay, India May 1992

ACADEMIC/PROFESSIONAL EXPERIENCE:

Professor Arizona State University, Tempe, AZ
School of ECEE Aug. 2023–Present

Associate Professor Arizona State University, Tempe, AZ
School of ECEE Aug. 2018–Jul. 2023

Assistant Professor Arizona State University, Tempe, AZ
School of ECEE Oct. 2012–Jul. 2018

Associate Research Scholar Princeton University, Princeton, NJ
Mentor: H. Vincent Poor Sep. 2010–Sep. 2012

Science and Technology Postdoctoral Fellow Princeton University, Princeton, NJ
Advisor: H. Vincent Poor Jun. 2007–Aug. 2010

Graduate Research Assistant WINLAB, Rutgers University, North Brunswick, NJ
Advisor: Narayan Mandayam Sep. 2003–May 2007

Senior Member of Technical Staff AT&T Shannon Labs, Florham Park, NJ
Sep. 1995–Mar. 2002

Advanced Engineer Engineering R&D, Polaroid Corporation, Cambridge, MA
Sep. 1994–Aug. 1995

HONORS AND AWARDS:

Google AI for Social Good Faculty Research Award Oct 2020

IEEE Information Theory Society Distinguished Lecturer Jan 2020– Dec 2022

NSF HDR Institute for Data-Intensive Research in Science and Engineering (lead PI) Oct 2019–Sep 2022

IEEE Senior Member May 2015

NSF CAREER Award NSF CCF Program 2014

IEEE Globecom Best Paper Award 2012

Princeton Science and Technology Council Teaching and Research Postdoctoral Fellowship 2007-2010

Electrical Engineering Academic Achievement Award ECE, Rutgers, 2007

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NOMINATIONS:

Nominated by my postdocs for the ASU Graduate College Outstanding Faculty Mentor Award Oct 2021
Nominated by my students for the ASU Graduate College Outstanding Faculty Mentor Award Oct 2020

RESEARCH SUPPORT:

SUMMARY OF RESEARCH SUPPORT

- ◇ Total amount of all awards in which Prof. Sankar is the PI or co-PI: \$8.9M (since Sep. 2012)
- ◇ Total amount of all awards in which Prof. Sankar is the PI: \$7.6M
- ◇ Prof. Sankar's share (recognition) in all awards as PI or co-PI as of 04/22/2022: ~ \$3.023M
- ◇ Prof. Sankar's share (recognition) of research expenditures as of 04/22/2022: ~ \$2.33M
- ◇ Total REU funds from the NSF for Undergraduate Research as PI or co-PI: \$56,000

Current active grants: 6 NSF grants including several from the CISE/CIF directorate, an NSF Directorate of Mathematical Sciences (DMS)+Simons Foundations grant on Deep Learning, and a Google AI for Social Good grant.

1. O. Kosut (PI, ASU ECEE), **L. Sankar** (co-PI), and F. Calmon (co-PI, Harvard), "Collaborative Research: CIF: Medium: Fundamental Limits of Privacy-Enhancing Technologies," **National Science Foundation CIF-2312666**, \$764,000, Oct. 2023 - Sep. 2027. (my share: 50%)
2. **L. Sankar** (PI), O. Kosut (co-PI, ASU ECEE), and R. Anguluri (SP, ASU ECEE), "Exploiting Physical and Dynamical Structures for Real-time Inference in Electric Power Systems," **National Science Foundation EPCN-2246658**, \$360,000, Jul. 2023 - Jun. 2026. (my share: 50%)
3. S. Koyejo (PI, Stanford), **L. Sankar** (co-PI), and J. Sun (co-PI, UIUC), "Collaborative Research: SCH: Fair Federated Representation Learning for Breast Cancer Risk Scoring," **National Science Foundation SCH-2205080**, \$1,100,000, Oct. 2022 - Sep. 2025. (my share: \$300,000)
4. **L. Sankar** (PI), A. Nedich (co-PI, ASU ECEE), G. Pedrielli (co-PI, ASU SCAI), and S. Lan (co-PI, ASU SoMMS), "Unifying Information and Optimization-theoretic Approaches for Modeling and Training Generative Adversarial Networks," **National Science Foundation DMS-2134256**, \$1,100,000, Oct. 2021 - Sep. 2024. (my share: 25%)
5. Y. Weng (PI), L. Lai, **L. Sankar** (member of the three faculty ASU team), "Comprehensive Cybersecurity Technology for Critical Power Infrastructure: AI-Based Centralized Defense and Edge Resilience," **Binational Industrial Research and Development Foundation (BIRD)**, (this is a consortium of three universities, two in the USA and one in Israel, and nearly 20 industry partners) \$900,000, Nov. 2021. (my share: 30% of ASU's share of \$3M)
6. **L. Sankar** (PI), "Applying Federated Analytics to COVID-19 Contact Tracing, with an On-campus Pilot," **Google University Grant**, \$150,000, Oct. 2020. (my share: 100%)
7. **L. Sankar** (PI) and G. Dasarathy (co-PI, ASU), "Alpha Loss: A New Framework for Understanding and Trading Off Computation, Accuracy, and Robustness in Machine Learning," **National Science Foundation CIF-2007688**, \$499,999, Oct. 2020 - Sep. 2023. (my share: 64%)
8. **L. Sankar** (PI) and G. Dasarathy (co-PI, ASU), **Research Experience in Undergraduate Education Supplement for:** "Alpha Loss: A New Framework for Understanding and Trading Off Computation, Accuracy, and Robustness in Machine Learning," **National Science Foundation CIF-2007688**, \$16,000, Oct. 2021 - Sep. 2023. (my share: 100%)

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9. **L. Sankar** (PI), N. Trieu (co-PI, ASU), and M. Zhao (co-PI, ASU), “RAPID: FACT: Federated Analytics for Contact Tracing,” **National Science Foundation COVID-19 RAPID Grants**, \$200,000, Jun. 2020 - May 2021. (my share: 34%)
10. **L. Sankar** (PI), N. Trieu (co-PI, ASU), M. Zhao (co-PI, ASU), **Research Experience in Undergraduate Education Supplement for:** “RAPID: FACT: Federated Analytics for Contact Tracing,” **National Science Foundation COVID-19 RAPID Grants**, \$8,000, Jun. 2020 - May 2021. (my share: 80%)
11. **L. Sankar** (PI), O. Kosut (co-PI, ASU), F. P. Calmon (co-PI, Harvard) “Information-theoretic Guarantees on Privacy in the Age of Learning” **National Science Foundation Award CCF-1901243**, \$1,200,000, Jun. 2019 - May 2023, my share of overall: 33% and my share of ASU funds: 50%.
12. **L. Sankar** (PI), O. Kosut (co-PI, ASU), G. Dasarathy (co-PI, ASU), A. Pal (co-PI, ASU), C. Bryan (co-PI, ASU), and L. Xie (co-PI, TAMU), “High-Dimensional Spatio-Temporal Data Science for a Resilient Power Grid: Towards Real-Time Integration of Synchrophasor Data” **National Science Foundation Harnessing the Data Revolution: Institute for Data-Intensive Research in Science and Engineering Award OAC-1815361**, \$1,725,000, Oct. 2019 - Sep. 2021, ASU share: \$1,500,000 over 2 years; (my share: ~23%) .
13. **L. Sankar** (PI) and O. Kosut (co-PI, ASU), NSF Travel Grant for the “2020 IEEE SmartGrid-Communications Conference: Trustworthy Sensing, Communications, Processing, and Analytics for a Sustainable Grid,” **National Science Foundation Conference Travel Grant**, \$8,000, Oct. 2020 - May 2021.
14. D. Jennewein (PI), L. Sankar (Co-PI), James McCabe (Co-PI), Chris Kurtz (Co-PI), B. Munk (Co-PI), “CC* Networking Infrastructure: Science DMZ for Data-enabled Science, Engineering, and Health,” **National Science Foundation Office of Advanced CyberInfrastructure**, \$500,000, Jul. 2020 - Jun 2022. (my share: 0%)
15. **L. Sankar** (PI) and R. Rajagopal (co-PI, Stanford), “Generative Adversarial Privacy: A Data-Drive Approach to Guaranteeing Privacy and Utility” **National Science Foundation Award CIF-1815361**, \$498,213, Oct. 2018 - Sep. 2021, my share: 66%.
16. **L. Sankar** (PI), A. Pal (co-PI, ASU), L. Xie (co-PI, TAMU) “Machine Learning Approaches for Real-time Integration of PMU Data” **NSF I/UCRC Power Systems Energy Research Center (PSERC) S-54**, \$220,000, Jul. 2019 – Jun. 2021, my share: \$80K (32%).
17. A. Pal, (PI), **L. Sankar** (co-PI), and C. DeMarco (co-PI, U. Wisconsin, Madison), “Synchrophasor-Data Analytics for a More Resilient Electric Power System” **NSF I/UCRC Power Systems Energy Research Center (PSERC) S-54**, \$220,000, Aug. 2017 – Jul. 2019, my share: \$70K (32%) .
18. **L. Sankar** (PI), “**REU Supplement:** Privacy-Guaranteed Distributed Interactions in Critical Infrastructure Networks” **National Science Foundation Faculty Early Career Development (CA-REER) Award CCF-1742836**, \$8,000, Jan. 2017 – Dec. 2018.
19. **L. Sankar** (PI), O. Kosut (co-PI, ASU), M. Govindarasu (co-PI, ISU), “Attack-Resilient and Secure EMS: Design, Algorithms, Operational Protocols, and Evaluation (S-72)” **NSF I/UCRC Power Systems Energy Research Center (PSERC) S-54**, \$220,000, Aug. 2016 – Jul. 2018, **Sankar share: \$80K over 2 years.**
20. **L. Sankar** (PI), K. Hedman (co-PI), and O. Kosut (co-PI), “A Verifiable Framework for Cyber-Physical Attacks and Countermeasures in a Resilient Electric Power Grid” **National Science Foundation Award CNS-1449080**, \$1,399,999.00, Mar. 2015 - Feb. 2019, **Sankar share: \$333,334 (34%) over 4 years.**

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21. O. Kosut (PI) and **L. Sankar** (co-PI), “A Framework for Low Latency Universal Compression with Privacy Guarantees” **National Science Foundation Award CCF-1422358**, \$498,213.00, Jul. 2014 - Jun. 2017, **Sankar share: \$249,106 (50%) over 3 years.**
22. L. Sankar (PI), “Privacy-Guaranteed Distributed Interactions in Critical Infrastructure Networks” **National Science Foundation Faculty Early Career Development (CAREER) Award CCF-1350914**, \$455,000, Jan. 2014 - Dec. 2019.
23. V. Namboodiri (PI), M. Jadliwala (co-PI), V. Aravinthan, and L. Sankar (co-PI), “Towards a Privacy-aware Information-sharing Framework for Advanced Metering Infrastructures” **NSF I/UCRC Power Systems Energy Research Center (PSERC) S-54**, \$290,000, 2013-2015, **Sankar share: \$70K (24%) over 2 years.**
24. H. V. Poor (PI) and L. Sankar (co-PI), “Privacy and Utility of Databases: An Information-theoretic Approach” **National Science Foundation Award CCF-1016671**, \$335,000, 2010-2013.

