

# Curriculum Vitae

Christopher G. Brinton, PhD

## CONTACT INFORMATION

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## PROFESSIONAL EXPERIENCE

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*Purdue University*, West Lafayette, IN  
Electrical and Computer Engineering  
**Elmore Associate Professor**  
**Elmore Assistant Professor**  
**Assistant Professor**

*July 2024 – Present*  
*Jun 2023 – July 2024*  
*Aug 2019 – Jun 2023*

- *Research:* My research is at the intersection of communications/networking and machine learning. I am advising/co-advising 14 PhD students and 3 postdocs in this area. I now have ~75 journal (or journal-equivalent conference) papers and ~90 conference papers published/accepted for publication, and have raised ~\$36M in funding as a PI/co-PI. I received *five of the nation's top early career awards* from ONR (YIP), NSF (CA-REER), DARPA (YFA and Director's Fellowship), and AFOSR (YIP), the *Intel Rising Star Faculty Award*, the *IEEE Communication Society William Bennett Prize Best Paper Award*, and the *Purdue College of Engineering Faculty Excellence Award in Early Career Research*.
- *Teaching:* At the undergraduate level, I co-developed a new course *Python for Data Science* that has become a requirement for ECE majors. I also teach *Signals and Systems* regularly. Beyond standard teaching duties, I periodically co-supervise an EPICS team in data science, and teach an interdisciplinary undergraduate course *Principles of Networks*. At the graduate level, I teach *Introduction to Computer Communication Networks* and *Optimization of Computer Communication Networks*. I received the *Purdue College of Engineering Faculty Excellence Awards* in both *Early Career Teaching* and *Online Education*.
- *Service:* I am an Associate Editor for IEEE/ACM Transactions on Networking, and am on the organizing committees for IEEE INFOCOM and ACM MobiHoc. I served as TPC co-chair of IEEE WiOpt in 2024. Also, I have co-organized several workshops at major conferences, including the annual FOGML workshop at IEEE INFOCOM, and the NSF NeTS Early Career Investigator workshop. At Purdue, I have served as the coordinator for graduate admissions in my area, on several ECE faculty search committees, and on an ECE head search committee.

*Princeton University*, Princeton, NJ  
**Associate Director of the EDGE Lab**  
**Lecturer of Electrical Engineering**

*Sept 2018 – Jul 2019*  
*Sept 2017 – Jun 2019*

- The Princeton EDGE Lab is devoted to research, education, and innovation in edge computing, edge networking, and data science. It has graduated over 30 PhD students and postdocs.
- I taught 3-4 courses each year, including *Networks: Friends, Money, and Bytes* which covers data science, optimization, and algorithms for social, technological, and economic networks.

*Zoomi Inc.*, Chesterbrook, PA ([www.zoomi.ai](http://www.zoomi.ai))  
**Head of Advanced Research (consulting)**  
**Head of Advanced Research**  
**Co-founder**  
**Research Intern**

*Feb 2014 – May 2016, Aug 2019 – Present*  
*Jun 2016 – Jul 2019*  
*Jun 2013 – Present*  
*Jun 2013 – Aug 2013*

- Zoomi is a big data startup company that provides predictive analytics and individualized learning for employee performance optimization. The service has been deployed to over one million users at Fortune 500 companies.
- I co-founded Zoomi based on my research pertaining to Social Learning Networks (SLN), and have led a team of 7 full-time, four part-time, and 9 summer intern data science researchers.

*The College of New Jersey*, Ewing, NJ  
**Adjunct Professor of Engineering**

*Aug 2016 – May 2017*

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## EDUCATION

*Princeton University*, Princeton, NJ

**Doctor of Philosophy in Electrical Engineering**

*May 2016*

- Research on data science and networking resulted in several papers, invited talks, and a startup company. PhD thesis won the *2016 Bede Liu Best Dissertation Award in Electrical Engineering*.
- First author of textbook *The Power of Networks: Six Principles That Connect Our Lives*, which was profiled in several media such as TIME and is being used to teach courses around the world.
- Co-instructor of three online courses to over 400,000 students, and lead TA of an in-class course.

**Masters Degree in Electrical Engineering**

*May 2013*

- Thesis on optimization methods for power systems and communication networks

*The College of New Jersey*, Ewing, NJ

**Bachelor of Science in Electrical Engineering**

*May 2011*

- Graduated valedictorian and summa cum laude

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## AWARDS AND HONORS

*International Conference on Learning Representations (ICLR) Spotlight Presentation (2025)*: Awarded to ~5% of ICLR 2025 papers. Received for our paper “Decentralized Sporadic Federated Learning: A Unified Algorithmic Framework with Convergence Guarantees.”

*Defense Advanced Research Projects Agency (DARPA) Director’s Fellowship (2024)*: Reserved for a limited number of 2022 DARPA YFA Awardees who “demonstrated exceptional performance over the 24-month base period.”

*IEEE Communication Society William Bennett Prize (2024)*: Annual best paper award for *IEEE/ACM Transactions on Networking* and *IEEE Transactions on Network and Service Management*, received for our paper “Multi-Stage Hybrid Federated Learning Over Large-Scale D2D-Enabled Fog Networks.”

*Qualcomm Faculty Award (QFA) (2024)*: Recipient of the 2024 QFA which “recognizes distinguished faculty research that inspires students and sparks new approaches.”

*Air Force Office of Scientific Research (AFOSR) Young Investigator Program Award (2024)*: Recipient of the 2024 AFOSR Young Investigator Program (YIP).

*IEEE Communication Society Distinguished Lecturer (2024)*: Appointed a distinguished lecturer for the IEEE Communication Society for the 2024-2025 term.

*Grainger Foundation’s Frontiers of Engineering (FOE) Symposium (2023)*: Invited to be a participant at the NAE-sponsored US FOE Symposium.

*Purdue College of Engineering Faculty Excellence Award for Early Career Research (2023)*: Awarded annually in Purdue’s College of Engineering.

*Purdue College of Engineering Faculty Excellence Award for Exceptional Early Career Teaching (2023)*: Awarded annually in Purdue’s College of Engineering.

*Intel Rising Star Faculty Award (2022)*: One of 15 recipients worldwide of the 2022 Intel Rising Star Faculty Award.

*Defense Advanced Research Projects Agency (DARPA) Young Faculty Award (2022)*: Recipient of the 2022 DARPA Young Faculty Award (YFA) program.

*National Science Foundation (NSF) Faculty Early Career Development Program (CAREER) Award (2022)*: Recipient of a 2022 NSF CAREER award.

*Office of Naval Research (ONR) Young Investigator Award (2022)*: Recipient of the 2022 ONR Young Investigator Program (YIP).

*College of Engineering Faculty Excellence Award for Online Education (2022)*: Awarded annually in Purdue's College of Engineering.

*Ruth and Joel Spira Outstanding Teacher Award (2020)*: Awarded to one faculty member in Purdue ECE each year.

*Purdue ECE Outstanding Faculty Mentor of Engineering Graduate Students (2020)*: Awarded to one faculty member in Purdue ECE each year.

*Distinguished Member of the INFOCOM TPC (2019-2023)*: Awarded based on contribution to the peer-review process of IEEE INFOCOM.

*Purdue Seed for Success Award (2019)*: Awarded for efforts in obtaining an external sponsored research award of \$1 million or more.

*Princeton Engineering Commendation List for Outstanding Teaching (2019)*: Awarded for high teaching evaluations received during the spring 2019 semester.

*INFOCOM Best-in-Session Presentation Award (2018, 2016)*: Awarded for having the highest rated presentation in my corresponding sessions at INFOCOM 2016 and 2018.

*Bede Liu Best Dissertation Award in Electrical Engineering (2016)*: Awarded to one graduating PhD student in Princeton's EE Department each year.

*Yan Huo '94 Graduate Fellowship in Electrical Engineering (2015)*: Awarded to three graduate students in Princeton's EE Department each year.

*Outstanding Teaching Assistant Award (2013)*: Awarded after being an assistant instructor for ELE/COS 381, both at Princeton (in-class) and on Coursera (online).

*Princeton University Research Assistantship (2012 - 2016)*: Awarded full tuition and stipend by Princeton for my PhD research.

*Princeton University First Year Fellowship (2011 - 2012)*: Awarded full tuition and additional compensation for my first year of graduate studies at Princeton.

*TCNJ School of Engineering Banner Bearer (2011)*: Awarded at graduation for obtaining the highest GPA of all graduating engineers from TCNJ in 2011.

*Engineer in Training (2011)*: Awarded for passing the Fundamentals of Engineering (FE) exam in 2011.

*TCNJ Fred O. Armstrong Scholars Award in Electrical Engineering (2008 - 2011)*: Obtained the highest-in-class GPA of Electrical Engineers. Received each year during my undergraduate studies.

## PUBLICATIONS

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### Books

B2. C. Brinton, M. Chiang. The Power of Networks: Six Principles that Connect our Lives. *Princeton University Press*, 2017. [www.powerofnetworks.org](http://www.powerofnetworks.org).

B1. C. Brinton, M. Chiang. Networks Illustrated: 8 Principles Without Calculus. *EdWiser Scholastic Press*, 2013.

### Journals and Journal-Equivalent Conferences

- J79. J. Kim, T. Kim, A. Das, S. Hosseinalipour, D. Love, C. Brinton. Coding for Gaussian Two-Way Channels: Linear and Learning-Based Approaches. *IEEE Transactions on Information Theory*, 2025.
- J78. S. Wagle, A. Das, D. Love, C. Brinton. Multi-Agent Reinforcement Learning for Graph Discovery in D2D-Enabled Federated Learning. *IEEE Journal on Selected Topics in Signal Processing*, 2025.
- J77. W. Fang, D. Han, C. Brinton. Federated Learning over Hierarchical Wireless Networks: Training Latency Minimization via Submodel Partitioning. *IEEE/ACM Transactions on Networking*, 2025.
- J76. Y. Chu, D. Han, C. Brinton. Only Send What You Need: Learning to Communicate Efficiently in Federated Multilingual Machine Translation. *IEEE Transactions on Audio, Speech, and Language Processing*, 2025.
- J75. E. Ruzomberka, H. Nikbakht, C. Brinton, D. Love, V. Poor. Derandomizing Codes for the Adversarial Wiretap Channel of Type II. *IEEE Transactions on Information Theory*, 2025.
- J74. S. Zehtabi, D. Han, R. Parasnis, S. Hosseinalipour, C. Brinton. Decentralized Sporadic Federated Learning: A Unified Algorithmic Framework with Convergence Guarantees. *International Conference on Learning Representations (ICLR)*, p. 1-70, 2025.
- J73. G. Lan, D. Han, A. Hashemi, V. Aggarwal, C. Brinton. Asynchronous Federated Reinforcement Learning with Policy Gradient Updates: Algorithm Design and Convergence Analysis. *International Conference on Learning Representations (ICLR)*, p. 1-30, 2025.
- J72. Y. Chu, D. Han, S. Hosseinalipour, C. Brinton. Unlocking the Potential of Model Calibration in Federated Learning. *International Conference on Learning Representations (ICLR)*, p. 1-27, 2025.
- J71. C. Brinton, M. Chiang, K. Kim, D. Love, M. Beesley, M. Repeta, J. Roese, P. Beming, E. Ekudden, C. Li, G. Wu, N. Batra, V. Ziegler, T. Ji, R. Prakash, J. Smee. Key Focus Areas and Enabling Technologies for 6G. *IEEE Communications Magazine*, 2025.
- J70. Y. Oh, J. Lee, C. Brinton, Y. Jeon. Communication-Efficient Split Learning via Adaptive Feature-Wise Compression. *IEEE Transactions on Neural Networks and Learning Systems*, 2025.
- J69. Y. Chu, D. Han, S. Hosseinalipour, C. Brinton. Rethinking the Starting Point: Collaborative Pre-Training for Federated Downstream Tasks. *Association for the Advancement in Artificial Intelligence (AAAI)*, p. 1-28, 2025.
- J68. W. Fang, D. Han, E. Chen, S. Wang, C. Brinton. Hierarchical Federated Learning with Multi-Timescale Gradient Correction. *Conference on Neural Information Processing Systems (NeurIPS)*, p. 1-35, 2024.
- J67. D. Han, W. Fang, S. Hosseinalipour, M. Chiang, C. Brinton. Orchestrating Federated Learning in Space-Air-Ground Integrated Networks: Adaptive Data Offloading and Seamless Handover. *IEEE Journal on Selected Areas in Communications*, Vol. 42, No. 12, p. 3505-3520, 2024.
- J66. S. Wagle, S. Hosseinalipour, N. Khosravan, C. Brinton. Unsupervised Federated Optimization at the Edge: D2D-Enabled Learning without Labels. *IEEE Transactions on Cognitive Communications and Networking*, Vol. 10, No. 6, p. 2252-2268, 2024.
- J65. S. Wang, S. Hosseinalipour, R. Morabito, M. Chiang, C. Brinton. Device Sampling and Resource Optimization for Federated Learning in Cooperative Edge Networks. *IEEE/ACM Transactions on Networking*, Vol. 32, No. 5, p. 4365-4381, 2024.
- J64. A. Piaseczny, E. Ruzomberka, R. Parasnis, C. Brinton. Adversarial Node Placement in Decentralized Federated Learning: Maximum Spanning-Centrality Strategy and Performance Analysis. *IEEE Internet of Things Journal*, Vol. 12, No. 1, p. 45-60, 2024.
- J63. M. Oh, A. Das, T. Kim, D. Love, C. Brinton. Minimum Description Feature Selection for Complexity Reduction in Machine Learning-based Wireless Positioning. *IEEE Journal on Selected Areas in Communications*, Vol. 42, No. 9, p. 2585-2600, 2024.