PUBLICATIONS:

SUMMARY OF PUBLICATIONS AND INTELLECTUAL PROPERTY

- ◇ Abstracts: 10
- ◇ Editor for Thematic Journal Issues: 1
- ◇ Co-Editor for Thematic Journal Issues: 2
- ◇ Invited Conference Papers: 5
- ◇ Total Journal Publications (Published, In Press, and/or Accepted): 30
- ◇ Total Journal Publications (Published, In Press, and/or Accepted) from ASU: **21**
- ◇ Journal Publications prior to ASU (All Published): 9
- ◇ Journal Editorials: 2
- ◇ Manuscripts from ASU (Submitted/under Revision): 3
- ◇ Manuscripts from ASU in Preparation (to be submitted by June 2017): 1
- ◇ Intellectual Property: Patents: 3

LEGEND:

Underline: Self (last name before 2006: Sankaranarayanan)

(*****): Corresponding author

Underline: ASU PhD student

Bold font: ASU MS student

(**#**) ASU Undergraduate Student

(**×**) ASU Postdoctoral Researcher (past and present)

(**+**): Equal contribution

All citations are as of April 15, 2022

Journal Publications:

1. G. Kurri^{×*}, O. Kosut⁺, and L. Sankar⁺, “An Operational Approach to Information Leakage via Generalized Gain Functions,” *IEEE Trans. Information Theory*, accepted for publication, Nov. 2023.
2. **N. TagizhpourBazargani**^{*}, G. Dasarathy, L. Sankar⁺, and O. Kosut⁺, “A Machine Learning Framework for Event Identification via Modal Analysis of PMU Data,” *IEEE Trans. Power Systems*, vol. 38, no. 5, Sep. 2023.
3. **A. Pinceti**^{*}, L. Sankar⁺, and O. Kosut⁺, “Generation of synthetic multi-resolution time series load data,” *IET Smart Grid*, vol. 6, no. 5, May. 2023.
4. R. Anguluri^{*†}, L. Sankar⁺, and O. Kosut⁺, “Localization and Estimation of Unknown Forced Inputs: A group LASSO approach,” *IEEE Trans. on Network Control*, accepted for publication, Mar. 2023 (early access).
5. **A. Arunkumar**^{*}, **A. Pinceti**, L. Sankar, and C. Bryan, “PMUVis : A large scale platform to assist power system operators in a smart grid” *IEEE Computer Graphics and Applications*, vol. 42, no. 6, Nov. 2022.
6. **X. Zheng**^{*}, **A. Pinceti**, L. Xie and L. Sankar, “Cross time-scale synthetic synchrophasor data creation: A generative adversarial nets (GAN)-based approach” *IEEE Journal of Modern Power Systems and Clean Energy*, vol. 11, no. 1, Jul. 2022.
7. **T. Sypherd**^{*}, M. Diaz[×], **J. Cava**, G. Dasarathy, P. Kairouz, and L. Sankar, “A tunable loss function for robust classification: Calibration, landscape, and generalization” *IEEE Transactions on Information Theory*, vol. 68, no. 9, Sep. 2022.
8. P. Kairouz, **J. Liao**[†], **C. Huang**[†], **M. Vyas**, **M. Welfert**^{*}, and L. Sankar, “Generating fair universal representations using adversarial models” *IEEE Transactions on Information Forensics and Security*, vol. 17, May. 2022 (early access).
9. R. Anguluri^{×*}, G. Dasarathy⁺, O. Kosut⁺, and L. Sankar⁺, “Grid topology identification with hidden nodes via structured norm minimization,” *IEEE Control Systems Letters*, vol. 6, Jun. 2021.
10. **Z. Chu**, **J. Zhang**, O. Kosut⁺, L. Sankar⁺, “N-1 Reliability Makes It Difficult for False Data Injection Attacks to Cause Physical Consequences” *IEEE Transactions on Power Systems*, vol. 26, no. 5, Sep. 2021.
11. H. V. Poor^{*}, M. Bloch, O. Günlü, F. Oggier, L. Sankar, R. Schaefer, and A. Yener, “An Overview of Information-Theoretic Security and Privacy: Metrics, Limits and Applications,” *IEEE Journal on Selected Areas in Information Theory*, vol. 2, no. 1, pp. 3-4, March 2021.
12. S. Asoodeh, **J. Liao**[†], F. P. Calmon⁺, O. Kosut⁺, L. Sankar⁺, “Three variants of differential privacy: Lossless conversion and applications,” *IEEE Journal on Selected Areas in Information Theory*, vol. 2, issue 1, Mar. 2021.
13. **A. Pinceti**^{*}, L. Sankar⁺, and O. Kosut⁺, “Detection and localization of load redistribution attacks on large scale systems,” accepted, *Journal of Modern Power Systems and Clean Energy*, vol. 10, no. 2, Feb. 2021.
14. **Z. Chu**^{*}, O. Kosut⁺, and L. Sankar⁺, “Detecting Load Redistribution Attacks via Support Vector Models,” accepted, *IET Smart Grid*, vol. 3, no. 5, Oct. 2020.
15. M. Diaz[×], H. Wang, F. P. Calmon⁺, and L. Sankar⁺, “On the robustness of information-theoretic privacy measures and mechanisms,” *IEEE Transactions on Information Theory*, vol. 66, no. 4, pp. 1949 - 1978, Apr. 2020.
16. **J. Liao**^{*}, O. Kosut, L. Sankar, and F. P. Calmon, “Tunable measures for information leakage and applications to privacy-utility tradeoffs,” *IEEE Transactions on Information Theory*, pp.1–24, Sep. 2019.

17. **J. Zhang***, **Z. Chu**, **L. Sankar⁺**, and O. Kosut⁺, “Can attackers with limited information exploit historical data to mount successful false data injection attacks on power systems?,” *IEEE Transactions on Power Systems*, vol. 33, no. 5, Sep. 2018.
18. **K. Kalantari***, **L. Sankar**, and A. D. Sarwate, “The optimal differential privacy mechanism for universal memoryless sources under Hamming distortion,” *IEEE Transactions on Information Forensics and Security*, vol. 13, no. 11, Nov. 2018.
19. **J. Liao***, **L. Sankar**, V. F. Tan, and F. du Pin Calmon, “Hypothesis testing under mutual information privacy constraints in the high privacy regime,” *IEEE Transactions on Information Forensics and Security*, published, vol. 13, no. 4, Apr. 2018.
20. **C. Huang**, P. Kairouz, X. Chen, **L. Sankar***, and R. Rajagopal. “Context-Aware Generative Adversarial Privacy,” *Entropy, Special Issue on Information Theory in Machine Learning*, vol. 19, 658, Dec. 2017.
21. **B. Moraffah** and **L. Sankar***. “Privacy-guaranteed Two-Agent Interactions Using Information-Theoretic Mechanisms,” *IEEE Transactions on Information Forensics and Security*, vol. 12, no. 9, Sep. 2017.
22. O. Kosut* and **L. Sankar**. “Asymptotics and non-asymptotics for universal fixed-to-variable source coding,” *IEEE Transactions on Information Theory*, accepted Mar. 2017.
23. **J. Zhang*** and **L. Sankar**. “Physical System Consequences of Unobservable State-and-Topology Cyber-Physical Attacks,” *IEEE Transactions on Smart Grid*, vol. 7, no. 4, pp. 2016-2025, July 2016.
24. **C. Huang***, **L. Sankar**, and A. Sarwate. “Designing Incentive Schemes for Privacy-Sensitive Users,” *Journal of Confidentiality and Privacy*, issue 1, vol.7, 2015-2016.
25. **J. Liang***, **L. Sankar⁺**, and O. Kosut⁺. “Vulnerability Analysis and Consequences of False Data Injection Attack on Power System State Estimation,” *IEEE Trans. Power Systems*, vol. 31, no. 5, pp. 3864-3872, Sept. 2016.
26. E. V. Belmega*, **L. Sankar**, and H. V. Poor. “Enabling Data Exchange in Interactive State Estimation under Privacy Constraints,” *IEEE Journal Special Topics in Signal Processing (JST-SP), Special Issue on Signal Processing for Privacy*, vol. 9, no. 7, pp. 1285-1297, Oct. 2015.
27. **L. Sankar***, W. Trappe, K. Ramachandran, H. V. Poor, and M. Debbah. “The role of signal processing in meeting privacy challenges: An overview,” *IEEE Signal Processing Magazine, Special Issue on Cyber-Security and Privacy*, issue 5, pp. 95-106, Sep. 2013.
28. R. Tandon*, **L. Sankar**, H. V. Poor. “Lossy discriminatory source coding: Side-information privacy,” *IEEE Transactions on Information Theory*, vol.59, no.9, pp.5665-5677, Sept. 2013.
29. **L. Sankar***, S. Raj Rajagopalan, S. Mohajer, H. V. Poor. “Smart meter privacy: A theoretical framework,” *IEEE Transactions on the Smart Grid*, vol.4, no.2, pp.837-846, Jun. 2013.
30. **L. Sankar***, S. Raj Rajagopalan, and H. V. Poor. “Utility-privacy tradeoffs in databases: An information-theoretic approach,” *IEEE Transactions on Information Forensics and Security*, vol.8, no.6, pp.838-852, Mar. 2013.
31. **L. Sankar***, G. Kramer, and N. B. Mandayam. “Dedicated relay vs. user cooperation in time-duplexed multiaccess networks,” *IEEE J. Commun.*, vol. 6, no. 4, pp. 330-339, Jul. 2011.
32. **L. Sankar***, X. Shang, E. Erkip, and H. V. Poor. “Ergodic fading interference channels: Sum-capacity and separability,” *IEEE Trans. Inform. Theory*, vol 57, no. 5, pp. 2005-2626, May 2011.
33. **L. Sankar***, Y. Liang, N. B. Mandayam, and H. V. Poor. “Opportunistic communications in fading Gaussian multiaccess relay channels,” *IEEE Trans. Inform. Theory*, vol. 57, no. 4, pp. 1911-1931, Apr. 2011.

34. V. Aggarwal*, L. Sankar, A. R. Calderbank, and H. V. Poor. "Secrecy capacity of a class of orthogonal relay eavesdropper channels," *EURASIP Journal on Wireless Communication and Networking: Special Issue on Wireless Physical Layer Security*, vol. 2009, article ID 494696, 14 pages, 2009.
35. L. Sankar*, N. B. Mandayam, and H. V. Poor. "On the sum-capacity of degraded Gaussian multiaccess relay channels," *IEEE Trans. Information Theory*, vol. 55, no. 12, pp. 5394-5411, Dec. 2009.
36. S Mathur*, L. Sankar, and N. B. Mandayam. "Coalitions in cooperative wireless networks," *IEEE J. Special Areas in Communication, Special Issue on Game Theory in Communication Networks*, vol. 26, no. 7, pp. 1104-1115, Sep. 2008.
37. L. Sankar*, G. Kramer, and N. B. Mandayam. "Offset encoding for multiple-access relay channels," *IEEE Trans. Information Theory, Special Issue on Models, Theory, and Codes for Relaying and Cooperation in Communication Networks*, vol.53, no. 10, pp. 3814-3821, Oct. 2007.

Preprints:

38. M. Welfert*, G. Kurri[×], K. Otstot, and L. Sankar, "Addressing GAN Training Instabilities via Tunable Classification Losses," under review, *IEEE Journal of Selected Applications of Information Theory (JSAIT), Special Issue on Information-theoretic Methods for Trustworthy Machine Learning*, Sep. 2023.
39. A. Gilani*, G. Kurri[×], O. Kosut, and L. Sankar, "Unifying Privacy Measures via Maximal (α, β) -Leakage (MabeL)," under review, *IEEE Trans. Information Theory (T-IT)*, Jun. 2023.
40. D. Vankov*, A. Nedich and L. Sankar, "Last Iterate Convergence of Popov Method for Non-monotone Stochastic Variational Inequalities," under review, *Artificial Intelligence and Statistics Conference (AISTATS)*, Oct. 2023.

In Preparation:

41. K. Otstot, A. Yang^{#*}, J. Cava, and L. Sankar⁺, "AUGLOSS: A Robust Augmentation-based Fine-tuning Methodology for Real-World Dataset Corruption," to be submitted to the *IEEE Transactions on Information Forensics and Security*.

Editorials/Newsletter Articles/Thesis:

42. H. V. Poor*, M. Bloch, O. Günlü, F. Oggier, L. Sankar, R. Schaefer, and A. Yener, "Editorial: Privacy and Security of Information Systems," *IEEE Journal on Selected Areas in Information Theory*, vol. 2, no. 1, pp. 3-4, March 2021, doi: 10.1109/JSAIT.2021.3060161.
43. W. Trappe*, L. Sankar, R. Poovendran, H. Lee, and S. Capkun. "Introduction to the issue on signal and information processing for privacy," *Guest Editorial, IEEE Journal Selected Topics on Signal Processing, Special Issue on Privacy*, vol. 5, no. 7, pp. 1172-1175, Oct. 2015.
44. L. Sankar*, W. Trappe, K. Ramachandran, H. V. Poor, and M. Debbah. "Signal processing for cybersecurity and privacy," *Guest Editorial, IEEE Signal Processing Magazine, Special Issue on Cyber-Security and Privacy*, issue 5, pp. 95-106, Sep. 2013.
45. L. Sankar* and H. V. Poor. "Teaching it to freshman," *IEEE Information Theory Society Newsletter*, Sep. 2008.
46. L. Sankar. "Relay cooperation in multiaccess networks," *Doctoral thesis*, WINLAB, Rutgers University, Oct. 2007.

Conference Papers:

47. **M. Welfert***, G. Kurri[×], **K. Otstot**, and **L. Sankar**, “Tunable Dual-Objective GANs for Stable Training,” spotlight talk and poster, *2nd Workshop on New Frontiers in Adversarial Machine Learning*, Jul. 2023, Hawaii, USA.
48. **T. Sypherd***, **N. Stromberg***, R. Nock, V. Berisha, and **L. Sankar**, “Smoothly Giving up: Robustness for Simple Models,” in Proc. *Artificial Intelligence and Statistics (AISTATS)*, Apr. 2023, Valencia, Spain.
49. **W. Alghamdi***, J. F. Gomez, S. Asoodeh, F. P. Calmon⁺, O. Kosut⁺, **L. Sankar**⁺, “The saddle-point method in differential privacy,” *International Conference on Machine Learning (ICML)*, Jul. 2023, Hawaii, USA.
50. **W. Alghamdi***, S. Asoodeh, F. P. Calmon⁺, J. F. Gomez, O. Kosut⁺, **L. Sankar**⁺, “Schrödinger mechanisms: Optimal differential privacy mechanisms for small sensitivity,” *IEEE International Symposium on Information Theory (ISIT)*, Jun. 2023, Taipei, Taiwan.
51. **W. Alghamdi***, S. Asoodeh, F. P. Calmon⁺, J. F. Gomez, O. Kosut⁺, **L. Sankar**⁺, “Optimal multidimensional differentially private mechanisms in the large-composition regime,” *IEEE International Symposium on Information Theory (ISIT)*, Jun. 2023, Taipei, Taiwan.
52. **M. Welfert***, G. Kurri[×], **K. Otstot**, and **L. Sankar**, “ (α_D, α_G) -GANs: Addressing GAN Training Instabilities via Dual Objectives,” *IEEE International Symposium on Information Theory (ISIT)*, Jun. 2023, Taipei, Taiwan.
53. **T. Sypherd***, R. Nock, and **L. Sankar**, “Being properly improper,” in Proc. *International Conference on Machine Learning (ICML 2022)*, Jul. 2022, Baltimore, MD.
54. **A. Gilani***, O. Kosut⁺, and **L. Sankar**⁺, “An alphabet of leakage measures,” *IEEE Information Theory Workshop (ITW)*, Nov. 2022, Mumbai, India.
55. R. Anguluri[×], **L. Sankar**⁺, and O. Kosut⁺, “Parameter Estimation in Ill-conditioned Low-inertia Power Systems,” *North American Power Symposium (NAPS)*, Nov. 2022, Utah.
56. **W. Alghamdi***, S. Asoodeh, F. P. Calmon⁺, O. Kosut⁺, **L. Sankar**⁺, and F. Wei[×], “Cactus Mechanisms: Optimal Differential Privacy Mechanisms in the Large-Composition Regime,” *IEEE International Symposium on Information Theory (ISIT)*, Jun. 2022, Espoo, Finland.
57. R. Anguluri[×], **N. TagizhpourBazagani***, **L. Sankar**⁺, and O. Kosut⁺, “A Complex-LASSO Approach for Localizing Forced Oscillations in Power Systems,” *Proc. IEEE Power and Energy Systems General Meeting (PES-GM)*, Jul. 2022, Denver CO.
58. G. Kurri[×], O. Kosut⁺, and **L. Sankar**⁺, “A Variational Formula for Infinity-Rényi Divergence With Applications to Information Leakage,” *IEEE International Symposium on Information Theory (ISIT)*, accepted for presentation and publication, Jun. 2022.
59. G. Kurri[×], **M. Welfert**, **T. Sypherd**, and **L. Sankar**, “ α -GAN: Convergence and Estimation Guarantees,” *IEEE International Symposium on Information Theory (ISIT)*, accepted for presentation and publication, Jun. 2022.
60. G. Kurri[×], **T. Sypherd**, and **L. Sankar**, “Realizing GANs via a Tunable Loss Function,” *IEEE Information Theory Workshop (ITW)*, virtual conference, Oct. 2021.
61. M. Diaz[×], P. Kairouz, **J. Liao***, and **L. Sankar**, “Neural Network-based Estimation of the MMSE,” *IEEE International Symposium on Information Theory (ISIT)*, virtual conference, Jul. 2021.
62. G. Kurri[×], O. Kosut⁺, and **L. Sankar**⁺, “Evaluating Multiple Guesses by an Adversary via a Tunable Loss Function,” *IEEE International Symposium on Information Theory (ISIT)*, virtual conference, Jul. 2021.

63. **A. Pinceti***, **L. Sankar**⁺, and O. Kosut⁺, “Synthetic Time-Series Load Data via Conditional Generative Adversarial Networks,” *Proc. IEEE Power and Energy Systems General Meeting (PES-GM)*, virtual conference, Jul. 2021 (**Selected to present in session on the best papers of the conference.**)
64. **Z. Chu***, O. Kosut⁺, and **L. Sankar**⁺, “Vulnerability Assessment of Large-scale Power Systems to False Data Injection Attacks,” *Proc. SmartGridCommunications Conference (SGComm)*, virtual conference, Nov. 2020.
65. **A. Pinceti***, O. Kosut⁺, and **L. Sankar**⁺, “Generation of Synthetic Multi-Resolution Time Series Load Data via Generative Adversarial Networks,” *Proc. IEEE Power and Energy Systems General Meeting (PES-GM)*, virtual conference, Aug. 2020, (abstract for poster presentation). **Third Prize - Graduate Student Poster Contest.**
66. S. Asodeh*, **J. Liao**, F. Calmon⁺, O. Kosut⁺, and **L. Sankar**⁺, “A Better Bound Gives a Hundred Rounds: Enhanced Privacy Guarantees via f -Divergences,” accepted for presentation in *Proceedings IEEE International Symposium Information Theory*, virtual conference, Jun. 2020.
67. **T. Sypherd***, M. Diaz[×], **L. Sankar**, and G. Dasarathy, “The α -loss landscape evolution in logistic models,” in *Proceedings IEEE International Symposium Information Theory*, virtual conference, Jun. 2020.
68. **T. Sypherd***, M. Diaz[×], L. Sankar, P. Kairouz, and G. Dasarathy, “A Class of Parameterized Loss Functions for Classification: Optimization Tradeoffs and Robustness Characteristics,” in *Neural Information Processing Conference, Workshop on Information Theory and Machine Learning*, Dec. 2019.
69. **T. Sypherd***, M. Diaz[×], L. Sankar, P. Kairouz, and G. Dasarathy, “A Class of Parameterized Loss Functions for Classification: Optimization Tradeoffs and Robustness Characteristics,” in *Neural Information Processing Conference, Workshop on Machine Learning with Guarantees*, Dec. 2019.
70. **Z. Chu***, **A. Pinceti**, **R. S. Biswas**, O. Kosut⁺, A. Pal⁺, and **L. Sankar**⁺, “Can predictive filters detect gradually ramping false data injection attacks against PMUs?,” *Proc. SmartGridCommunications Conference (SGComm)*, Beijing, China, Oct. 2019.
71. **T. Sypherd***, M. Diaz[×], **L. Sankar**, and P. Kairouz, “A tunable loss function for binary classification,” *Proc. International Symposium on Information Theory (ISIT)*, Paris, France, Jul. 2019.
72. **J. Liao***, **L. Sankar**, O. Kosut, and F. P. Calmon, “Robustness of maximal α -leakage to side information,” *Proc. International Symposium on Information Theory (ISIT)*, Paris, France, Jul. 2019.
73. **A. Pinceti***, O. Kosut⁺, and **L. Sankar**⁺, “Data-driven generation of synthetic load datasets preserving spatio-temporal features,” *Proc. IEEE Power and Energy Systems General Meeting (PES-GM)*, Atlanta, GA, Aug. 2019.
74. **C. Huang**, P. Kairouz, **L. Sankar***, “Generative Adversarial Privacy: A Data-Driven Approach to Information-Theoretic Privacy,” *IEEE Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2018, *invited*.
75. **C. Huang*** and **L. Sankar**, “Market segmentation of “free” online services,” *Proc. Conference on Decision and Game Theory for Security (GameSec)*, Seattle, WA, Oct. 2018.
76. **J. Liao***, O. Kosut⁺, **L. Sankar**⁺, and F. P. Calmon⁺, “Privacy under hard distortion constraints,” *Proc. Information Theory Workshop*, Guangzhou, China, Nov. 2018.
77. **A. Pinceti***, **L. Sankar**⁺, and O. Kosut⁺, “Load redistribution attack detection using machine learning: A data-driven approach,” *Proc. of IEEE Power and Energy Systems General Meeting*, Portland, Oregon, Aug., 2018. (**Selected to present in session on the best papers of the conference.**)
78. **C. Huang**, P. Kairouz, X. Chen, **L. Sankar**, R. Rajagopal, “Generative Adversarial Privacy,” in *International Conference on Machine Learning (ICML), Workshop on Privacy in Machine Learning and Artificial Intelligence (PiMLAI)*, Jul. 2018.