- J62. S. Wang, M. Chen, C. Chen, C. Yin, C. Brinton. Digital Over-the-Air Federated Learning in Multi-Antenna Systems. *IEEE Transactions on Wireless Communications*, Vol. 23, No. 10, p. 15125-15141, 2024.
- J61. A. Das, A. Ramamoorthy, D. Love, C. Brinton. Sparsity-Preserving Encodings for Straggler-Optimal Distributed Matrix Computations at the Edge. *IEEE Internet of Things Journal*, Vol. 11, No. 21, p. 34455-34470, 2024.
- J60. L. Yuan, Z. Wang, L. Sun, P. Yu, C. Brinton. Decentralized Federated Learning: A Survey and Perspective. *IEEE Internet of Things Journal*, Vol. 11, No. 21, p. 34617-34638, 2024.
- J59. L. Yuan, Z. Wang, C. Brinton. Digital Ethics in Federated Learning. *IEEE Internet Computing*, Vol. 28, No. 5, p. 66-74, 2024.
- J58. A. Arun, A. Das, C. Brinton, D. Love, J. Krogmeier. Do Small Cells Make Sense for Simple Low Cost LPWANs? *IEEE Wireless Communication Letters*, Vol. 13, No. 9, p. 2352-2356, 2024.
- J57. Y. Chu, S. Hosseinalipour, E. Tenorio, L. Cruz, K. Douglas, A. Lan, C. Brinton. Multi-Layer Personalized Federated Learning for Mitigating Biases in Student Predictive Analytics. *IEEE Transactions on Emerging Topics in Computing*, 2024.
- J56. Z. Chang, S. Hosseinalipour, M. Chiang, C. Brinton. Asynchronous Multi-Model Dynamic Federated Learning over Wireless Networks: Theory, Modeling, and Optimization. *IEEE Transactions on Cognitive Communications and Networking*, Vol. 10, No. 5, p. 1989-2004, 2024.
- J55. D. Han, S. Hosseinalipour, D. Love, M. Chiang, C. Brinton. Cooperative Federated Learning over Ground-to-Satellite Integrated Networks: Joint Local Computation and Data Offloading. *IEEE Journal on Selected Areas in Communications*, Vol. 42, No. 5, p. 1080-1096, 2024.
- J54. M. Bliss, F. Block, T. Royster, C. Brinton, D. Love. Orchestrating Heterogeneous NTN: from Stochastic Geometry to Resource Allocation. *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 60, No. 4, p. 5264-5285, 2024.
- J53. R. Parasnis, S. Hosseinalipour, Y. Chu, M. Chiang, C. Brinton. Energy-Efficient Connectivity-Aware Learning over Time-Varying D2D Networks. *IEEE Journal on Selected Topics in Signal Processing*, Vol. 18, No. 2, p. 242-258, 2024.
- J52. S. Wang, S. Hosseinalipour, C. Brinton. Multi-Source to Multi-Target Decentralized Federated Domain Adaptation. *IEEE Transactions on Cognitive Communications and Networking*, Vol. 10, No. 3, p. 1011-1025, 2024.
- J51. M. Oh, A. Das, S. Hosseinalipour, T. Kim, D. Love, C. Brinton. A Decentralized Pilot Assignment Algorithm for Scalable O-RAN Cell-Free Massive MIMO. *IEEE Journal on Selected Areas in Communications*, Vol. 42, No. 2, p. 373-388, 2024.
- J50. S. Hosseinalipour, S. Wang, N. Michelusi, V. Aggarwal, C. Brinton, D. Love, M. Chiang. Parallel Successive Learning for Dynamic Distributed Model Training over Heterogeneous Wireless Networks. *IEEE/ACM Transactions on Networking*, Vol. 32, No. 1, p. 222-237, 2024.
- J49. V. Chellapandi, L. Yuan, C. Brinton, S. Zak, Z. Wang. Federated Learning for Connected and Automated Vehicles: A Survey of Existing Approaches and Challenges. *IEEE Transactions on Intelligent Vehicles*, Vol. 9, No. 1, p. 119-137, 2024.
- J48. S. Wang, M. Chen, C. Brinton, C. Yin, W. Saad, S. Cui. Performance Optimization for Variable Bitwidth Federated Learning in Wireless Networks. *IEEE Transactions on Wireless Communications*, Vol. 23, No. 3, p. 2340-2356, 2024.
- J47. F. Lin, S. Hosseinalipour, N. Michelusi, C. Brinton. Delay-Aware Hierarchical Federated Learning. *IEEE Transactions on Cognitive Communications and Networking*, Vol. 10, No. 2, p. 674-688, 2024.
- J46. D. Han, D. Kim, M. Choi, D. Nickel, J. Moon, M. Chiang, C. Brinton. Federated Split Learning with Joint Personalization-Generalization for Inference-Stage Optimization in Wireless Edge Networks. *IEEE Transactions on Mobile Computing*, Vol. 23, No. 6, p. 7048-7065, 2024.

- J45. J. Park, D. Han, J. Kim, S. Wang, C. Brinton, J. Moon. StableFDG: Style and Attention Based Learning for Federated Domain Generalization. *Conference on Neural Information Processing Systems (NeurIPS)*, p. 1-19, 2023.
- J44. A. Das, A. Ramamoorthy, D. Love, C. Brinton. Distributed Matrix Computations with Low-weight Encodings. *IEEE Journal on Selected Areas in Information Theory*, Vol. 4, p. 363-378, 2023.
- J43. G. Lan, H. Wang, J. Anderson, C. Brinton, V. Aggarwal. Improved Communication Efficiency in Federated Natural Policy Gradient via ADMM-based Gradient Updates. *Conference on Neural Information Processing Systems (NeurIPS)*, p. 1-16, 2023.
- J42. J. Kim, T. Kim, D. Love, C. Brinton. Robust Non-Linear Feedback Coding via Power-Constrained Deep Learning. *International Conference on Machine Learning (ICML)*, p. 1-20, 2023.
- J41. M. Oh, S. Hosseinalipour, T. Kim, D. Love, J. Krogmeier, C. Brinton. Dynamic and Robust Sensor Selection Strategies for Wireless Positioning with TOA/RSS Measurement. *IEEE Transactions on Vehicular Technologies*, Vol. 72, No. 11, p. 14656-14672, 2023.
- J40. R. Sahay, M. Zhang, D. Love, C. Brinton. Defending Adversarial Attacks on Deep Learning Based Power Allocation in Massive MIMO Using Denoising Autoencoders. *IEEE Transactions on Cognitive Communications and Networking*, Vol. 9, No. 4, p. 913-926, 2023.
- J39. S. Wang, S. Hosseinalipour, V. Aggarwal, C. Brinton, D. Love, W. Su, M. Chiang. Toward Cooperative Federated Learning over Heterogeneous Edge/Fog Networks. *IEEE Communications Magazine*, Vol. 61, No. 12, p. 54-60, 2023.
- J38. B. Ganguly, S. Hosseinalipour, K. Kim, C. Brinton, V. Aggarwal, D. Love, M. Chiang. Multi-Edge Server-Assisted Dynamic Federated Learning with an Optimized Floating Aggregation Point. *IEEE/ACM Transactions on Networking*, Vol. 31, No. 6, p. 2682-2697, 2023.
- J37. E. Ruzomberka, D. Love, C. Brinton, A. Gupta, C. Wang, H. V. Poor. Challenges and Opportunities for Beyond-5G Wireless Security. *IEEE Security and Privacy*, Vol. 21, No. 5, p. 55-66, 2023.
- J36. Z. Zhou, S. Azam, C. Brinton, D. Inouye. Efficient Federated Domain Translation. *International Conference on Learning Representations (ICLR)*, p. 1-31, 2023.
- J35. D. Kushwaha, S. Redhu, C. Brinton, R. Hedge. Optimal Device Selection in Federated Learning for Resource-Constrained Edge Networks. *IEEE Internet of Things Journal*, Vol. 10, No. 12, p. 10845-10856, 2023.
- J34. R. Sahay, S. Nicoll, M. Zhang, T. Yang, C. Joe-Wong, K. Douglas, C. Brinton. Predicting Learning Interactions in Social Learning Networks: A Deep Learning Enabled Approach. *IEEE/ACM Transactions on Networking*, Vol. 31, No. 5, p. 2086-2100, 2023.
- J33. S. Wang, S. Hosseinalipour, M. Gorlatova, C. Brinton, M. Chiang. UAV-assisted Online Machine Learning over Multi-Tiered Networks: A Hierarchical Nested Personalized Federated Learning Approach. *IEEE Transactions on Network and Service Management*, Vol. 20, No. 2, p. 1847-1865, 2023.
- J32. S. Palacios, A. Ault, J. Krogmeier, B. Bhargava, C. Brinton. AGAPECert: An Auditable, Generalized, Automated, Privacy-Enabling Certification Framework with Oblivious Smart Contracts. *IEEE Transactions on Dependable and Secure Computing*, Vol. 20, No. 4, p. 3269-3286, 2023.
- J31. C. Chen, C. Brinton, V. Aggarwal. Latency Minimization for Mobile Edge Computing Networks. *IEEE Transactions on Mobile Computing*, Vol. 22, No. 4, p. 2233-2247, 2023.
- J30. R. Sahay, J. Stubbs, C. Brinton, G. Birch. An Uncertainty Quantification Framework for Counter Unmanned Aircraft Systems Using Deep Ensembles. *IEEE Sensors Journal*, Vol. 22, No. 21, p. 20896-20909, 2022.
- J29. D. Nguyen, S. Hosseinalipour, D. Love, P. Pathirana, C. Brinton. Latency Optimization for Blockchain-Empowered Federated Learning in Multi-Server Edge Computing. *IEEE Journal on Selected Areas in Communications*, Vol. 40, No. 12, p. 3373-3390, 2022.
- J28. R. Sahay, S. Appadwedula, D. Love, C. Brinton. A Neural Network-Prepended GLRT-Based Framework for Signal Detection in Nonlinearity. *IEEE Communications Letters*, Vol. 26, No. 9, p. 2161-2165, 2022.