79. **J. Liao***, O. Kosut⁺, **L. Sankar**⁺, and F. P. Calmon⁺, “A tunable measure for information leakage,” *Proc. International Symposium on Information Theory*, Vail, Colorado, Jul. 2018.
80. H. Wang*, M. Diaz^x, **L. Sankar**⁺, and F. P. Calmon⁺, “The utility cost of robust privacy guarantees,” *Proc. International Symposium on Information Theory*, Vail, Colorado, Jul. 2018.
81. **J. Zhang***, **Z. Chu**, **L. Sankar**⁺, and O. Kosut⁺, “False data injection attacks on phasor measurements that bypass low-rank decomposition,” *IEEE SmartGrid Comm Conference*, accepted, Oct. 2017.
82. **J. Liao***, **L. Sankar**, F. du pin Calmon, and V. Tan. “Hypothesis testing under maximal leakage,” *Proc. International Symposium on Information Theory*, Aachen, Germany, Jul. 2017.
83. **K. Kalantari***, **L. Sankar**⁺, and O. Kosut⁺. “On Information-Theoretic Privacy with General Distortion Cost Functions,” *Proc. International Symposium on Information Theory*, Aachen, Germany, Jul. 2017.
84. **Z. Chu***, **J. Zhang**, O. Kosut⁺, and **L. Sankar**⁺, “Evaluating power system vulnerability to false data injection attacks via scalable optimization,” *IEEE International Conference on Smart Grid Communications (SmartGridComm)*, Sydney, Australia, 2016.
85. **J. Liao***, **L. Sankar**, V. Tan, and F. du pin Calmon, “Hypothesis testing in the high privacy regime,” *54th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, Monticello, IL, USA, Sep. 2016.
86. **K. Kalantari***, O. Kosut⁺, and **L. Sankar**⁺, “On the Fine asymptotics of information theoretic privacy,” *54th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, Monticello, IL, USA, Sep. 2016.
87. **J. Zhang***, **Z. Chu**, **L. Sankar**⁺, and O. Kosut⁺, “False data injection attacks on power system state estimation with limited information,” *Proc. of IEEE Power and Energy Systems General Meeting*, Boston, USA, Jul., 2016.
88. **K. Kalantari***, **L. Sankar**, and A. D. Sarwate, “Optimal differential privacy mechanisms under Hamming distortion for structured source classes,” *Proc. of IEEE International Symposium on Information Theory*, Barcelona, Spain, Jul., 2016.
89. **C. Huang*** and **L. Sankar**, “Incentive mechanisms for privacy-sensitive electricity consumers with alternative energy sources,” *Proc. of 50th Annual Conference on Information Sciences and Systems*, Princeton, NJ, Jul. 9-14, 2016.
90. **C. Huang***, **L. Sankar**, and A. Sarwate. “Incentive Schemes for privacy-sensitive consumers,” *Proc. 6th Intl. Conference on Decision and Game Theory for Security (GameSec 2015)*, London, UK, November 4-5, 2015.
91. **J. Zhang***, **L. Sankar**, and K. W. Hedman. “Implications of cyber attacks on distributed power system operations,” *Proc. CIGRE Grid of the Future*, Houston, TX, Oct. 2015.
92. **J. Hu***, **L. Sankar** and D. J. Mir, ”Cluster-and-connect: A more realistic model for the electric power network topology,” *IEEE International Conference on Smart Grid Communications (Smart-GridComm)*, Miami, FL, USA, Nov. 2015, pp. 85-90.
93. **J. Hu***, **L. Sankar** and D. J. Mir, ”Cluster-and-Connect: An algorithmic approach to generating synthetic electric power network graphs,” *2015 53rd Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, Monticello, IL, USA, 2015, pp. 223-230.
94. **B. Moraffah** and **L. Sankar***, ”Information-theoretic private interactive mechanism,” *2015 53rd Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, Monticello, IL, USA, 2015, pp. 911-918.
95. **J. Zhang*** and **L. Sankar**. “Implementation of unobservable state-preserving topology attacks,” *IEEE North American Power Symposium (NAPS)*, Charlotte, NC, pp. 1-6, May 2015.

96. A. D. Sarwate* and L. Sankar. “A rate-distortion perspective on local differential privacy,” *Proc. of 52nd Annual Allerton Conference on Communication, Control and Computing*, Monticello, IL, Sep., 2014.
97. **J. Liang***, O. Kosut⁺ and L. Sankar⁺. “Cyber attacks on AC state estimation: Unobservability and physical consequences,” *Proc. of IEEE Power and Energy Systems General Meeting*, National Harbor, MD, 2014, pp. 1-5, Jul. 2014.
98. O. Kosut* and L. Sankar. “New results on third-order coding rate for universal fixed-to-variable source coding,” *Proc. of IEEE International Symposium on Information Theory*, Honolulu, HI, Jul. 2014, pp. 2689-2693.
99. L. Sankar*. “Competitive Privacy: Distributed computation with privacy guarantees,” *Proc. of 1st IEEE Global Conference on Signal and Information Processing*, Austin, TX, Dec., 2013.
100. O. Kosut* and L. Sankar. “Universal fixed-to-variable source coding in the finite blocklength regime,” *Proc. of IEEE International Symposium on Information Theory*, Istanbul, Turkey, Jul., 2013.
101. E.V. Belmega*, L. Sankar and H. V. Poor, “Repeated games for privacy-aware distributed state estimation in interconnected networks,” *IEEE International Conf. on NETWORK Games, CONTROL and Optimization (NETGCOOP)*, Avignon, France, Nov. 2012.
102. L. Sankar*, S. Kar and H. V. Poor, “Competitive privacy in the smart grid,” *IEEE Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2012 *invited*.
103. E. V. Belmega*, L. Sankar, H. V. Poor, and M. Debbah. “Pricing mechanisms for distributed state estimation,” submitted to *IEEE International Symposium on Communications, Control, and Signal Processing 2012*, Oct. 2011.
104. E. Glennon*, L. Sankar, and H. V. Poor. “Twitter vs. printed English: An information-theoretic comparison,” submitted to *IEEE ICASSP 2012*, Aug. 2011.
105. R. Tandon*, L. Sankar, and H. V. Poor. “Discriminate lossy source coding: Side-information privacy,” *Proc. of IEEE Global Communications Conference*, Houston, TX, Dec. 5-9, 2011.
106. S. R. Rajagopalan, L. Sankar*, S. Mohajer, and H. V. Poor. “Smart meter privacy: A utility-privacy tradeoff framework,” *Proc. of the 2nd IEEE International Conference on Smart Grid Communications*, Brussels, Belgium, Oct. 17-20, 2011. (**Google Citation: 118**)
107. L. Sankar*, S. Kar, R. Tandon, and H. V. Poor. “Competitive privacy in the smart grid: An information-theoretic approach,” *Proc. of the 2nd IEEE International Conference on Smart Grid Communications*, Brussels, Belgium, Oct. 17-20, 2011. (**Google Citation: 59**)
108. R. Tandon*, L. Sankar, and H. V. Poor. “Multi-user privacy: The Gray-Wyner system and the generalized common information,” *Proc. of IEEE International Symposium on Information Theory*, St. Petersburg, Russia, Aug. 1-5, 2011.
109. H. V. Poor*, L. Sankar, and S. R. Rajagopalan. “Secure source coding and privacy-utility tradeoffs in databases,” *Proc. of the 6th Joint Workshop on Coding and Communications*, San Stefano Belbo, Italy, Oct. 17-19, 2010.
110. L. Sankar*, S. R. Rajagopalan, and H. V. Poor. “An information-theoretic approach to privacy,” *Proc. of the 48th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sep. 29 - Oct. 1, 2010.
111. L. Sankar*, S. R. Rajagopalan, and H. V. Poor. “A theory of utility and privacy of data sources,” *Proc. of IEEE International Symposium on Information Theory*, Austin, TX, Jun. 13-18 2010.
112. L. Sankar*, S. R. Rajagopalan, and H. V. Poor. “Utility and privacy of data sources: Can Shannon help conceal and reveal information,” *Proc. of the 4th Annual Information Theory and Applications Workshop*, La Jolla, CA, Jan. 31 - Feb. 5, 2010 (*invited*).

113. L. Sankar^{*}, E. Erkip, and H. V. Poor. "A general coding scheme for two-user fading interference channels," arxiv.org:1001:2786 Jan. 2010.
114. A. Chong, L. Sankar, and H. V. Poor. "Frequency of occurrence and information entropy of American Sign Language," arxiv.org:0912:1768 Dec. 2009.
115. L. Sankar^{*}, J. Vondrack, and H. V. Poor. "K-user ergodic interference channels: the ergodic very strong case," *Proc. of the 47th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sep. 30 - Oct. 2, 2009.
116. V. Aggarwal^{*}, L. Sankar, A. R. Calderbank, and H. V. Poor. "Ergodic layered erasure one-sided interference channels," *Proc. of the Information Theory Workshop*, Taormina, Italy, Oct. 11-16, 2009.
117. V. Aggarwal^{*}, L. Sankar, A. R. Calderbank, and H. V. Poor. "Secrecy capacity of a class of orthogonal relay eavesdropper channels," *Proc. of IEEE International Symposium on Information Theory*, Seoul, South Korea, Jun. 28-Jul. 3, 2009.
118. V. Aggarwal^{*}, L. Sankar, A. R. Calderbank, and H. V. Poor. "Secrecy capacity of a class of orthogonal relay eavesdropper channels," *Proc. of the 3rd Annual Information Theory and Applications Workshop*, La Jolla, CA, Feb. 8-13, 2009 (*invited*).
119. L. Sankar^{*}, X. Shang, E. Erkip and H. V. Poor. "Ergodic fading two-user interference channels: is separability optimal", *Proc. of the 46th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sep. 23-26, 2008. (**Google Citation: 42**)
120. L. Sankar^{*}, E. Erkip and H. V. Poor. "Sum-capacity of ergodic fading interference and compound multiaccess channels," *Proc. of IEEE International Symposium on Information Theory*, Toronto, CA, Jul. 7-11 2008.
121. S. Mathur^{*}, L. Sankar, and N. B. Mandayam. "Coalitions in cooperative wireless networks," *Proc. of the 2nd Annual Information Theory and Applications Workshop*, La Jolla, CA, Jan. 28-Feb 1, 2008 (*invited*).
122. L. Sankar^{*}, G. Kramer and N. B. Mandayam. "User vs. relay cooperation in multiaccess networks," *Proc. of 45th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sep. 26-28, 2007.
123. L. Sankar^{*}, Y. Liang, H. V. Poor, and N. B. Mandayam. "Opportunistic communications in an orthogonal multiaccess relay channel," *Proc. of IEEE International Symposium on Information Theory*, Jun. 24-29, 2007.
124. L. Sankar^{*}, G. Kramer and N. B. Mandayam. "Sum-capacity of degraded Gaussian multiple-access relay channels," *Proc. of the 1st Annual Information Theory and Applications Workshop*, La Jolla, CA, Jan. 29-Feb 2, 2008 (*invited*).
125. S. Mathur^{*}, L. Sankaranarayanan, and N. B. Mandayam. "Coalitional games in cooperative radio networks," *Proc. of 40th Annual Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Oct. 29-Nov. 1, 2006.
126. S. Mathur^{*}, L. Sankaranarayanan, and N. B. Mandayam. "Coalitional games in Gaussian interference channels," *Proc. of IEEE International Symposium on Information Theory*, Seattle, WA, Jul. 9-14, 2006. (**Google Citation: 43**)
127. S. Mathur^{*}, L. Sankaranarayanan, and N. B. Mandayam. "Coalitional games in receiver cooperation for spectrum sharing," *Proc. of 40th Annual Conference on Information Sciences and Systems*, Princeton, NJ, Jul. 9-14, 2006.
128. L. Sankaranarayanan^{*}, G. Kramer, and N. B. Mandayam. "Cooperative diversity in wireless networks: a geometry-inclusive analysis," *Proc. of 43rd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sep. 28-30, 2005.

129. L. Sankaranarayanan*, G. Kramer, and N. B. Mandayam. “Cooperation vs. hierarchy: an information-theoretic comparison,” *Proc. of IEEE International Symposium on Information Theory*, Sep. 4-9, 2005.
130. L. Sankaranarayanan*, G. Kramer, and N. B. Mandayam. “Hierarchical wireless networks: capacity theorems and cooperative strategies using the multiple-access relay channel model,” *Proc. of 38th Annual Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 7-10, 2004.
131. L. Sankaranarayanan*, G. Kramer, and N. B. Mandayam. “Hierarchical sensor networks: capacity theorems and cooperative strategies using the multiple-access relay channel model,” *Proc. of 1st IEEE Conference on Sensor Networks (SECON)* Pacific Grove, CA, Oct. 4-7, 2004. (**Google Citation: 119**)
132. L. Sankaranarayanan*, G. Kramer, and N. B. Mandayam. “Capacity theorems for the multiple-access relay channel,” *Proc. of 42nd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sep. 29-Oct. 1 2004. (**Google Citation: 112**)
133. R. Erving and L. Sankaranarayanan. “Combining channel codes for data rate maximization in DMT-based DSL systems,” *Proc. of 36th Annual Conference on Information Sciences and Systems*, Princeton, NJ, March 20-22, 2002.
134. J. M. Morris, S. Balasubramanian, M. Guo, and L. Sankaranarayanan*. “A detection algorithm for gaseous pollutants using signal processing techniques on FTIR interferograms,” *Proc. of SPIE*, Washington, DC, Nov. 9-11, 1994.

Patents:

1. R. Erving and L. Sankaranarayanan. *Efficient reduced complexity windowed time domain equalizer for discrete multitone-based DSL modem*, U.S. patent no. 7248648, Jul. 2007. (**Google Citation: 8**)
2. R. Erving and L. Sankaranarayanan. *Multi-frequency data transmission channel power allocation*, U.S. patent no. 7139323, Jul. 2006.
3. L. Sankaranarayanan and R. Sonalkar. *Method and apparatus for allocating data for transmission via discrete multiple tones*, U.S. patent no. 6134274, Oct. 2000. (**Google Citation: 34**)

TUTORIALS, PRESENTATIONS AND POSTERS (INCLUDING INVITED)

TUTORIALS and WORKSHOPS

1. L. Sankar, Talk on “Information-theoretic Foundations of Generative Adversarial Models: Addressing Training Instabilities” at a week long workshop I organized with Profs. Oliver Kosut (ASU) and Flavio Calmon (Harvard) at the Simons Institute for the Theory of Computing, as a part of a one of a kind *NSF Broadening Participation in Computing* effort related to our NSF CIF-Medium-1901243 grant, May 2023 (live presentation with recordings available via YouTube for the general public).
2. L. Sankar, “Bridging information theory and machine learning: A loss function perspective,” three-hour tutorial presented at the Information Theory Workshop, Nov. 2022 (in person).
3. L. Sankar, “Bridging information theory and machine learning: A loss function perspective,” three-hour tutorial presented at the first East Asian School of Information Theory, Aug. 2021 (virtual live presentation with recordings available via YouTube for the general public).
4. F. P. Calmon, P. Kairouz, L. Sankar, and A. Wagner, “Privacy and Fairness in Data Science: An Information-theoretic Perspective,” tutorial presented at the IEEE International Symposium on Information Theory, Paris, France, Jul. 2019 (live presentation with recordings available via YouTube for the general public).

5. L. Sankar, Tutorial on “Information-Theoretic Methods for Privacy” for a two-day mini-symposium I organized at the Simons Institute for the Theory of Computing, as a part of a semester-long program on Data Privacy: Foundations and Applications, Berkeley, California, Mar. 2019 (live presentation with recordings available via YouTube for the general public).

INVITED PRESENTATIONS

1. **Tunable Dual-Objective GANs for Stable Training**
2nd Workshop on New Frontiers in Adversarial Machine Learning, Hawaii, (Jul. 2023)
2. **Information- and Optimization-Theoretic Approaches for Training Generative Adversarial Networks**
NSF Simons PI Meeting, New York (Sep. 2023)
3. **Smoothly Giving up: Robustness for Simple Interpretable Models**
NSF PIPP Phase I Grant Workshop, ASU, Tempe, AZ (Sep. 2023)
4. **Robust Loss Functions for Classification: An Information-theoretic Perspective**
University of Hawaii, Manoa, (Jul. 2023)
5. **Being Improper and Smoothly Giving up: The Role of Loss Functions in Robust ML**
Information Theory and Applications (ITA), University of California, San Diego (Feb. 2023)
6. **α -loss: A Tunable Loss Function for Robust Classification: Calibration, Landscape, and Generalization**
Fall Colloquium, Electrical and Systems Sciences, University of Pennsylvania, (Oct. 2021)
7. **α -loss: A Tunable Loss Function for Robust Classification: Calibration, Landscape, and Generalization**
CINS/Hamilton Institute Seminar, Massachusetts Institute of Technology, (Oct. 2021)
8. **Reliable, Responsible, and Rigorous Machine Learning: A Loss Function Perspective**
Workshop on Information-theoretic Methods for Reliable, Responsible, and Rigorous Machine Learning, Intl. Conference on Machine Learning, (Jul. 2021)
9. **A Better Bound Gives a Hundred Rounds: Enhanced Privacy Guarantees via f -Divergences**
Workshop on Distributed and Private Machine Learning, Intl. Conference on Learning Representations, (May 2021)
10. **α -loss: A Tunable Loss Function for Robust Classification: Calibration, Landscape, and Generalization**
Mathematical Institute for Data Science (MINDS) Seminar, Johns Hopkins University, (Mar. 2021)
11. **Data-driven Resilience against Cyberattacks**
2021 IEEE International Forum on Smart Grid for Smart Cities, Virtual Forum, (Mar. 2021)
12. **α -loss: A Tunable Class of Loss Functions for Robust Learning**
INFORMS Invited Session on the Theory of Neural Networks and Causal Inference, (Nov. 2020)
13. **Data-driven Resilience against Cyberattacks that Exploit the Cyber-physical Interdependence of Power Systems**
IEEE PES Task Force on Cyber-Physical Interdependence for Power System Operation and Control , (Sep. 2020)
14. **Real-time Integration of Synchrophasors in the Electric Grid: An HDR I-DIRSE Data Science Perspective**
Forging Connections between Machine Learning, Data Science, & Power Systems Research, National Science Foundation, (Mar. 2020)
15. **Alpha-loss: A Tunable Class of Loss Functions for Robust Learning**
Research Colloquium, University of Washington, (Jun. 2020)

16. **Real-time Integration of Synchrophasors in the Electric Grid: The Big Data Challenge**
2020 NSF Harnessing the Data Revolution (HDR) PI Meeting, virtual (Apr. 2020)
17. **Alpha-loss: A Tunable Class of Loss Functions for Robust Learning**
Session on Theoretical Foundations of Learning, Bombay Information Theory Seminar, Mumbai India (Jan. 2020)
18. **Alpha-loss: A Tunable Class of Loss Functions for Robust Learning**
Information Sciences Seminar Series, Indian Institute of Technology, Chennai, India (Jan. 2020)
19. **Designing Fair/Censored Representations using Generative Adversarial Models**
One of four Plenary Speakers in the Privacy in ML Workshop, NeurIPS, Vancouver (Dec. 2019)
20. **A Verifiable Framework for Cyber- Physical Attacks and Countermeasures in a Resilient Electric Power Grid**
2019 NSF CPS PI Meeting, Arlington, Virginia (Nov. 2019)
21. **Evaluating the Vulnerability of Energy Management Systems to False Data Injection Attacks**
Panel on Cybersecurity Challenges in the Smart Grid, IEEE Power and Energy Systems General Meeting, Atlanta (Aug. 2019)
22. **Can predictive filters detect gradually ramping false data injection attacks against PMUs?**
IEEE ComSoc SmartGridComm 2019, Beijing, China (Oct. 2019)
23. **Robustness of maximal α -leakage to side information**
IEEE International Symposium on Information Theory, Paris, France (Jul. 2019)
24. **Generative Adversarial Privacy: From Theory of Information Measures to Practical Mechanism Design**
Telecom ParisTech, Paris (Jul. 2019)
25. **Generative Adversarial Privacy/Fairness: A Context-Aware Approach Data Publishing**
Federated Learning Workshop, Google AI, Seattle (Jun. 2019)
26. **Data-driven generation of synthetic load datasets preserving spatio-temporal features**
IEEE Power and Energy Systems General Meeting, Atlanta, Georgia (Aug. 2019)
27. **Generative Adversarial Privacy/Fairness: A Context-Aware Approach Data Publishing**
Machine Learning in Science and Engineering, Georgia Tech, Atlanta (Jun. 2019)
28. **Information-theoretic Privacy: Leakage Measures, Robust Privacy Guarantees, and Adversarial Models**
Statistics, Information, Learning, and Optimization Seminar Series, University of Wisconsin, Madison (Jun. 2019)
29. **Viability of a Privacy-differentiated Market for Free Online Services**
Workshop on Beyond DP as a part of the Privacy: Foundations and Applications Series, Simons Institute of Computing, University of California, Berkeley (May 2019)
30. **Unifying IT leakage measures via the lens of Adversarial Learning**
Symposium on Information-theoretic methods in Privacy as a part of the Privacy: Foundations and Applications Series, Simons Institute of Computing, University of California, Berkeley (Mar. 2019)
31. **On the Performance of Finite-Capacity Adversaries in Fairness and Privacy**
Information Theory and Applications, University of California, San Diego (Feb. 2019)
32. **Information-theoretic Privacy: Leakage Measures, Robust Privacy Guarantees, and Adversarial Models**
Stanford ISL Seminar, Palo Alto, California (Dec. 2018)