- J27. J. Kim, S. Hosseinalipour, A. Marcum, T. Kim, D. Love, C. Brinton. Learning-Based Adaptive IRS Control with Limited Feedback Codebooks. *IEEE Transactions on Wireless Communications*, Vol. 21, No. 11, p. 9566-9581, 2022.
- J26. J. Guo, R. Raj, D. Love, C. Brinton. Nonparametric Decentralized Detection and Sparse Sensor Selection via Multi-Sensor Online Kernel Scalar Quantization. *IEEE Transactions on Signal Processing*, Vol. 70, p. 2593-2608, 2022.
- J25. S. Azam, S. Hosseinalipour, Q. Qiu, C. Brinton. Recycling Model Updates in Federated Learning: Are Gradient Subspaces Low-Rank? *International Conference on Learning Representations (ICLR)*, p. 1-70, 2022.
- J24. S. Azam, T. Kim, S. Hosseinalipour, C. Joe-Wong, S. Bagchi, C. Brinton. Can we Generalize and Distribute Private Representation Learning? *International Conference on Artificial Intelligence and Statistics (AISTATS)*, p. 1-21, 2022.
- J23. S. Hosseinalipour, S. Azam, C. Brinton, N. Michelusi, V. Aggarwal, D. Love, H. Dai. Multi-Stage Hybrid Federated Learning Over Large-Scale D2D-Enabled Fog Networks. *IEEE/ACM Transactions on Networking*, Vol. 30, No. 4, p. 1569-1584, 2022.
- J22. D. Lemay, T. Doleck, C. Brinton. SLOAN: Social Learning Optimization Analysis of Networks. *International Review of Research in Open and Distributed Learning (IRRODL)*, Vol. 3, No. 4, p. 94-121, 2022.
- J21. J. Kim, T. Kim, M. Hashemi, D. Love, C. Brinton. Minimum Overhead Beamforming and Resource Allocation in D2D Edge Networks. *IEEE/ACM Transactions on Networking*, Vol. 30, No. 4, p. 1454-1468, 2022.
- J20. M. Lee, S. Hosseinalipour, C. Brinton, G. Yu, H. Dai. A Fast Graph Neural Network-Based Method for Winner Determination in Multi-Unit Combinatorial Auctions. *IEEE Transactions on Cloud Computing*, Vol. 10, No. 4, p. 2264-2280, 2022.
- J19. R. Sahay, C. Brinton, D. Love. A Deep Ensemble-based Wireless Receiver Architecture for Mitigating Adversarial Interference in Automatic Modulation Classification. *IEEE Transactions on Cognitive Communications and Networking*, Vol. 8, No. 1, p. 71-85, 2021.
- J18. F. Lin, S. Hosseinalipour, S. Azam, C. Brinton, N. Michelusi. Semi-Decentralized Federated Learning with Cooperative D2D Local Model Aggregations. *IEEE Journal on Selected Areas in Communications*, Vol. 39, No. 12, p. 3851-3869, 2021.
- J17. R. Sahay, C. Brinton. Robust Subject-Independent P300 Waveform Classification via Signal Pre-processing and Deep Learning. *IEEE Access*, Vol. 9, p. 87579-87591, 2021.
- J16. Q. Wu, A. Hare, S. Wang, Y. Tu, Z. Liu, C. Brinton, Y. Li. BATS: A Spectral Biclustering Approach to Single Document Topic Modeling and Segmentation. *ACM Transactions on Intelligent Systems and Technology*, Vol. 12, No. 5, p. 1-29, 2021.
- J15. S. Wang, Y. Tu, Y. Ruan, S. Wagle, C. Brinton, C. Joe-Wong. Network-Aware Optimization of Distributed Learning for Fog Computing. *IEEE/ACM Transactions on Networking*, Vol. 29, No. 5, p. 2019-2032, 2021.
- J14. T. Doleck, D. Lemay, C. Brinton. Evaluating the Efficiency of Social Learning Networks: Perspectives for Harnessing Learning Analytics to Improve Discussions. *Elsevier Computers & Education*, Vol. 164, p. 1-11, 2021.
- J13. H. Nguyen, V. Schwag, S. Hosseinalipour, C. Brinton, M. Chiang, H. V. Poor. Fast-Convergent Federated Learning. *IEEE Journal on Selected Areas in Communications*, Vol. 39, No. 1, p. 201-218, 2021.
- J12. S. Hosseinalipour, C. Brinton, V. Aggarwal, H. Dai, M. Chiang. From Federated to Fog Learning: Distributed Machine Learning over Heterogeneous Wireless Networks. *IEEE Communications Magazine*, Vol. 58, No. 12, p. 41-47, 2020.
- J11. S. Liu, C. Joe-Wong, J. Chen, C. Brinton, C. Tan, L. Zheng. Economic Viability of a Virtual ISP. *IEEE/ACM Transactions on Networking*, Vol. 28, No. 2, p. 902-916, 2020.
- J10. W. Chen, C. Brinton, D. Cao, M. Chiang. Early Detection Prediction of Learning Outcomes in Online Short-Courses via Learning Behaviors. *IEEE Transactions on Learning Technologies*, Vol. 12, No. 1, p. 44-58,

2019.

- J9. C. Brinton, S. Buccapatnam, L. Zheng, D. Cao, A. Lan, F. Wong, S. Ha, M. Chiang, H. V. Poor. On the Efficiency of Online Social Learning Networks. *IEEE/ACM Transactions on Networking*, Vol. 26, No. 5, p. 2076-2089, 2018.
- J8. T. Yang, C. Brinton, C. Joe-Wong, M. Chiang. Behavior-Based Grade Prediction for MOOCs via Time Series Neural Networks. *IEEE Journal of Selected Topics in Signal Processing*, Vol. 11, No. 5, p. 716-728, 2017.
- J7. C. Brinton, S. Buccapatnam, M. Chiang, H. V. Poor. Mining MOOC Clickstreams: Video-Watching Behavior versus In-Video Quiz Performance. *IEEE Transactions on Signal Processing*, Vol. 64, No. 14, p. 3677-3692, 2016.
- J6. L. Zheng, C. Joe-Wong, C. Brinton, C. Tan, S. Ha, M. Chiang. On the Viability of a Cloud Virtual Service Provider. *ACM Special Interest Group on Performance Evaluation (SIGMETRICS)*, Vol. 44, No. 1, p. 235-248, 2016.
- J5. C. Brinton, R. Rill, S. Ha, M. Chiang, R. Smith, W. Ju. Individualization for Education at Scale: MIIC Design and Preliminary Evaluation. *IEEE Transactions on Learning Technologies*, Vol. 8, No. 1, p. 136-148, 2015.
- J4. C. Brinton, M. Chiang, S. Jain, H. Lam, Z. Liu, F. Wong. Learning about social learning in MOOCs: From statistical analysis to generative model. *IEEE Transactions on Learning Technologies*, Vol. 7, No. 4, p. 346-359, 2014.
- J3. K. Reichmann, P. Iannone, C. Brinton, et al. A Symmetric-Rate, Extended-Reach 40Gb/s CWDM-TDM PON with Downstream and Upstream SOA-Raman Amplification. *IEEE Journal of Lightwave Technology*, Vol. 30, No. 4, p. 479-485, 2012.
- J2. C. Brinton, M. Wharton, A. Katz. Design and Demonstration of a Passive, Broadband Equalizer for an SLED. *Microwave Journal*, Vol. 55, No. 10, p. 88-102, 2012.
- J1. C. Brinton, D. Hirsh. Sensitivity Enhancement in Continuous-Wave Electron Paramagnetic Resonance: Adaptive Signal Averaging versus a Moving Average. *Review of Scientific Instruments*, Vol. 81, No. 2, 2010.

#### Peer-Reviewed Conferences and Competitive Workshops

- C92. M. Shisher, A. Piaseczny, Y. Sun, C. Brinton. Computation and Communication Co-scheduling for Timely Multi-Task Inference at the Wireless Edge. *IEEE International Conference on Computer Communications (INFOCOM)*, 2025.
- C91. S. Kang, V. Tripathi, C. Brinton. Timely Trajectory Reconstruction in Finite Buffer Remote Tracking Systems. *IEEE International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, 2025.
- C90. Y. Zou, C. Brinton, V. Tripathi. Communication-Efficient Cooperative Localization: A Graph Neural Network Approach. *IEEE International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, 2025.
- C89. E. Chen, F. Lin, D. Han, C. Brinton. Differentially-Private Multi-Tier Federated Learning. *IEEE International Conference on Communications (ICC)*, 2025.
- C88. M. Shisher, V. Tripathi, M. Chiang, C. Brinton. AoI-based Scheduling of Correlated Sources for Timely Inference. *IEEE International Conference on Communications (ICC)*, 2025.
- C87. S. Wagle, A. Malhotra, S. Hamibi-Rad, M. Ibrahim, D. Love, C. Brinton. Physics-Informed Generative Approaches for Wireless Channel Modeling. *International Conference on Learning Representations (ICLR) Workshop on Deep Generative Model in Machine Learning: Theory, Principle and Efficacy*, 2025.
- C86. S. Wagle, A. Malhotra, S. Hamibi-Rad, M. Ibrahim, C. Brinton. Joint Spatio-Temporal Feature Extraction for Channel State Prediction in MIMO Systems. *IEEE Consumer Communications and Networking Conference (CCNC)*, 2025.



- C85. M. Kouchaki, M. Zhang, A. Abdalla, G. Lan, C. Brinton, V. Marojevic. Enhanced Real-Time Threat Detection in 5G Networks: A Self-Attention RNN Autoencoder Approach for Spectral Intrusion Analysis. *IEEE International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, 2024.
- C84. S. Ding, D. Han, C. Brinton, K. Dasala. FICDF: A Federated Incremental Learning Framework for IoT Device Fingerprinting. *IEEE International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, 2024.
- C83. E. Chen, S. Wang, C. Brinton. Taming Subnet-Drift in D2D-Enabled Fog Learning: A Hierarchical Gradient Tracking Approach. *IEEE International Conference on Computer Communications (INFOCOM)*, 2024.
- C82. Y. Chu, D. Han, C. Brinton. Only Send What You Need: Learning to Communicate Efficiently in Federated Multilingual Machine Translation. *ACM International World Wide Web Conference (WWW)*, 2024.
- C81. K. Wang, C. Tan, C. Brinton. Maximizing User Admittance for Cognitive Radio using ODE-inspired Spectral Radius Estimation. *IEEE Information Theory Workshop*, 2024.
- C80. A. Piaseczny, E. Ruzomberka, R. Parasnis, C. Brinton. The Impact of Adversarial Node Placement in Decentralized Federated Learning Networks. *IEEE International Conference on Communications (ICC)*, 2024.
- C79. W. Fang, D. Han, C. Brinton. Submodel Partitioning in Hierarchical Federated Learning: Algorithm Design and Convergence Analysis. *IEEE International Conference on Communications (ICC)*, 2024.
- C78. L. Yuan, D. Han, V. Chellapandi, S. Zak, C. Brinton. FedMFS: Federated Multimodal Fusion Learning with Selective Modality Communication. *IEEE International Conference on Communications (ICC)*, 2024.
- C77. M. Oh, A. Das, T. Kim, D. Love, C. Brinton. Complexity Reduction in Machine Learning-Based Wireless Positioning: Minimum Description Features. *IEEE International Conference on Communications (ICC)*, 2024.
- C76. S. Lee, A. Das, S. Wagle, C. Brinton. Smart Information Exchange for Unsupervised Federated Learning via Reinforcement Learning. *IEEE International Conference on Communications (ICC)*, 2024.
- C75. D. Han, S. Hosseinalipour, D. Love, M. Chiang, C. Brinton. Cooperative Federated Learning over Hybrid Terrestrial and Non-Terrestrial Networks. *IEEE International Conference on Communications (ICC)*, 2024.
- C74. B. Lee, A. Das, D. Love, C. Brinton, J. Krogmeier. Constant Modulus Waveform Design with Block-Level Interference Exploitation for DFRC Systems. *IEEE International Conference on Communications (ICC)*, 2024.
- C73. N. Yang, S. Wang, M. Chen, C. Yin, C. Brinton. A Privacy Preserving and Byzantine Robust Collaborative Federated Learning Method Design. *IEEE International Conference on Communications (ICC)*, 2024.
- C72. R. Parasnis, S. Hosseinalipour, Y. Chu, M. Chiang, C. Brinton. Connectivity-Aware Semi-Decentralized Federated Learning over Time-Varying D2D Networks. *ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc)*, 2023.
- C71. X. Zhang, Y. Li, Z. Zhang, C. Brinton, Z. Liu, Z. Zhang. Distributional Cloning for Stabilized Imitation Learning via ADMM. *IEEE International Conference on Data Mining (ICDM)*, 2023.
- C70. A. Das, A. Ramamoorthy, D. Love, C. Brinton. Preserving Sparsity and Privacy in Straggler-Resilient Distributed Matrix Computations. *Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, 2023.
- C69. E. Ruzomberka, H. Nikbakht, C. Brinton, D. Love, H. V. Poor. Derandomizing Codes for the Binary Adversarial Wiretap Channel of Type II. *Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, 2023.
- C68. S. Wagle, A. Das, D. Love, C. Brinton. A Reinforcement Learning-Based Approach to Graph Discovery in D2D-Enabled Federated Learning. *IEEE Global Communications Conference (GLOBECOM)*, 2023.
- C67. N. Yang, S. Wang, M. Chen, C. Shen, C. Yin, C. Brinton. MIMO Beamforming and Signal Modulation Design for Federated Learning Optimization. *IEEE Global Communications Conference (GLOBECOM)*, 2023.

- C66. N. Yang, S. Wang, M. Chen, C. Brinton, C. Yin. Energy Efficient Collaborative Federated Learning Design: A Graph Neural Network based Approach. *IEEE Global Communications Conference (Globecom)*, 2023.
- C65. O. Kandelusy, C. Brinton, T. Kim. Distributed Quantized Transmission and Fusion for Federated Machine Learning. *IEEE Vehicular Technology Conference (VTC)*, 2023.
- C64. B. Velasevic, R. Parasnis, C. Brinton, N. Azizan. On the Effects of Data Heterogeneity on the Convergence Rates of Distributed Linear System Solvers. *IEEE Conference on Decision and Control (CDC)*, 2023.
- C63. E. Ruzomberka, H. Nikbakht, C. Brinton, H. V. Poor. On Pseudolinear Codes for Correcting Adversarial Errors. *IEEE Symposium on Foundations of Computer Science (FOCS)*, 2023.
- C62. A. Das, A. Ramamoorthy, D. Love, C. Brinton. Distributed Matrix Computations with Low-Weight Encodings. *IEEE International Symposium on Information Theory (ISIT)*, 2023.
- C61. A. Das, A. Ramamoorthy, D. Love, C. Brinton. Coded Matrix Computations for D2D-Enabled Linearized Federated Learning. *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2023.
- C60. S. Wang, R. Sahay, C. Brinton. How Potent are Evasion Attacks for Poisoning Federated Learning-Based Signal Classifiers? *IEEE International Conference on Communications (ICC)*, 2023.
- C59. D. Nguyen, D. Love, C. Brinton. Intelligent Spectrum Sensing and Resource Allocation in Cognitive Networks via Deep Reinforcement Learning. *IEEE International Conference on Communications (ICC)*, 2023.
- C58. D. Han, D. Kim, M. Choi, C. Brinton, J. Moon. SplitGP: Achieving Both Generalization and Personalization in Federated Learning. *IEEE International Conference on Computer Communications (INFOCOM)*, 2023.
- C57. T. Wang, S. Azam, A. Wiranata, C. Brinton, J. Allebach. B2B Customer Conversion Prediction: A Document Representation, Graph Theory, and CatBoost Driven Methodology. *Special Interest Group on Knowledge Discovery and Data Mining (KDD) Workshop on End-End Customer Journey Optimization*, 2023.
- C56. R. Gehr, E. Garcia, S. Swaine, S. McBride, J. Rispoli, C. Brinton. Assessment and Support of Advisor-Student Mentoring for Graduate Engineering Students at a Land Grant Institution. *American Society for Engineering Education (ASEE)*, 2023.
- C55. W. Chan, H. Kwon, R. Chou, D. Love, S. Fahmy, S. Hussain, S. Kim, C. Vander Valk, C. Brinton, V. Marojevic, K. Pham, T. Kim. Adaptive Frequency Hopping for 5G New Radio mMTC Security. *IEEE International Conference on Industrial Technology (ICIT)*, 2023.
- C54. G. Wu, X. Zhang, Z. Zhang, Y. Li, X. Zhou, C. Brinton, Z. Liu. Learning Lightweight Neural Networks via Channel-Split Recurrent Convolution. *Winter Conference on Applications of Computer Vision (WACV)*, 2023.
- C53. Y. Chu, S. Hosseinalipour, E. Tenorio, L. Cruz, K. Douglas, A. Lan, C. Brinton. Mitigating Biases in Student Performance Prediction via Attention-Based Personalized Federated Learning. *Conference on Information and Knowledge Management (CIKM)*, 2022.
- C52. N. Yang, S. Wang, M. Chen, C. Brinton, C. Yin, W. Saad, S. Cui. Model-Based Reinforcement Learning for Quantized Federated Learning Performance Optimization. *IEEE Global Communications Conference (Globecom)*, 2022.
- C51. S. Wagle, S. Hosseinalipour, N. Khosravan, M. Chiang, C. Brinton. Embedding Alignment for Unsupervised Federated Learning via Smart Data Exchange. *IEEE Global Communications Conference (Globecom)*, 2022.
- C50. J. Kim, S. Hosseinalipour, T. Kim, D. Love, C. Brinton. Linear Coding for Gaussian Two-Way Channels. *Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, 2022.
- C49. S. Zehtabi, S. Hosseinalipour, C. Brinton. Decentralized Event-Triggered Federated Learning with Heterogeneous Communication Thresholds. *IEEE Conference on Decision and Control (CDC)*, 2022.
- C48. R. Sahay, G. Birch, J. Stubbs, C. Brinton. Uncertainty Quantification-based Unmanned Aircraft System Detection using Deep Ensembles. *IEEE Vehicular Technology Conference (VTC)*, 2022.

- C47. D. Nickel, F. Lin, S. Hosseinalipour, N. Michelusi, C. Brinton. Resource-Efficient and Delay-Aware Federated Learning Design under Edge Heterogeneity. *IEEE International Conference on Communications (ICC)*, 2022.
- C46. J. Kim, S. Hosseinalipour, A. Marcum, T. Kim, D. Love, C. Brinton. Deep Reinforcement Learning-Based Adaptive IRS Control with Limited Feedback Codebooks. *IEEE International Conference on Communications (ICC)*, 2022.
- C45. A. Scarlatos, C. Brinton, A. Lan. Process-BERT: A Framework for Representation Learning on Educational Process Data. *International Conference on Educational Data Mining (EDM)*, 2022.
- C44. S. Nicoll, K. Douglas, C. Brinton. Giving Feedback on Feedback: An Assessment of Grader Feedback Construction on Student Performance. *International Conference on Learning Analytics & Knowledge (LAK)*, 2022.
- C43. L. Cruz, T. Li, L. Ciner, K. Douglas, C. Brinton. Predicting Learning Outcome in a First-Year Engineering Course: A Human-Centered Learning Analytics Approach. *American Society for Engineering Education (ASEE)*, 2022.
- C42. Y. Chu, E. Tenorio, L. Cruz, K. Douglas, A. Lan, C. Brinton. Click-Based Student Performance Prediction: A Clustering Guided Meta-Learning Approach. *IEEE International Conference on Big Data (BigData)*, 2021.
- C41. S. Azam, T. Kim, S. Hosseinalipour, C. Joe-Wong, S. Bagchi, C. Brinton. A Generalized and Distributable Generative Model for Private Representation Learning. *Neural Information Processing Systems (NeurIPS) Workshop on Deep Generative Models and Downstream Applications*, 2021.
- C40. F. Lin, S. Hosseinalipour, S. Azam, C. Brinton, N. Michelusi. Federated Learning Beyond the Star: Local D2D Model Consensus with Global Cluster Sampling. *IEEE Global Communications Conference (Globecom)*, 2021.
- C39. R. Sahay, D. Ries, J. Zollweg, C. Brinton. Hyperspectral Image Target Detection Using Deep Ensembles for Robust Uncertainty Quantification. *IEEE Asilomar Conference on Signals, Systems and Computers (Asilomar)*, 2021.
- C38. T. Li, L. Castro, K. Douglas, C. Brinton. Relationship Between Learning Engagement Metrics and Learning Outcomes in Online First-Year Engineering Courses. *Frontiers in Education (FIE)*, 2021.
- C37. J. Kim, S. Hosseinalipour, T. Kim, D. Love, C. Brinton. Multi-IRS-assisted Multi-Cell Uplink MIMO Communications under Imperfect CSI: A Deep Reinforcement Learning Approach. *IEEE International Conference on Communications (ICC)*, 2021.
- C36. R. Sahay, C. Brinton, D. Love. Frequency-based Automated Modulation Classification in the Presence of Adversaries. *IEEE International Conference on Communications (ICC)*, 2021.
- C35. M. Oh, S. Hosseinalipour, T. Kim, C. Brinton, D. Love. Channel Estimation via Successive Denoising in MIMO OFDM Systems: A Reinforcement Learning Approach. *IEEE International Conference on Communications (ICC)*, 2021.
- C34. S. Wang, M. Lee, S. Hosseinalipour, R. Morabito, M. Chiang, C. Brinton. Device Sampling for Heterogeneous Federated Learning: Theory, Algorithms, and Implementation. *IEEE International Conference on Computer Communications (INFOCOM)*, 2021.
- C33. Q. Wu, C. Brinton, Z. Zhang, M. Cucuringu, A. Pizzoferrato, Z. Liu. Equity2Vec: End-to-end Deep Learning Framework for Cross-sectional Asset Pricing. *ACM International Conference on AI in Finance (ICAIF)*, 2021.
- C32. R. Sahay, D. Love, C. Brinton. Robust Automatic Modulation Classification in the Presence of Adversarial Attacks. *IEEE Conference on Information Sciences and Systems (CISS)*, 2021.
- C31. F. Lin, C. Brinton, N. Michelusi. Federated Learning with Communication Delay in Edge Networks. *IEEE Global Communications Conference (Globecom)*, 2020.
- C30. Y. Tu, Y. Ruan, S. Wagle, C. Brinton, C. Joe-Wong. Network-Aware Optimization of Distributed Learning for Fog Computing. *IEEE International Conference on Computer Communications (INFOCOM)*, 2020.
- C29. J. Kim, T. Kim, M. Hashemi, C. Brinton, D. Love. Joint Optimization of Signal Design and Resource Allocation in Wireless D2D Edge Computing. *IEEE International Conference on Computer Communications (INFOCOM)*, 2020.