33. **Data-driven Learning Methods for Detecting and Mitigating Load Redistribution Attacks**
INFORMS Conference, Special Session on Power and Energy, Phoenix, Arizona (Nov. 2018)
34. **On the Robustness of Information-Theoretic Privacy Measures and Mechanisms**
Allerton Conference on Communications, Computing and Control: Invited Session on Information Theory and Learning, Monticello, Illinois (Sep. 2018)
35. **Generative Adversarial Privacy: A Context-Aware Approach to Privacy-Guaranteed Data Publishing**
Indian Institute of Technology, Mumbai, India (Dec. 2017)
36. **Generative Adversarial Privacy: A Context-Aware Approach to Privacy-Guaranteed Data Publishing**
Tata Institute of Fundamental Research, Mumbai, India (Dec. 2017)
37. **Generative Adversarial Privacy: A Context-Aware Approach to Privacy-Guaranteed Data Publishing**
National University of Singapore, Singapore (Dec. 2017)
38. **A Verifiable Framework for Cyber-Physical Attacks and Countermeasures in a Resilient Electric Power Grid**
NSF Cyber-Physical Systems PI Meeting, Washington DC (Nov. 2017)
39. **Cybersecurity and Privacy in Electric Power Systems**
Smart Urban Infrastructure Workshop, MIT, Cambridge, MA (May 2017)
40. **Information-theoretic Privacy-Utility Tradeoffs: General Distortion-Cost Functions and Fine Asymptotics**
MIT EECS Seminar, Cambridge, MA (May 2017)
41. **Information-theoretic Privacy-Utility Tradeoffs: General Distortion-Cost Functions and Fine Asymptotics**
Harvard University SEAS/EE Seminar, Harvard, MA (May 2017)
42. **Incentives and Markets for Privacy-sensitive Consumers^{##}**
ASU CIDSE Faculty Talk Series (Apr. 2017)
43. **A Verifiable Framework for Cyber- Physical Attacks and Countermeasures in a Resilient Electric Power Grid**
DHS Cyber-Physical Systems PI Meeting, Tampa, FL (Feb. 2017)
44. **False Data Injection Attacks: Feasibility of Limited Knowledge Attacks and Scalability of Attacks on Large Power Systems**
Georgia Institute of Technology, Atlanta (Dec. 2016)
45. **Market Segmentation of Privacy-differentiated ‘Free’ Online Services⁺⁺**
Information Theory and Applications Workshop (ITA), La Jolla, CA (Feb. 2017)
46. **Privacy and Statistical Inference: An Information-theoretic Approach**
Georgia Institute of Technology, Atlanta (Dec. 2016)
47. **Cybersecurity Challenges in the Electric Power System^{##}**
ASU IEEE Power Systems Student Chapter, Faculty Introduction Talks (Oct. 2016)
48. **False Data Injection Attacks: Feasibility of Limited Knowledge Attacks and Scalability of Attacks on Large Power Systems**
DHS Cyber-Physical Systems PI Meeting, Minneapolis, MN (Aug. 2016)
49. **Information-Theoretic Privacy: The Utility of an Average-Case Approach**
Indian Institute of Technology, Chennai (Jun. 2016)

50. **Hypothesis Testing in the High Privacy Regime⁺⁺**
Signal Processing and Communications Conference, Bangalore, India (Jun. 2016)
51. **Information-Theoretic Privacy: The Utility of an Average-Case Approach**
Cornell University Seminar Series, Ithaca (Jun. 2016)
52. **Information-Theoretic Privacy: The Utility of an Average-Case Approach**
Nexus of Information and Computation Theories Secrecy and Privacy, Institute Henri Poincare (IHP), Paris, France (Mar. 2016)
53. **A Verifiable Framework for Cyber-Physical Attacks and Countermeasures in a Resilient Electric Power Grid**
DHS Cyber Security Division PI Meeting, Washington DC (Feb. 2016)
54. **The Optimal Differential Privacy Mechanism under Hamming Distortion for Universal Memoryless Sources⁺⁺**
Information Theory and Applications (ITA) Workshop, San Diego (Feb. 2016)
55. **Incentive Schemes for Privacy-Sensitive Consumers**
Indian Institute of Sciences Information Systems Seminar Series (Dec. 2015)
56. **Incentive Schemes for Privacy-Sensitive Consumers**
Texas A&M University Information Systems Seminar Series (Dec. 2015)
57. **Consequences of Unobservable Cyber and Cyber-Physical False Data Injection Attacks on the Electric Power System**
Texas A&M University Power Systems Seminar Series (Dec. 2015)
58. **Cyber-Attacks on Electric Power System: Vulnerability and Resiliency Analysis**
PSERC IAB Meeting (Dec. 2015)
59. **Designing Incentive Schemes for Privacy-Sensitive Users**
EE Seminar, Imperial College London (Nov. 2015)
60. **A Verifiable Framework for Cyber-Physical Attacks and Countermeasures in a Resilient Electric Power Grid**
NSF Cyber-Physical Systems PI Meeting, Washington DC (Nov. 2015)
61. **Cluster-and-Connect: An algorithmic approach to generating synthetic electric power network graphs⁺⁺**
Allerton Conference on Communications, Computing, and Control (Sep.-Oct. 2015)
62. **Information-theoretic Privacy Mechanisms**
Mathematical Tools of Information-Theoretic Security Workshop, Paris France (Sep. 2015)
63. **Incentivizing privacy sensitive users to share data⁺⁺**
Information Theory and Applications (ITA) Workshop (Feb. 2015)
64. **Consequences of Cyber-attacks on the Electric Power System**
CMU Power Systems Seminar (Nov. 2014)
65. **Differential Privacy vs. Information-theoretic Privacy⁺⁺**
Information Theory and Applications (ITA) Workshop (Feb. 2014)
66. **Competitive Privacy: Incentives for Interaction Among Distributed Agents⁺⁺**
Information Theory and Applications (ITA) Workshop (Feb. 2013)
67. **Cyber-Security, Privacy, and Big Data in the Smart Grid**
Southern California Edison (Feb. 2013)

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68. **Cyber-Security, Privacy, and Big Data in the Smart Grid##**
ASU Power Systems Seminar (Jan. 2013)
69. **Quantifying Privacy for Large Data: An Information-theoretic Approach**
Stanford University EECS Seminar (Nov. 2012)
70. **Quantifying Privacy for Large Data: An Information-theoretic Approach**
Technicolor Labs, Palo Alto (Nov. 2012)

MENTORING, ADVISEES, DISSERTATION COMMITTEES:

SUMMARY OF MENTORING:

- ◇ **Mentored Personnel in non-US Academia : 2 (Mexico, India, USA)**
- ◇ **Mentored Personnel in US Academia : 1**
- ◇ **Mentored Personnel at national labs in the USA : 1**
- ◇ **Postdoctoral Researchers: 5 (current: 1; previous: 4)**
- ◇ **Ph.D. Students Graduated: 5**
- ◇ **Ph.D. Students Current: 7 (2 shared equally)**
- ◇ **M.S. Students Graduated: 8**
- ◇ **M.S. Students Current: 1**
- ◇ **Undergraduate Students (Research): 5**
- ◇ **Student Fellowships and Awards: 18**
- ◇ **Undergraduate Students (Research-focused Outreach): 5 (all female)**

Current PhD Students:

- ◇ Atefeh Gilani (jointly with Prof. Oliver Kosut)
- ◇ Monica Welfert
- ◇ Nathan Stromberg
- ◇ Daniil Vankov (jointly with Prof. Angelia Nedich)
- ◇ Obai Bahwal
- ◇ Naima Tasnim
- ◇ Esther Rodriguez

Current MS Students:

- ◇ Rohan Ayyagari

Current Postdocs:

- ◇ Dr. Rajasekhar Anguluri (PhD: University of California, Riverside)
- ◇ Dr. Joel Mathias (PhD: University of Florida, Gainesville)

Jointly mentored PhD Students:

- ◇ Zhigang Chu (graduated 2020; advised by Prof. Oliver Kosut; I helped hire him in 2016 when he approached me)
- ◇ Nima TagizhpourBazargani (graduated 2023; advised by Prof. Oliver Kosut; I hired him in 2019)

Graduated Doctoral Students:

- ◇ Tyler Sypherd, PhD, 2022, Research Scientist, Circle-K Research Labs, Phoenix, AZ
- ◇ Andrea Pinceti, PhD, 2021, Research Scientist, Dominion Power, Richmond, VA
- ◇ Jiachun Liao, PhD, 2020, Lead Engineer, Nanhu Labs, China
- ◇ Chong Huang, PhD, 2018, Lead Engineer, Apple, San Jose, CA
- ◇ Jiazi Zhang, PhD, 2017, Research Scientist, NREL, Golden, CO

Graduated Masters Students:

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- ◇ Kyle Otstot, MS, 2023, ML Engineer, TikTok, San Francisco, CA
- ◇ Erika Lingo Cole, MA Mathematics 2022, Data Engineer, Phoenix, AZ
- ◇ Gokulan Vikas Babu, MS, 2021, Data Scientist, Amazon, San Jose, CA
- ◇ Roozbeh Khodadadeh, MS, 2019, Engineer, IncSys Inc, Seattle, WA
- ◇ Kousha Kalantari, MS, 2017, Senior Research Scientist, Meta, Tucson, AZ
- ◇ Bahman Moraffah, MS, 2015, Lecturer, ASU, Tempe, AZ
- ◇ Jiale Hu, MS, 2015, Engineer, ETAP, Irvine, CA
- ◇ Jingwen Liang, MS, 2015, China Power and Electric, Xinan, China
- ◇ Jiazi Zhang, MS, 2015, Research Scientist, NREL, Golden, CO