- C28. Y. Tu, E. Tenorio, C. Brinton. An Adaptive Content Skipping Methodology based on User Behavioral Modeling. *IEEE Conference on Information Sciences and Systems (CISS)*, 2020.
- C27. P. Hansen, R. Bustamante, T. Yang, E. Tenorio, C. Brinton, M. Chiang, A. Lan. Predicting the Timing and Quality of Responses in Online Discussion Forums. *IEEE International Conference on Distributed Computing Systems (ICDCS)*, 2019.
- C26. Y. Tu, C. Brinton, A. Lan, M. Chiang. Adaptive Remediation with Multi-modal Content. *International Conference on Human Computer Interaction (HCI)*, 2019.
- C25. Y. Tu, W. Chen, C. Brinton. A Deep Learning Approach to Behavior-Based Learner Modeling. *International Conference on Educational Data Mining (EDM)*, 2019.
- C24. T. Yang, C. Brinton, P. Mittal, M. Chiang, A. Lan. Learning Informative and Private Representations via Generative Adversarial Networks. *IEEE International Conference on Big Data (BigData)*, 2018.
- C23. A. Lan, C. Brinton, J. Spencer, Z. Chen, M. Chiang. Personalized Thread Recommendation for MOOC Discussion Forums. *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, 2018.
- C22. W. Chen, C. Joe-Wong, C. Brinton, L. Zheng, D. Cao. Principles for Assessing Adaptive Online Courses. *International Conference on Educational Data Mining (EDM)*, 2018.
- C21. W. Chen, A. Lan, D. Cao, C. Brinton, M. Chiang. Behavioral Analysis at Scale: Learning Course Prerequisite Structures from Learner Clickstreams. *International Conference on Educational Data Mining (EDM)*, 2018.
- C20. Y. Tu, Y. Xiong, W. Chen, C. Brinton. A Domain-Independent Text Segmentation Method for Educational Course Content. *IEEE International Conference on Data Mining (ICDM) Workshop on Data Mining for eLearning Personalization*, 2018.
- C19. D. Cao, A. Lan, W. Chen, C. Brinton, and M. Chiang. Learner Behavioral Feature Refinement and Augmentation using GANs, *International Conference on Artificial Intelligence in Education (AIED)*, 2018.
- C18. M. Shridharan, A. Willingham, J. Spencer, T. Yang, C. Brinton. Predictive Learning Analytics for Video-Watching Behavior in MOOCs. *IEEE Conference on Information Science and Systems (CISS)*, 2018.
- C17. V. Xia, K. Jain, A. Krishna, C. Brinton. A Network-Driven Methodology for Sports Ranking and Prediction. *IEEE Conference on Information Science and Systems (CISS)*, 2018.
- C16. C. Bridges, J. Jared, J. Weissmann, A. Montanez-Garay, J. Spencer, C. Brinton. Course Recommendation as Graphical Analysis. *IEEE Conference on Information Science and Systems (CISS)*, 2018.
- C15. N. Slighton, J. Rico, E. Kallfelz, J. Qi, C. Brinton. A Network-Driven Approach to Modeling the Spread of Ebola-type Epidemics. *IEEE Conference on Information Science and Systems (CISS)*, 2018.
- C14. T. Yang, C. Brinton, C. Joe-Wong. Predicting Learner Interactions in Social Learning Networks. *IEEE International Conference on Computer Communications (INFOCOM)*, 2018.
- C13. A. Lan, C. Brinton, T. Yang, M. Chiang. Behavior-Based Latent Variable Model for Learner Engagement. *International Conference on Educational Data Mining (EDM)*, 2017.
- C12. W. Chen, C. Brinton, D. Cao, M. Chiang. Behavior in Social Learning Networks: Early Detection for Online Short-Courses. *IEEE International Conference on Computer Communications (INFOCOM)*, 2017.
- C11. L. Zheng, C. Joe-Wong, J. Chen, C. Brinton, C. Tan, M. Chiang. Economic Viability of a Virtual ISP. *IEEE International Conference on Computer Communications (INFOCOM)*, 2017.
- C10. C. Brinton, S. Buccapatnam, F. Wong, M. Chiang, H. V. Poor. Social Learning Networks: Efficiency Optimization in MOOC Forums. *IEEE International Conference on Computer Communications (INFOCOM)*, 2016.
- C9. C. Brinton, M. Chiang. MOOC Performance Prediction via Clickstream Data and Social Learning Networks. *IEEE International Conference on Computer Communications (INFOCOM)*, 2015.

- C8. C. Brinton, M. Chiang. Social Learning Networks: A Brief Survey. *IEEE Conference on Information Science and Systems (CISS)*, 2014.
- C7. P. Iannone, K. Reichmann, C. Brinton, et al. Experimental Demonstration of a Cost-Effective Broadcast Overlay for a Commercial WDM PON. *National Fiber Optic Engineers Conference (NFOEC)*, 2011.
- C6. P. Iannone, K. Reichmann, C. Brinton, et al. Bi-Directionally Amplified Extended Reach 40Gb/s CWDM-TDM PON with Burst-Mode Upstream Transmission. *Optical Fiber Communication Conference (OFC)*, 2011.

**Peer-Reviewed WIPs, Workshops, and Other Conferences**

- C5. G. Nanda, S. Wei, A. Katz, C. Brinton, M. Ohland. Work in Progress: Using Latent Dirichlet Allocation to Uncover Themes in Student Comments from Peer Evaluations of Teamwork. *American Society for Engineering Education (ASEE)*, 2022.
- C4. A. Bhattacharya, E. Rutter, C. Brinton, T. Kim, and D. Diaz. Predicting in-Season Soil Mineral Nitrogen in Corn Production using Deep Learning Models. *ASA, CSSA, SSSA International Annual Meeting*, 2021.
- C3. S. Mitra, S. Bari, T. M. Talavage, C. Brinton. Generative Adversarial Networks to Model Scanner Noise for Improving Multi-Site Data Harmonization. *Organization for Human Brain Mapping*, 2020.
- C2. C. Brinton, E. Aryafar, S. Corda, S. Russo, R. Renoso, M. Chiang. An Intelligent Satellite Multicast and Caching Overlay for CDNs to Improve Performance in Video Applications. *31st AIAA International Communications Satellite Systems Conference (ICSSC)*, 2013.
- C1. A. Katz, D. McGee, C. Brinton, and J. Qiu. Sensitivity and Mitigation of Reverse IMD in High Power Amplifiers. *2011 IEEE Topical Conference on Power Amplifiers for Wireless and Radio Applications (PAWR)*, 2011.

**Whitepapers**

- H4. C. Brinton, D. Love, T. Kim, M. Hashemi, A. Christianson, R. Raj. Network-Aware Distributed Machine Learning and Sensor Fusion for Spectrum System Intelligence. Sept 2020.
- H3. D. Ogbe, D. Love, C. Wang, C. Brinton. Low-Latency Techniques to Support New Scientific Missions for Beyond-5G Wireless Networks. Jan 2020.
- H2. C. Brinton, D. Love, A. Marcum, S. Mau. Distributed AI and Reception for 5G-and-Beyond Spectrum Learning. Jun 2019.
- H1. M. Chiang, C. Brinton. Individualization for Effective Learning at Massive Scale. Jul 2014.

**Major Journals and Conferences Under Review/Revision**

- R13. S. Wang, R. Sahay, A. Piaseczny, C. Brinton. Mitigating Evasion Attacks in Federated Learning-Based Signal Classifiers. Under minor (since Mar. 2025), *IEEE Transactions on Network Science and Engineering*.
- R12. L. Yuan, D. Han, S. Wang, D. Upadhyay, C. Brinton. Communication-Efficient Multimodal Federated Learning: Joint Modality and Client Selection. Under revision (since Aug. 2024), *IEEE Transactions on Mobile Computing*.
- R11. W. Fang, D. Han, L. Yuan, S. Hosseinalipour, C. Brinton. Federated Sketching LoRA: On-Device Collaborative Fine-Tuning of Large Language Models. Submitted, *International Conference on Machine Learning*, Jan. 2025.
- R10. E. Chen, J. Zhang, S. Wang, C. Liu, C. Brinton. Parameter Tracking in Federated Learning with Adaptive Optimization. Submitted, *International Conference on Machine Learning*, Jan. 2025.
- R9. Z. Chang, D. Han, S. Hosseinalipour, M. Chiang, C. Brinton. Federated Learning with Dynamic Client Arrival and Departure: Convergence and Rapid Adaptation via Initial Model Construction. Submitted, *International Conference on Machine Learning*, Jan. 2025.
- R8. E. Chen, F. Lin, D. Han, C. Brinton. Differentially-Private Multi-Tier Federated Learning: A Formal Analysis and Evaluation. Submitted, *IEEE/ACM Transactions on Networking*, Jan. 2025.

- R7. S. Lee, W. Fang, A. Das, S. Hosseinalipour, D. Love, C. Brinton. Cooperative Decentralized Backdoor Attacks on Vertical Federated Learning. Submitted, *IEEE/ACM Transactions on Networking*, Jan. 2025.
- R6. M. Shisher, V. Tripathi, M. Chiang, C. Brinton. AoI-based Scheduling of Correlated Sources for Timely Inference. Submitted, *IEEE/ACM Transactions on Networking*, Jan. 2025.
- R5. M. Xu, D. Niyato, C. Brinton. Serving Long-Context LLMs at the Mobile Edge: Test-Time Reinforcement Learning-based Model Caching and Inference Offloading. Submitted, *IEEE/ACM Transactions on Networking*, Jan. 2025.
- R4. A. Rizwan, D. Han, M. Pervej, C. Brinton, A. Molisch, M. Choi. Efficient Split Learning with Overlapping Areas: Handling Distribution Shift in Multi-Cell Networks. Submitted, *IEEE/ACM Transactions on Networking*, Dec. 2024.
- R3. Y. Mei, L. Yuan, D. Han, K. Chan, C. Brinton, T. Lan. Using Diffusion Models as Generative Replay in Continual Federated Learning. Submitted, *IEEE/ACM Transactions on Networking*, Dec. 2024.
- R2. S. Zehtabi, S. Hosseinalipour, C. Brinton. Resource-Constrained Decentralized Federated Learning via Personalized Event-Trigging. Submitted, *IEEE/ACM Transactions on Networking*, Dec. 2024.
- R1. E. Chen, S. Wang, C. Brinton. A Hierarchical Gradient Tracking Algorithm for Mitigating Subnet-Drift in Fog Learning Networks. Submitted, *IEEE/ACM Transactions on Networking*, Oct. 2024.

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## PATENTS

### Granted

- P2. C. Brinton, M. Chiang, S. Ha, W. Ju, R. Rill, J. Walker, E. Tenorio. Systems and Methods to Assist an Instructor of a Course. *U.S. Patent #17/029,707*. Issued Aug. 2022.
- P1. C. Brinton, W. Chen, M. Chiang, S. Ha, R. Rill. System and Method for Automated Course Individualization via Learning Behaviors and Natural Language Processing. *U.S. Patent #10,339,822*. Issued July 2019.

### Applications

- A2. M. Oh, A. Das, T. Kim, D. Love, C. Brinton. Minimum Description Feature Selection for Complexity Reduction in Machine Learning-Based Wireless Positioning. *U.S. Provisional Patent* filed Nov. 2024.
- A1. J. Kim, T. Kim, A. Das, S. Hosseinalipour, D. Love, C. Brinton. Systems and Methods for Signal Generation and Information Estimation with Recurrent Neural Networks. *U.S. Provisional Patent* filed Apr. 2024.

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## GRANTS

### External

- G.30 PI. RTX Corporation. “Learning-based Approaches to Scaling Network Management in Complex Heterogeneous, Ad-Hoc Wireless Deployments.” Jan 2025 – Dec 2025. (\$100,000, sole PI)
- G.29 Co-PI (with A. Hashemi [PI]). Cummins Inc. “Advances in Personalized Federated Machine Learning for Intelligent Monitoring of Smart and Connected Vehicles.” Jan 2025 – Jan 2026. (\$162,500, individual share \$81,250)
- G.28 Co-PI (with P. Pearce [Georgia Tech], Justine Sherry [CMU]). National Science Foundation. “Conference: NeTS Early-Career Investigators Workshop 2024 .” Nov 2024. (\$115,102, funds spent collectively)
- G.27 PI (with S. Sundaram, J. Kronqvist [KTH Sweden]). Saab Inc. “AUV Data Processing, Communication, and Swarm Optimization in Contested and Denied Undersea Environments.” Apr 2024 – Mar 2026. (\$400,000, individual share \$100,000)
- G.26 PI. Air Force Office of Scientific Research (AFOSR). “FogML: Intelligence Orchestration over Heterogeneous, Dynamic, and Contested Fog Learning Environments.” Mar 2024 – Feb 2027. (\$450,000, single PI)

- G.25 PI. MIT Lincoln Labs. “Routing and Topology Selection of Non-Terrestrial Network Systems.” Jan 2024 – May 2026. (\$100,000, single PI)
- G.24 Co-PI (with A. Hashemi [PI], C. Shen [U. Virginia]). National Science Foundation. “Collaborative Research: CPS Medium: Learning through the Air: Cross-Layer UAV Orchestration for Online Federated Optimization.” Oct 2023 – Sept 2026. (\$1,200,000, individual share \$400,000)
- G.23 Purdue Co-PI (with KU [lead], WSU, ISU, PSU, BBN, AFRL, Ericsson). National Science Foundation. “NSF Convergence Accelerator Track G: Combating Vulnerability and Unawareness in 5G Network Security: Signaling and Full-Stack Approach.” Phase II: Sept 2023 – Aug 2025. (\$5,000,000, individual share \$250,000)
- G.22 Co-PI (with J. Krogmeier [PI], D. Love, D. Cappelleri, D. Buckmaster). National Science Foundation. “CCRI: Planning-M: Midwest Pivot Array for Autonomous Agricultural Sensing at Scale.” Jun 2023 – May 2025. (\$175,000, individual share \$10,000)
- G.21 Technical PI (with Saab Inc. [lead], S. Mou, S. Sundaram, D. Inouye, S. Zhang, M. Zoltowski). Office of Naval Research. “Threat & Situational Understanding with Networked-Online Machine Intelligence (TSUNOMI).” Jan 2023 – Dec 2026. (\$13,000,000 total, \$4,372,072 to Purdue, individual share \$750,000)
- G.20 Purdue PI (with T. Kim [PI], M. Hashemi, J. Krogmeier, D. Love). National Science Foundation. “GOALI: CNS: Medium: Communication-Computation Co-Design for Rural Connectivity and Intelligence under Nonuniformity: Modeling, Analysis, and Implementation.” Oct. 2022 – Sept. 2025. (\$1,000,000, individual share \$225,000)
- G.19 PI. Intel Corporation. “Intel’s 2022 Rising Star Faculty Award.” Sept 2022. (\$50,000, single PI)
- G.18 PI. Defense Advanced Research Projects Agency (DARPA) Young Faculty Award (YFA) Program. “FL-NTN: Fog Learning Orchestration of Heterogeneous Model Training across Hybrid Terrestrial and Non-Terrestrial Network Systems.” Aug 2022 – Jul 2024. (\$750,000, single PI)
- G.17 PI. Office of Naval Research Young Investigator Program (YIP). “Distributed Intelligence Optimization under Interference in Heterogeneous Resource-Constrained Wireless Systems.” April 2022 – March 2025. (\$510,000, single PI)
- G.16 PI. NSF Faculty Early Career Development Program (CAREER). “CAREER: From Federated to Fog Learning: Expanding the Frontier of Model Training in Heterogeneous Networks.” March 2022 – Feb 2027. (\$505,000, single PI)
- G.15 PI (with D. Love, T. Kim, and M. Hashemi). Office of Naval Research. “Network-Aware Distributed Machine Learning and Sensor Fusion for Spectrum System Intelligence.” May 2021 – April 2025. (\$1,500,000, individual share \$475,000)
- G.14 PI (with D. Love and J. Krogmeier). Ford Motor Company. “Signal Processing and Machine Learning Approaches to Multiple Antenna Positioning for Phone as a Key (PaaK).” Apr 2021 – May 2025. (\$250,000, individual share \$100,000)
- G.13 Purdue Co-PI (with KU [lead], WSU, ISU, PSU, BBN, AFRL, Ericsson). National Science Foundation. “NSF Convergence Accelerator Track G: Combating Vulnerability and Unawareness in 5G Network Security: Signaling and Full-Stack Approach.” Phase I: July 2022 – June 2023. (\$750,000)
- G.12 PI (with J. Allebach). HP Personal Systems Software. “Clustering and Personalization Systems.” Jul 2021 – Dec 2022. (\$75,000, individual share \$60,000)
- G.11 PI (with J. Allebach). HP Personal Systems Software. “Mining and Modeling Computer Application Usage Behavior.” Aug 2021 – Dec 2022. (\$75,000, individual share \$60,000)
- G.10 Co-PI (with D. Love [PI]). MIT Lincoln Labs. “Machine Learning Techniques for Future Satellite Communication Networks.” Mar 2021 – Dec 2022. (\$150,000, individual share \$67,500)
- G.9 Purdue PI (with Raytheon BBN Technologies [lead], and Purdue co-PIs D. Love, J. Krogmeier, and C. Wang). National Spectrum Consortium (NSC). “Dynamic Spectrum Sharing 5G Network Enhancements Prototype.”

Mar 2021 – May 2022. (\$8,000,000 total, \$1,500,000 to Purdue, individual share \$400,000, but only Phase 1 awarded)

- G.8 Purdue PI (with UNM [lead], CMU, ISU, KU, and WSU). National Science Foundation (NSF). “SII Planning: Spectrum-Agile Cognitive Communications for Terrestrial and Space Applications.” Aug 2020 – Apr 2022. (\$300,000, individual share \$45,000)
- G.7 Co-PI (with J. Allebach, PI). Hewlett Packard 3D Marketing. “3D Marketing Data Science.” Sept 2020 – Aug 2021. (\$65,000, individual share \$26,000)
- G.6 PI (with S. Bagchi). Northrop Grumman Cybersecurity Research Consortium (NGCRC). “A Privacy-Preserving Predictive Modeling Architecture for Edge Computing.” Sept 2019 – Dec 2020. (\$125,000, individual share \$75,000)
- G.5 PI (with D. Love, T. Kim, and M. Hashemi). Naval Surface Warfare Center Crane Division. “Distributed Machine Learning and Sensor Fusion for Spectrum Sensing System Optimization.” May 2020 – Aug 2020. (\$500,000, individual share \$150,000, but only Phase 1 awarded)

### Internal

- G.4 PI (with I. Hua, L. Leifsson, D. Love). Supporting Partnering for Advanced Research teamwORK (SPARK). “Center for Dynamic Intelligence in Challenging Environments (DICE).” (\$100,000, individual share \$25,000)
- G.3 PI (with D. Love). Autonomous and Connected Systems (ACS) initiative. “Streamlining and Securing AI Tensor Computations across Heterogeneous Edge Network Systems.” Aug 2022. (\$75,000, individual share \$37,500)
- G.2 Co-PI (with A. Boltasseva [PI], J. Allebach, K. Roy, and X. Wang). Elmore Family School of ECE. “Emerging Frontiers Center: Crossroads of Quantum and AI.” Aug 2021. (\$500,000, individual share \$46,000)
- G.1 PI (with K. Douglas). Charles Koch Foundation. “Machine Learning for eLearning Innovation.” Aug 2020. (\$250,000, individual share \$150,000)

### Select Pending

- N.5 Co-PI (with X. Chen [PI], T. Hege, A. Younts, and Muhammad Shabaz). National Science Foundation. “CC\* Integration-Large: Enhancing Campus Cyber Infrastructure for the 5G Edge.” Submitted in Oct 2024. (\$1,000,000, individual share \$300,000)
- N.4 Purdue PI (with S. Hosseinalipour and W. Su [UB]). National Science Foundation. “Collaborative Research: NeTS: Medium: Cooperative Distributed Learning over Integrated Space-Air-Ground Networks.” Submitted in Oct 2024. (\$1,200,000, individual share \$400,000)
- N.3 PI (lead of 24 faculty across Purdue, WVU, ASU, and UB). National Science Foundation. “NSF Engineering Research Center for DICE: Dynamic Intelligence in Challenging Environments.” Pre-proposal submitted in Sept 2024. (\$25,000,000)
- N.2 PI (with Z. Ghodsi and C. Joe-Wong [CMU]). National Science Foundation. “Collaborative Research: SaTC: CORE: Medium: Secure-by-Design Personalization for Heterogeneous Federated Learning Systems.” Submitted in Sept 2024. (\$1,200,000, individual share \$400,000)
- N.1 Co-PI (with J. Qin [PI], A. Hashemi, and K. Poolla [UC Berkeley]). National Science Foundation. “Collaborative Research: PDaSP: Track 2: Privacy-Preserving Aggregation of Demand Flexibility for Sustainable Power Systems.” Submitted in Sept 2024. (\$1,500,000, individual share \$375,000)

### Site Visits

NSF Platforms for Advanced Wireless Research (PAWR). “TOWER Testbed for Open Wireless Experimental Research in Rural Communities.” Virtual site visit in May 2020.

**Total awarded amount:** \$36.3M (individual share \$6.3M)



**ECE 301: Signals and Systems** (Purdue, Instructor)*F'22, S'23, S'25*

This course teaches mathematical tools to analyze and manipulate both signals that carry information as well as systems that respond to signals and produce outputs.

- Typical enrollment: 150 students
- Responsibilities: Creating/delivering lectures, creating exams and assignments, mentoring final projects, grading, and holding office hours.

**ECE 647: Performance Modeling of Computer Communication Networks** (Purdue, Instructor) *S'25*

This course covers advanced topics related to communication networks, in particular the mathematical foundation for performance analysis, control and optimization of such networks. Specific topics include formulating and solving convex optimization problems, and stochastic optimization under uncertainty, with applications to different network functionalities.

- Typical enrollment: 30 students
- Responsibilities: Overall course organization, creating/delivering lectures, creating exams and assignments, mentoring final projects, and holding office hours.

**ECE 547: Introduction to Computer Communication Networks** (Purdue, Instructor)*F'23, F'24*

This course emphasizes a fundamental understanding of network design, queueing theory, layering, dimensioning and control. Various network functions such as error-recovery algorithms, flow control, congestion control, routing, multi-access, and switching are covered in detail.

- Typical enrollment: 60 students
- Responsibilities: Creating/delivering lectures, creating exams and assignments, mentoring final projects, grading, managing TAs, and holding office hours.

**HON 399: Principles of Networks** (Purdue, Instructor)*F'23*

This course teaches the fundamental principles of networks, both communication and social in nature, in a manner accessible to an interdisciplinary body of students.

- Typical enrollment: 30 students
- Responsibilities: Creating/delivering lectures, creating exams and assignments, mentoring final projects, grading, and holding office hours.

**ECE 60022: Wireless Communication Networks** (Purdue, Instructor)*S'22*

This course covers fundamental techniques in wireless networks, such as channel modeling, cellular design, resource allocation, and edge intelligence. It also introduces the engineering challenges to be considered in NextG systems.

- Typical enrollment: 25 students
- Responsibilities: Overall course organization, creating/delivering lectures, creating exams and assignments, mentoring final projects, and holding office hours.

**ECE 20875: Python for Data Science** (Purdue, Instructor and co-developer)*F'19, S'20, F'20, F'21*

This course introduces Python programming to students through data science problems. Students learn Python concepts as well as introductory data science topics such as regression, clustering, and neural networks.

- Typical enrollment: 150 students
- Responsibilities: Overall course organization, creating/delivering lectures, creating exams and assignments, mentoring final projects, managing TAs, and holding office hours.

**EPICS: Harnessing the Data Revolution** (Purdue, Instructor and co-developer)*F'21, S'22, F'22, S'23*

Engineering Projects in Community Service (EPICS) is a service-learning design program in which teams of students partner with local and global community organizations to address human, community, and environmental needs.

- Typical enrollment: 15 students

- Responsibilities: Mentoring student project teams, critiquing design reviews, facilitating interactions with community partners, and managing TAs.

**ELE/APC 486: Transmission and Compression of Information** (Princeton, Lecturer) *S'19*

This course covers the fundamental algorithms and limits of data compression and transmission, detailing key components of information theory and coding theory. It is an elective for students in EE and math.

- Typical enrollment: 10 students
- Responsibilities: Creating/delivering lectures, creating and grading exams, creating and grading problem sets, and holding office hours.

**ELE/COS 381: Networks: Friends, Money, and Bytes** (Princeton, Lecturer) *F'17, S'19*

This course teaches social, economic, and technical networks with data science, optimization, linear algebra, and machine learning. It is interdisciplinary, taken by students in EE, CS, ORFE, economics, and other majors.

- Typical enrollment: 80 students
- Responsibilities: Creating/delivering lectures, creating exams, mentoring final projects, managing TAs, holding office hours.

**ELE 206 / COS 306: Contemporary Logic Design** (Princeton, Lecturer) *F'18*

This course teaches the basic concepts in logic design that form the basis of computation and communication circuits, such as logic gates, memory elements, and finite state systems. It is a core class for EE and an elective for COS.

- Enrollment: 105 students
- Responsibilities: Creating/delivering/recording lectures, organizing labs, managing TAs, holding office hours.

**ENG 150: Foundations of Engineering** (Princeton, Lecturer) *S'18*

This course provides a hands-on introduction to the foundational principles of engineering, including calculus, physics, circuit construction, and computational data analysis. It is for incoming Princeton students prior to freshman year.

- Enrollment: 18 students
- Responsibilities: Creating/delivering lectures, running labs, managing TAs, holding office hours.