Past Postdoctoral Fellows:

- ◇ Dr. Gowtham Kurri 2020-2022 (presently Assistant Professor, IIIT, Hyderabad, India)
- ◇ Mario Diaz, 2017-2019 (presently Assistant Professor, Institute for Mathematical Sciences IIMAS, UNAM, Mexico City)
- ◇ Dr. Fei Wei 2020-2021 (presently Researcher, NUS, Singapore)

Undergraduate Mentees/Summer Interns/NSF REUs:

- ◇ Kyle Otstot, mentored May 2021–July 2023
 - ASU CS and Mathematics junior
 - 2020 ASU Summer Undergraduate Research Initiative (SURI) intern
 - 2021-2022 NSF REU funded student
 - working on robust loss functions for image classification – submitted to the IEEE Transactions on Pattern Matching and Image Processing
 - SURI and REU helped Kyle decide to continue doing research in my lab in the next year (2022-2023) as he pursues his 4+1 MS degree
- ◇ Joshua Inman, mentored May 2022–present
 - ASU CS and Mathematics junior
 - 2022 ASU Summer Undergraduate Research Initiative (SURI) intern
 - 2022-2023 NSF REU funded student
 - working on efficient algorithms for hyperparameter tuning – published paper at the prestigious winter simulation conference of the optimization community
 - Honors thesis adviser (co-advised with Prof. Giulia Pedrielli in SCAI)
- ◇ Erika Cole, May 2021–August 2021
 - ASU Masters student in Mathematics
 - 2020 ASU Summer Undergraduate Research Initiative (SURI) intern funded by Facebook
 - SURI helped her decide to work on her MS thesis with Sankar in collaboration with Profs. Shiwei Lan and Giulia Pedrielli during the 2021-2022 academic year
- ◇ Grant Steans, mentored Jan–July 2019
 - BS from Florida State University (HBCU)
 - ASU Summer Undergraduate Research Initiative (SURI) and Intel Fellowship intern 2020
 - Worked on tunable loss functions for classification
- ◇ Mafuor Tanji, mentored May 2020–July 2020
 - BS from Florida State University (HBCU)
 - ASU Summer Undergraduate Research Initiative (SURI) and Intel Fellowship intern 2020
 - Worked on tunable loss functions for classification
- ◇ Nathan Stromberg, May 2020–August 2021, CS+Math UG from Univ. of Kentucky: 2020 ASU Summer Undergraduate Research Initiative student, and 2020-2021 NSF REU funded student
 - U. of Kentucky CS and Mathematics UG
 - 2020 ASU Summer Undergraduate Research Initiative (SURI) intern

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- 2020-2021 NSF REU funded student (while senior at U. of Kentucky)
- currently a PhD student at ASU advised by Sankar
- working on robust risk prediction using COVID-19 self-survey data from Facebook
- ◇ John Kevin Cava, Jan 2020–present
 - ASU CS and Mathematics undergraduate in 2019
 - ASU CS PhD student (2020-present) advised by me during 2020-2021
 - working on robust loss functions for image classification submitted to the IEEE Transactions on Pattern Matching and Image Processing
- ◇ Corbin Ott, mentored Jan–July 2019
 - ASU ECEE undergraduate (BS, 2019)
 - ASU Fulton Undergraduate Research Initiative (FURI program where students are funded during the semester and/or summer to work with a faculty mentor) student working with me
- ◇ Varun Pattalachinti, May–July 2017
 - UIUC ECE undergraduate
 - worked on testing information-theoretic privacy mechanisms on large public datasets
- ◇ Tyler Sypherd, Jan 2016–Aug 2017
 - ECE BS, 2017, ASU
 - worked on exploring privacy mechanisms for genetic data

Student Fellowships and Awards:

1. Tyler Sypherd: 2022-2023 ASU Achievement Rewards for College Scientists (ARCS) Fellow
2. Tyler Sypherd: 2022-2023 ASU Graduate College Fellowship
3. Daniil Vankov: 2022-2023 University Graduate Fellowship
4. Nathan Stromberg: 2021-2025 ASU Fulton School of Engineering Deans Fellowship Award
5. Monica Welfert: 2020-2024 ASU Fulton School of Engineering Deans Fellowship Award
6. Tyler Sypherd: 2021-2022 ASU Achievement Rewards for College Scientists (ARCS) Fellow
7. Tyler Sypherd: 2021-2022 ASU Dunn Memorial Fellowship
8. Tyler Sypherd: 2021-2022 School of ECE International Switching Symposium Graduate Fellowship
9. Tyler Sypherd: Summer University Graduate Fellowship 2022
10. Andrea Pinceti: IEEE Power and Energy Systems Best Poster Award Aug. 2021
11. Andrea Pinceti: IEEE Phoenix Section Student Scholarship 2021-2022
12. Tyler Sypherd: 2017-2021 ASU Fulton School of Engineering Deans Fellowship Award
13. Andrea Pinceti: Summer University Graduate Fellowship 2017
14. Jiachun Liao: University Graduate Fellowship 2015-2016
15. Kousha Kalantari: University Graduate Fellowship 2014-2015
16. Chong Huang: Summer University Graduate Fellowship 2016
17. Chong Huang: Pamela and Jack Saltich Fellowship 2015
18. Chong Huang: University Graduate Fellowship 2013-2014

Thesis/Qualifying Exam Committees:

ADVISED/ADVISING GRADUATE STUDENTS

- ◇ Kyle Otstot, MS, Computer Science (defended June 2023)
- ◇ Erika Lingo Cole, MA Mathematics (defended Apr 2022)
- ◇ Tyler Sypherd, PhD Candidate Electrical, Computer, and Energy Engineering (Defense Oct. 2022; Comprehensive Exam Apr 2022; PhD Qualifying Exam Sep 2019)
- ◇ Andrea Pinceti, PhD Electrical, Computer, and Energy Engineering (defended Apr 2021; PhD comprehensive exam; Sep 2020, PhD qualifying exam Sep. 2019)

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- ◇ Gokulan Vikas Babu, MS Computer Science (defended Apr 2021)
- ◇ Jiachun Liao, PhD Electrical, Computer, and Energy Engineering (defended April 2020; Comprehensive Exam Feb. 2017; MS defense/PhD Qualifying Exam Jul. 2015)
- ◇ Roozbeh Khodadadeh, MS Computer Science, (defended May 2019)
- ◇ Jiazi Zhang, PhD Electrical, Computer, and Energy Engineering (defended Apr 2017; Comprehensive Exam Feb. 2017; MS defense/PhD Qualifying Exam Jul. 2015)
- ◇ Chong Huang, PhD Electrical, Computer, and Energy Engineering (defended Dec 2017; Comprehensive Exam Mar. 2017; Qualifying Exam Sep. 2015)
- ◇ Kousha Kalantari, PhD Candidate Electrical, Computer, and Energy Engineering (Comprehensive Exam Aug. 2017; MS/Qualifying Exam Feb. 2016 – left the program in summer 2018)
- ◇ Jingwen Liang, MS Electrical, Computer, and Energy Engineering (defended Jul. 2015)
- ◇ Jiale Hu, MS Electrical, Computer, and Energy Engineering (defended July 2015)
- ◇ Bahman Moraffah, MS Electrical, Computer, and Energy Engineering (defended Aug 2015)

ADVISED UNDERGRADUATE STUDENTS/HONORS THESIS

- ◇ Sriram Rangaswami (BS, Honor Thesis Co-Adviser along with S. Jayasuriya, ECEE/AME, ASU, Apr 2021)
- ◇ Monica Welfert (BS May 2020)
- ◇ Tyler Sypherd (BS May 2017)

GRADUATE STUDENT THESIS COMMITTEES

External Committees:

- ◇ Chin Jun Xing, PhD Defense, ETH Zurich, adviser Prog. G. Hug – served as external dissertation examiner

At ASU:

- ◇ Parth Thaker (PhD defense Dec. 2023; Adviser: G. Dasarathy in ECEE)
- ◇ Nima TaghizhpourBazargani (PhD defense Sep. 2023; Adviser: O. Kosut in ECEE)
- ◇ Zhongzhia Zhang (PhD defense May 2023; Adviser: M. Wu in ECEE)
- ◇ Haoran Liu (PhD comprehensive exam Nov 2021; Adviser: Y. Weng in ECEE)
- ◇ Zhigang Chu (PhD defense April 2020; Adviser: O. Kosut in ECEE)
- ◇ Zhongxia Zhang (PhD Qualifying Exam April 2020; Adviser: M. Wang in ECEE)
- ◇ Parth Thaker (PhD Qualifying Exam April 2020; Adviser: G. Dasarathy in ECEE)
- ◇ Roozbeh Khodadadeh (MS defense May 2019; Advisers: Sankar and Kosut in ECEE)
- ◇ Roozbeh Khodadadeh (MS defense May 2019; Advisers: Sankar and Kosut in ECEE)
- ◇ Nematollah Iri (Qualifying Exam 2016, Comprehensive Exam 2017; Doctoral Defense Jan. 2018, Adviser: O. Kosut)
- ◇ Eram Schweitzer (Qualifying Exam 2016; Adviser: A. Scaglione)
- ◇ Nikita Singhal (Qualifying Exam 2015, Comprehensive Exam 2016; Doctoral Defense: Jan. 2018, Adviser: K. Hedman)
- ◇ Nan Li (Thesis Defense Exams, 2016, Comprehensive Exam 2016; Adviser: K. Hedman)
- ◇ Pranav Balasubramaniam (Thesis Defense 2016, Comprehensive Exam 2015; Adviser: K. Hedman)
- ◇ Yousef Al-Abdullah (Thesis Defense 2016, Comprehensive Exam 2015; Adviser: K. Hedman)

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- ◇ Vaithinathan Ravi (MS defense 2015; Adviser: G. Heydt)
- ◇ Askhat Tokombayev (MS defense 2015; Adviser: G. Heydt)
- ◇ Yingying Qi (MS defense; Adviser: D. Tylavsky)
- ◇ Nikita Singhal (MS defense; 2015 Adviser: K. Hedman)
- ◇ Yousef Al-Abdullah (Qualifying Exam; 2015; Adviser: K. Hedman)

TEACHING:

SUMMARY OF TEACHING:

- ◇ Undergraduate Courses Taught, including New Course Development : 3
- ◇ Graduate Courses Taught, including New Course Development : 4
- ◇ Average Teaching Evaluation Score for Undergraduate Courses taught at ASU: 4.3
- ◇ Average Teaching Evaluation Score for Graduate Courses taught at ASU: 4.5

Undergraduate Teaching:

- ◇ Service courses taught:
 - **EEE202: Basic Circuits** (70 student sections taught 4 times since fall 2013)
 - **EEE350: Random Signal Theory** (50+ student sections taught 4 times since fall 2014)
- ◇ New courses developed and taught:
 - **EEE549: Statistical Machine Learning: From Theory to Practice:** 3 credit graduate course developed, introduced, and taught by me four times since 2020
- ◇ Key aspects of my undergraduate teaching experience at ASU:
 - Engagement during class and office hours including discussion time
 - Active use of undergraduate TAs (UGTAs) since it was introduced in spring 2016 – my first UGTA is now my fifth year PhD student Tyler Sypherd; he was my first UGTA for EEE350 whom I mentored through his junior and senior years at ASU and as a summer intern
 - I have continually and successfully used UGTAs for EEE350, EEE202, and EEE498: Machine Learning courses mentioned above
 - The key challenge of UG teaching at ASU is need to be creative since TAs are not allocated to course sections (only labs); I have used a combination of UGTAs, extra office hours, recorded additional lectures/problem discussion sections to ensure sound student outcomes
 - I accept Honors options for my courses and work independently on honors topics for extra grade with them. One such student, Monica Welfert, in my EEE350 class in fall 2019, is now a PhD student in my lab working on generalization guarantees of deep learning models
 - My EEE498 course inspired ECEE UG Sriram Rangaswami to delve into the Honors Thesis topic of Teaching Machines to learn Harmonies and Rhythms in Jazz Music, for which I served as an co-adviser

Graduate Teaching:

- ◇ Regular courses taught:
 - **EEE554: Probability and Random Processes** (previously known as Random Signal Theory) (70 student sections taught 2 times since fall 2013)
 - **EEE551: Information Theory** (25+ student sections taught 3 times since fall 2015)
- ◇ New courses developed and introduced:
 - **EEE598: Smart Grid Operations, Cybersecurity, and Analytics** (3-credit, 30+ student sections taught 3 times since spring 2013 when I first introduced it)

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- **EEE591: Foundations of Machine Learning: From Theory to Practice** (joint grad-undergrad, 4-credit, 70 student course introduced in fall 2020 and taught entirely online the first time due to COVID)
- **EEE598 (fall 2021)/EEE549 (present): Statistical Machine Learning: From Theory to Practice**: 3-credit course built on previous EEE591 as a pure graduate course offering in fall 2021 due to increased demand and the need for a separate more advanced graduate course
- ◇ Key aspects of my graduate teaching approach:
 - A combination of projects and exams for both core and introduced courses
 - Highlighting emerging data-driven challenges relevant for grid operations including real-time analytics and cybersecurity
 - Connection between modern machine learning and its information theoretic foundations when I taught EEE551: Information theory in spring 2020

PROFESSIONAL ACTIVITIES AND SERVICE: (PRESENT–PAST)

SUMMARY OF PROFESSIONAL ACTIVITIES AND SERVICE (since starting at ASU)

- ◇ Editor, Associate Editor for peer reviewed journals (#): 2
- ◇ International/National Conferences Chaired (#): 1
- ◇ International/National Conference Committees (#): 12
- ◇ International/National Conferences Sessions Organized (#): 6
- ◇ International/National Conferences Sessions Chaired (#): 15+
- ◇ Peer Reviewed Journals (#): 13
- ◇ Proposal Review Service for Funding Agencies (#): 6
- ◇ ASU-level Committees (#): 1
- ◇ ASU Engineering School-level Committees (#): 1
- ◇ ASU Unit-level Committees (#): 3

Service to IEEE Societies and Research Communities:

- ◇ **Diversity and Inclusion Chair** for the IEEE Information Theory Society 2023-2025 – working with the five-member committee, I helped create a volunteer website to first solicit volunteers and then connect them to the appropriate committees in the society to provide opportunities for all interested with data to evaluate the process.
- ◇ **Lead Editor**: along with Prof. Oliver Kosut (ASU) for the *IEEE Journal on Selected Areas in Information Theory (JSAIT) - Special Issue on Information-theoretic Methods for Trustworthy Machine Learning*; co-editors: A. Ozgur (Stanford); F. Calmon (Harvard); O. Shayevich (Tel-Aviv University); L. Wang (UBC); P. Sadeghi (Australia) (The Ohio State University), Sep. 2023 - present (expect to end June 2024).
- ◇ **Lead Organizer** (along with co-PIs Profs. Oliver Kosut at ASU and Flavio Calmon at Harvard) of a week-long workshop on Information-theoretic methods for Trustworthy Machine Learning, at the Simons Institute for the Theory of Computing, May 22-25, 2023. Part of an NSF Broadening Participation in Computing effort proposed in our joint medium grant 2019-2023.
- ◇ **Associate Editor**: IEEE Transactions on Information Forensics and Security (TIFS), Dec. 2021–Nov. 2024 (impact factor of TIFS: 6.211)
- ◇ **Associate Editor**: IEEE BITS, the Magazine for the Information Theory Society, Jan. 2021–Dec. 2023 (part of the first AE cohort for this newly launched magazine consisting of peer reviewed surveys and tutorials and articles of interest to the community)
<https://www.itsoc.org/bits/about-us>

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- ◇ **Associate Area Chair:** Neural Information Processing (NeurIPS) 2020 (work with a senior Area Chair to manage an assigned set of 25-odd papers)
- ◇ **Guest Editor:** for the *IEEE Journal on Selected Areas in Information Theory (JSAIT) - Special Issue on Privacy and Security of Information Systems*; co-editors: H. Vincent Poor (Princeton); Matthieu Bloch (Georgia Tech); Onur Günlü (TU Berlin); Frédérique Oggier (NTU, Singapore); Rafael F. Schaefer (University Siegen); Aylin Yener (The Ohio State University), Jun. 2020 - Mar. 2021.
- ◇ **Lead Guest Editor:** for the *IEEE Signal Processing Magazine Special Issue on Signal and Information Processing for Privacy*; co-editors: H. Vincent Poor (Princeton), Kannan Ramachandran (Berkeley), Wade Trappe (Rutgers), Merouane Debbah (Supelec, France), Nov 2013 - Oct. 2014.
- ◇ **Steering Committee/Board Member** IEEE ComSoc SmartGridCommunications Conference (SGComm) 2021-2023
- ◇ **Distinguished Lecturer** IEEE Information Theory Society 2020-2022 (in-person talks in early 2020 and virtual talks since including tutorials at information theory summer schools)
- ◇ **Conference Co-Chair** IEEE ComSoc SmartGridCommunications Conference (SGComm) 2020 held virtually, originally scheduled to be held in Phoenix (I led this first SGComm that was fully virtual)
- ◇ **Mini-Symposium on Information-Theoretic Methods for Privacy March 2019** Organized a two-day symposium on privacy as a part of a semester long program on Data Privacy at the Simons Institute for the Theory of Computing, University of California, Berkeley along with Profs. F. P. Calmon (Harvard), P. Kairouz (Google), and A. Wagner (Cornell).
- ◇ **Co-Chair for Workshops 2017** IEEE Wireless Communications and Networking Conference (WCNC) 2017 (Helped solicit and choose 9 workshops for the conference)
- ◇ **Co-Chair for the Cyber-Security and Privacy Symposium**, IEEE SmartGrid Communications 2017, 2018
- ◇ **Organized invited sessions at:** (i) Allerton Conference, 2018, 2019 and (ii) Conference on Information Systems and Sciences 2016
- ◇ **Co-Chair for two Symposia at IEEE 1st GlobalSIP Conference 2013:** (i) Cyber-Security and Privacy and (ii) Information Processing in the Smart Grid
- ◇ **Technical Program Committee (TPC):**
 - International Symposium on Information Theory (ISIT) (2012-2022)
 - IEEE International Workshop on Signal Processing Advances in Wireless Communications 2018
 - Information Theory Workshop (ITW) (2014-2022)
 - Globecom (2015)
 - IEEE Smart Grid Communications (2012-2018)
 - IEEE GlobalSIP 2016 : (i) Symposium on Information Theoretic Approaches to Security and Privacy; and (ii) Symposium on Smart Grids

Co-chair, Women in Information Theory (WITHITS): 2016-2018 (part of IEEE Information Theory Society): Organized mentoring and discussion events at the Information Theory Society conferences including ISIT, Allerton, and ITA conferences

Peer Reviewer for Journals:

- ◇ **IEEE Transactions:** Information Theory (T-IT), Signal Processing (T-SP), Information Forensics and Security (T-IFS), Smart Grid (T-SG), Power Systems (T-PS), Automatic Control (T-AC), Control of Networked Systems (T-CNS)
- ◇ **IEEE:** Journal Selected Topics in Signal Processing (JSTSP), Power Engineering Letters (PEL), Signal Processing Magazine (SPM)

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- ◇ **ACM:** Transactions on Information and Systems Security
- ◇ **Other:** Royal Society of Statistics, Proceedings National Academy of Sciences (PNAS)

Reviewer for Conferences:

- ◇ ACM AISTATS, ICML, NeurIPS (2019-2020)
- ◇ International Symposium on Information Theory (ISIT) (2012-2017)
- ◇ Information Theory Workshop (ITW) (2012-2016)
- ◇ IEEE Globecom (2012-2014)
- ◇ Conference on Decision and Control (CDC) (2012-2016)
- ◇ International Conference on Acoustics, Speech, and Signal Processing (ICASSP) (2012-2014)
- ◇ North American Power Systems Conference (NAPS) (2014-2017)
- ◇ IEEE GlobalSIP 2013-2016

ASU INTERNAL ACTIVITIES AND SERVICE:

ASU Service:

- ◇ Graduate Program Chair, ECEE MS Concentration in Data Science (designed and developed this and other MS concentration programs across engineering and mathematics) : 2020–present
- ◇ Graduate Program Committee Member, PhD in Data Science and Engineering (DSAE)
- ◇ Chair, ECEE Search Committee 2023-24 on AI and Controls
- ◇ Chair, Graduate Awards Committee (five members representing five core subareas), ECEE – focus is on developing a variety of meaningful research day awards for MS and PhD students in ECEE
- ◇ Faculty representing ECEE in the Research Activity Council (RAC) in the Fulton Schools of Engineering (FSE) for 2021-2023 (this effort is focused on enhancing graduate programs and research efforts within FSE)
- ◇ Active and founding member of the FSE Summer Undergraduate Research Initiative (SURI) program (I have mentored several US undergraduate and graduate students including from HBCUs with two of them enrolled in our PhD program now)
- ◇ Served on committee to revisit teaching load and buyout plan (2019-2020)
- ◇ Served on multiple search committees since 2013
- ◇ Founding member of the ASU FSE New Faculty Advisory Council (2 from each FSE school).
- ◇ Created a New Faculty Peer Mentor program to connect new faculty with junior faculty (along with Sarah Stabenfelt, SHBSE, and Candace Chan, SEMTE) which has been very successful at introducing new hires to the processes at ASU.
- ◇ Served on two search committees (power systems and communication systems) in ECEE for academic year 2013-2014.
- ◇ Participated in E-2 camp in summers 2013 and 2014. Represented ECEE in the ‘Intro to Engineering’ activity at the camp.