**ELE 201: Information Signals** (Princeton, Lecturer) *S'18*

This course teaches mathematical tools to analyze and manipulate both signals that carry information as well as systems that respond to signals and produce outputs. It is a core class for EE and also taken by COS and math.

- Enrollment: 37 students.
- Responsibilities: Creating/delivering lectures, creating exams, managing TAs, holding office hours.

**ENG 342: Advanced Engineering Math II** (TCNJ, Adjunct Professor) *F'16, S'17*

This course covers a range of topics in probability/statistics, machine learning, and partial differential equations. It is taken by juniors and seniors in electrical, computer, mechanical, and biomedical engineering.

- Typical enrollment: 30 students.
- Responsibilities: Lecturing, creating/delivering exams and homeworks, grading, holding office hours.

**Fog Networks and the Internet of Things** (MOOC, Instructor) *F'17 - S'21*

This course covers Fog networking, the key trend of pushing computation, storage, and communication tasks from the cloud towards the network edge. In doing so, it discusses the Internet of Things, a key network enabled by Fog.

- Enrollment: 20,000 students since 2015.
- Responsibilities: Creating lecture videos, responding to forum questions, offering virtual office hours.

**Networks Illustrated: Principles Without Calculus** (MOOC, Instructor) *S'13 - S'21*

This Massive Open Online Course (MOOC) explains the fundamental principles behind social, economic, and technical networks. It is based on my textbook *The Power of Networks: Six Principles That Connect our Lives*.

- Enrollment: 150,000 students since 2013.
- Responsibilities: Creating lecture videos, responding to forum questions, making homeworks/exams.

**Networks: Friends, Money, and Bytes** (MOOC, Instructor)

*F'12 - S'21*

This is the online version of Networks: Friends, Money, and Bytes. It was among the first six MOOCs by Princeton.

- Enrollment: 250,000 students since 2012.
- Responsibilities: Responding to forum questions, making homeworks/exams, offering virtual office hours.

**ELE 381: Networks: Friends, Money, and Bytes** (Princeton, lead TA)

*F'12*

This is the course I am a lecturer for now. It was the first-ever offering of a STEM course in “flipped classroom” format at Princeton, where lecture videos were watched before class and class time was used for discussion.

- Enrollment: 30 students.
- Responsibilities: Managing Q&A sessions, setting up real-time demonstrations during class, making/grading homeworks/exams, mentoring final course projects.

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INVITED PRESENTATIONS

**Talks**

“Fog Learning under Heterogeneity: The Role of Ad-Hoc Wireless Topologies.” Invited seminar. Air Force Research Laboratory (AFRL) Information Exploitation Branch. Wright-Patterson Air Force Base, Ohio (virtual). Mar 2025.

“From Federated to Fog Learning: Model Training over Contemporary Wireless Network Systems.” IEEE Communications Society Distinguished Lecture Tour. IEEE Santa Clara Valley, Buenaventura, Coastal Los Angeles, and San Diego Chapters. Jan 2025.

“Learning over Heterogeneous Networks: From Convergence Analysis to Intelligent Control.” Invited seminar. ETH Zurich, Switzerland. Nov 2024.

“From Federated to Fog Learning: Model Training over Contemporary Wireless Network Systems.” IEEE Communications Society Distinguished Lecture. University of Illinois at Chicago, Chicago, IL. Sept 2024.

“Energy-Efficient Communication Architectures in Decentralized AI/ML.” Invited talk. ATIS NextG Alliance: Green G Working Group, Washington, DC (virtual). Aug 2024.

“Federated Learning over Heterogeneous Networks: From Convergence Analysis to Intelligent Network Control.” Invited seminar. MIT Lincoln Labs, Lexington, MA. Aug 2024.

“From Federated to Fog Learning: Model Training over Contemporary Wireless Network Systems.” Invited talk. Nokia Bell Labs, Murray Hill, NJ. Jun 2024.

“Semi-Decentralized Federated Learning: Inner-Loop Control.” Invited talk. Information Theory and Applications Workshop. San Diego, CA. Feb 2024.

“Fog Learning under Heterogeneity: The Role of Ad-Hoc Wireless Topologies.” Invited seminar. University of Virginia, Charlottesville, VA. Oct 2023.

“Integrating AI/ML and Communications: Robust Coding Design and Heterogeneous Federated Learning.” Invited talk. MediaTek, Hsinchu, Taiwan (virtual). May 2023.

“Rethinking Communications with AI: Robust Coding Design and Heterogeneous Federated Learning.” Invited talk. Quantum Science Center and Elmore ECE Emerging Frontiers Center Summer School, West Lafayette, IN. Apr 2023.

“Fog Learning under Heterogeneity: The Role of Ad-Hoc Wireless Topologies.” Invited talk. Intel Labs, Portland, OR (virtual). Feb 2023.

“From Federated to Fog Learning: Semi-Decentralized Spectrum Learning.” Organizer talk. World Forum on Internet of Things, Workshop on From Federated to Fog Learning, Yokohama, Japan (virtual). Nov 2022.

“From Federated to Fog Learning: Challenges and Opportunities.” Invited talk. Quantum Science Center and Elmore ECE Emerging Frontiers Center Summer School, West Lafayette, IN. May 2022.

“Intelligence Optimization over Fog Networks.” Invited talk. IEEE Summit on Communications Futures, session On the Edge and in the Cloud (virtual). Jan 2022.

“Context-Aware Distributed Learning for Heterogeneous Fog Network Systems.” Invited talk. Fog and Edge Computing Track, IEEE World Forum on Internet of Things, New Orleans, LA (virtual). Jun 2021.

“Migrating from Federated Learning to Fog Learning.” Invited seminar. IEEE Winter School on Fog/Edge Computing, IIT Kanpur (virtual). Dec 2020.

“Network-Aware Distributed Machine Learning for Fog/Edge Computing.” Invited seminar. Raytheon, El Segundo, CA. Oct 2019.

“Data Science Meets Network Science.” Invited seminar. Purdue Integrative Data Science Initiative, West Lafayette, IN. Sept 2019.

“Data Science Meets Network Science: Modeling and Optimizing Social Learning Networks.” Invited seminar. Purdue University, College of William and Mary, New Jersey Institute of Technology, University of Maryland, Brown University, and University of Minnesota. Spring 2019.

“A Lens into AI for Learning.” Organizer talk. Data Science for eLearning, Coursera, Mountain View, CA. Mar 2018.

“Technology and Pedagogy: Using Big Data and AI to Enhance eLearning.” Invited lecture. DEGREE meeting. Chegg, San Francisco, CA. Dec 2017.

“Learning Analytics and Personalization: A Behavior-Based Approach.” Organizer talk. 2017 KDD Workshop on Advancing Education with Data, Halifax, Canada. Aug 2017.

“The Power of Networks: What Facebook, Cell Phones, and Online Courses Have in Common.” Engineering Week Keynote Lecture, The College of New Jersey, Ewing, NJ. Feb 2017.

“Beyond Assessment Scores: How Behavior Can Give Insight into Knowledge Transfer.” Invited talk. NIPS Workshop on Machine Learning for Education, Barcelona, Spain. Dec 2016.

“The Next Generation of Learning Technologies.” Invited talk. Trenton Computer Festival, Ewing, NJ. Mar 2016.

“Pedagogy and Technology: Leveraging Big Data to Enhance the Quality of Human Learning.” Invited talk. Bell Labs, Murray Hill, NJ. Nov 2015.

“Improving the Quality of Massively Scaled (Human) Learning Through Machine Learning.” Invited Seminar. Department of Computer and Information Sciences, University of Delaware, Newark, DE. May 2015.

“Social Learning Networks: Enhancing the Engagement and Efficacy of Learning.” Invited talk. Applied Communication Sciences, Basking Ridge, NJ. Apr 2015.

## **Panels and Roundtables**

“Artificial Intelligence in College Settings: Best Practices that Support Student Success and Engagement.” Indiana Commission for Higher Education (virtual). Sept 2024.

“Wireless, AI, and the Future of IoT, Smart Cities and Industrial Applications.” 2024 San Diego Wireless Summit: Wireless in the era of AI. University of California San Diego, La Jolla, CA. Jun 2024.

“5G Private Wireless – Connecting Higher Education to the Future.” George Washington University Center for Excellence in Public Leadership (virtual). Sept 2022.

“5G Security.” 21st CERIAS Annual Security Symposium, Purdue University, West Lafayette, IN. Sept 2020.

“Utilizing Data Science as a Strategy.” Data Science for eLearning, UdeMy, San Francisco, CA. Apr 2017.

“Education Innovation Panel: Pedagogy and Technology.” Keller Center 10th Anniversary Symposium, Princeton University, Princeton, NJ. Oct 2015.

“Massive Open Online Courses: Reflections, Challenges, and Opportunities.” 65th Annual United Nations DPI / NGO Conference (Program: Recovering Stolen Childhoods Through Education: Utilizing the Tools of the Digital Age), New York City, NY. Aug 2014.

“Online Courses: Issues and Opportunities.” The MOOC Experience: Faculty Reflections, William Patterson University, Wayne, NJ. Oct 2013.

“Practical Issues Dealing with Online Courses / Flipped Courses.” The Role of Technology in Postsecondary Education, Princeton University, Princeton, NJ. May 2013.

### Webinars, Tutorials, and Podcasts

“FedIoT: Network-Aware Federated Learning for Distributing AI through IoT Systems.” Tutorial. IEEE World Forum on Internet of Things, New Orleans, LA (virtual). Jun 2021.

“Revolutionizing an Industry.” Podcast. American Mathematical Society, Mathematical Moments Episode 139, Sept 2018.

“New Perspectives on Improving Business Outcomes through Better Measurement and Online Learning Design.” Webinar. Cognizant, Teaneck, NJ. Jun 2018.

“The Power of Networks.” Podcast. Smart People Podcast, Episode 268, Apr 2017.

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## ACADEMIC AND PROFESSIONAL SERVICE

### Journal Editorial Boards

Associate Editor

- *IEEE/ACM Transactions on Networking* 2023 - present
- *IEEE Transactions on Wireless Communications* 2021 - 2024

Guest Editor

- *IEEE Transactions on Big Data*, Special Issue on Federated Learning for Big Data Applications 2023
- *IEEE Internet of Things Journal*, Special Issue on Edge Learning in B5G IoT Systems 2024

### Conference Organizing Committees

*ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc)*

- Publicity and Sponsorship Chair 2025
- Posters and Demos Co-Chair 2023, 2024
- Workshops Co-Chair 2022

*IEEE International Conference on Computer Communications (INFOCOM)*

- Panels Co-Chair 2025

*IEEE International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks (WiOpt)*

- TPC Co-Chair 2024

### Workshop Organizing Committees

*NSF Networking Technology and Systems Early Career Workshop (NeTS-ECI) at NSF* 2025

- 92 early-career junior faculty, postdoc, and senior PhD attendees from 71 institutions

- 21 faculty mentors, speakers, and panelists participated

<i>Workshop on Digital Twins over NextG Wireless Networks (DTWIN)</i> , at IEEE INFOCOM	2025
<i>Workshop on Distributed Machine Learning and Fog Networks (FOGML)</i> , at IEEE INFOCOM	2021 - Present
<i>Workshop on Edge Learning over 5G Mobile Networks and Beyond</i> , at IEEE ICC	2024
<i>Workshop on From Federated to Fog Learning</i> , at World Forum on Internet of Things	2022
<i>Workshop on Data Driven Networking (DDN)</i> , at ACM MOBIHOC	2021
<i>Fog/Edge Computing and Networking for 5G and Beyond IoT</i> , at World Forum on Internet of Things	2021
<i>Session on Foundations and Applications of Data Science</i> , at IEEE CISS	2020
<i>Workshop on Data Mining for eLearning Personalization</i> , at IEEE ICDM	2018
<i>Workshop on Advancing Education with Data</i> , at ACM SIGKDD	2017

### **Task Forces and Working Groups**

Lead contributor, <i>6G Global Task Force</i>	2023 - present
◦ Industry-academia consortium on defining 6G formed by Purdue with technology executives from Cisco, Dell, Ericsson, Intel, Nokia, and Qualcomm	
Purdue representative, <i>Indiana Commission for Higher Education (CHE) AI Opportunities Working Group</i>	2024 - present
◦ Working group formed by the Indiana Commission for Higher Education, with faculty from Purdue University, Indiana University, Indiana State University, and Ivy Tech	
Participating member, <i>International Olympic Committee (IOC) AI Working Group</i>	2023 - 2024
◦ One of 15 panelists on this working group which produced an AI Agenda for the 2024-and-beyond Olympics.	

### **Conference Technical Program Committees**

<i>International Conference on Machine Learning (ICML)</i>	2025 - present
<i>International Conference on Learning Representations (ICLR)</i>	2024 - present
<i>IEEE Conference on Computer Communications (INFOCOM)</i>	2018 - present
<i>ACM Special Interest Group on Performance Evaluation (SIGMETRICS)</i>	2022 - present
<i>IEEE International Conference on Distributed Computing Systems (ICDCS)</i>	2021 - 2022
<i>AAAI Conference on Artificial Intelligence</i>	2021
<i>IEEE Conference on Information Sciences and Systems (CISS)</i>	2018 - 2020
<i>IEEE Vehicular Technology Conference</i>	2020
<i>IEEE Sarnoff Symposium</i>	2020

**Mentoring Faculty Fellow**, Purdue University's Graduate School 2022

### **Committee Chair**, Purdue University

<i>Purdue ECE's CNSIP Graduate Admissions</i>	2021 - 2024
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### **Committee Member**, Purdue University

<i>Purdue Integrative Data Science Initiative</i>	2023 - Present
<i>Purdue Online Data Science Curriculum Committee</i>	2024 - Present

<i>Purdue Computes ECE Faculty Search Committee</i>	2023 - 2024
<i>Purdue ECE's Head Search Committee</i>	2023 - 2024
<i>Purdue ECE's Foundations of Data Science Faculty Search Committee</i>	2019 - 2020
<i>Purdue ECE's Graduate Committee</i>	2019 - 2022

### **Proposal Review Panelist**

<i>NSF Computer and Network Systems (CNS)</i>	2020, 2022 (2x)
<i>NSF Computer Systems Research (CSR)</i>	2023
<i>NSF Technology, Innovation and Partnerships (TIP)</i>	2025

### **Faculty Advisor, Purdue University**

<i>IEEE Student Organization</i>	2019 - 2022
<i>ECE Graduate Student Association</i>	2019 - 2022

### **Peer Review**

<i>IEEE Communications Magazine</i>	2022 - 2023
<i>IEEE Transactions on Mobile Computing</i>	2022
<i>IEEE/ACM Transactions on Networking</i>	2016 - 2023
<i>IEEE INFOCOM</i>	2017 - 2018
<i>IEEE Transactions on Wireless Communications</i>	2020 - 2021
<i>NeurIPS</i>	2018, 2019
<i>IEEE ICDM</i>	2018, 2019
<i>Entropy</i>	2019
<i>ACM SIGKDD</i>	2017, 2018
<i>IEEE Transactions on Learning Technologies</i>	2014 - 2017
<i>IEEE Transactions on Emerging Topics in Computing</i>	2015 - 2017
<i>Elsevier Computers &amp; Education</i>	2015 - 2017

**Alumni Interviewer, Princeton University** 2016 - 2018

**Chief Coordinator and Co-Founder, 3 Nights and Done (3ND)** 2012 - 2015

**Alumni Mentor, TCNJ School of Engineering** 2012 - 2014

**President and Co-Founder, TCNJ Engineering Honor Society (now Tau Beta Pi)** 2010 - 2011

**Vice President, TCNJ IEEE Student Organization** 2009 - 2010

## MENTORING EXPERIENCE

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### **Postdoctoral Researchers (current)**

Kamran Shisher (co-advised with M. Chiang): Summer 2024 – Present

Sunjung Kang: Fall 2024 – Present

Ziqiao Zhang (co-advised with S. Sundaram): Spring 2025 – Present

### **PhD Students (current)**

Sheik Shams Azam: Fall 2019 – Spring 2022, Fall 2024 – Present

Zhan-Lun Chang (co-advised with M. Chiang): Fall 2021 – Present

Satyavrat Wagle: Spring 2022 – Present

Shahryar Zehtabi: Spring 2022 – Present

Evan Po-Yu Chen: Fall 2022 – Present

Wehzhhi (Tom) Fang: Fall 2023 – Present

Guangchen Lan: Fall 2023 – Present

David Nickel (co-advised with D. Love): Fall 2023 – Present

Liangqi Yuan: Fall 2023 – Present

Adam Piaseczny: Fall 2024 – Present

Abhishek Rajasekaran: Fall 2024 – Present

Jianing Zhang (co-advised with C. Liu): Fall 2024 – Present

Xiaoyan Ma: Spring 2025 – Present

Yinan Zhou (co-advised with V. Tripathi): Spring 2025 – Present

### **Masters Students (current)**

James Brandewie: Fall 2023 – Present

Shengli Ding: Fall 2023 – Present

### **Undergraduate Research Students (current)**

Joseph Seohyun Lee: Summer 2023 – Present

### **Postdoctoral Researchers (completed)**

Seyyedali Hosseinalipour (Summer 2020 – Summer 2022): Now Assistant Professor of Electrical Engineering, University at Buffalo

Dinh Nguyen (Spring 2022 – Summer 2023): Now Assistant Professor of Electrical and Computer Engineering, University of Alabama Huntsville

Rohit Parasnis (Summer 2022 – Summer 2023): Now Postdoc at Massachusetts Institute of Technology (MIT)

Anindya Das (Summer 2022 – Summer 2024): Now Assistant Professor of Electrical and Computer Engineering, University of Akron

Dong-Jun Han (Spring 2023 – Summer 2024): Now Assistant Professor of Computer Science and Engineering, Yonsei University

Jonggwang Kim (Spring 2024 – Summer 2024): Now Assistant Professor of Business, Kennesaw State University

### **PhD Students (completed)**

Henry Wang (Fall 2019 – Fall 2023, *Network-Aware Federated Learning Across Highly Heterogeneous Edge/Fog Networks*): Now Postdoctoral Researcher at Princeton University



Frank Lin (Fall 2019 – Summer 2023, *Distributed Machine Learning over Large-Scale Networks*): Now Research Scientist at CACI International

Junghoon Kim (Fall 2019 – Spring 2023, *Joint Learning and Optimization Methodologies for Advancing Next Generation Communication Systems*): Now Wireless Staff Researcher at Motorola Mobility

Rajeev Sahay (Spring 2020 – Fall 2022, *Robust Deep Learning Under Application Induced Data Distortions*): Now Assistant Teaching Professor at University of California San Diego

Myeung Suk Oh (Spring 2020 – Spring 2024, *Optimization Strategies for Estimation and Positioning Techniques in Wireless Systems*): Now Postdoctoral Researcher at Ohio State University

Yun-Wei Chu (Spring 2021 – Spring 2025, *Enhancing the Reliability of Federated Inference: From Bias Mitigation to Model Calibration*): Now Machine Learning Scientist at DISCO

### **Masters Students (completed)**

Sheik Shams Azam, Purdue (Fall 2019 – Spring 2022, *Towards Privacy and Communication Efficiency in Distributed Representation Learning*): Now AI/ML Resident at Apple Inc., on leave from PhD studies at Purdue

Serena Nicoll, Purdue (Fall 2020 – Spring 2022, *Applied Machine Learning for Online Education*): Now in Cyber-Physical Systems at STR: Systems & Technology Research

Somosmita Mitra, Purdue (Fall 2019 – Spring 2021, *Brain Tumor Detection via Generative Adversarial Network Models of MRI Scans*): Now a PhD student at Purdue

Tsung-Yen Yang, Princeton (Fall 2016 – Spring 2019, *Learning Informative and Private Representations via Generative Adversarial Networks*): Now PhD candidate at Princeton

Jessica Ko, Princeton (Fall 2015 – Spring 2017): *MOOC User Behavior Analysis: Insight from Topic Analysis and Application to Performance Prediction*

### **Undergraduate Research Students (completed)**

Adam Piaseczny, Purdue (Spring 2023 – Spring 2024): *The Impact of Adversarial Node Placement in Decentralized Federated Learning Networks*

David Nickel, Purdue (Spring 2021 – Spring 2023): *Delay-Aware Federated Learning Network Design with Communications Reliability Considerations*

Rebecca Horwatt, Purdue (Spring 2023): *Correlation Between Demographic Variables and Course Performance in Graduate ECE Courses*

Minjun (Jess) Zhang, Purdue (Summer 2020 – Fall 2022): *Link Prediction in Social Learning Networks and Massive MIMO Threat Defense Mechanisms*

Leyla Ciner, Purdue (Summer 2021 – Spring 2022): *Machine Learning for Education Innovation*

Siddharth Srinivasan, Purdue (Spring 2021 – Fall 2021): *Federated Unsupervised Representation Learning*

Mahd Khan, Princeton (Fall 2018 – Spring 2019): *Deep Learning for Improvement of Autonomous Vehicle Navigation*

Madhumitha Shridharan, Princeton (Summer 2018 – Spring 2019): *Assessing the Efficacy of Deep Learning for MOOC Behavior-based Prediction*

Caeley Harihara, Princeton (Summer 2018 – Spring 2019): *Data Mining and Feature Engineering of MOOC Clickstreams for Predictive Learning Analytics*

Ankit Buddhiraju, Princeton (Fall 2014 – Spring 2015): *Dynamic Centrality Measures for Financial Contagion: New Paradigms for Modeling Dynamic Graphs across Disciplines*

Pranav Ghokale, Princeton (Fall 2014 – Spring 2015): *TypeAway: Development of a Gesture-Based Typing System*

Vaidhy Murti, Princeton (Fall 2014 – Spring 2015): *Mod-omate: Automated Moderation on Anonymous Social Media Apps*

George Touloumes, Princeton (Fall 2013 – Spring 2014): *Visualizing Instructor Feedback for Video-Based Online Courses*

Ankit Buddhiraju, Princeton (Fall 2013 – Spring 2014): *Mercury Model: A Unified Approach to Studying Dynamic Networks*

Jian Min Sim, Princeton (Fall 2012 – Spring 2013): *Investigation of Information Propagation in Social Search*

Harvest Zhang, Princeton (Fall 2012 – Spring 2013): *Profiling and Visualizing Student Performance in MOOCs*

Ethan Berl (Feb 2013 – May 2013), Princeton: *Algorithms for Recommending Sequences of Courses for College Students*

Rohan Sharma, Princeton (Fall 2012 – Spring 2013): *Evaluating Amazon's Ranking Algorithm*

### **Industry Researchers (from Zoomi Inc.)**

Adam Hare (Dec 2019 – Present): Data Scientist/Researcher/Full-Stack Developer

Elizabeth Tenorio (Jan 2018 – Jan 2021): Lead Data Scientist

Yuwei Tu (Apr 2018 – Spring 2020): Data Scientist

Amanda Mason-Singh (Feb 2017 – May 2018): Lead Data Scientist

Joseph Urciuoli (Sept 2016 – Nov 2017): Lead Data Engineer

Weiyu Chen (Jul 2015 – Nov 2018): Lead Data Scientist

Da Cao (Mar 2015 – Oct 2019): Data Engineer

Ying Xiong, Patrick Hansen, Richard Junior Bustamante (Jun 2018 – Aug 2018): Undergraduate Interns

Charlton Lu (Jun 2016 - Aug 2016, Jun 2017 – Aug 2017): High School Intern

Advait Chauhan, Derrick Xin, Sean Yun (Jun 2015 – Aug 2015): Undergraduate Interns

### **PhD Committee Membership Completed**

Miguel Villarreal-Vasquez, Purdue Computer Science (Defended June 2020); Ganapathy Mani, Purdue Computer Science (Defended April 2020); Laura Cruz, Purdue Engineering Education (Defended June 2022); Sonali Patel, Purdue Electrical and Computer Engineering (Defended October 2022); Tong Yao, Purdue Electrical and Computer Engineering (Defended June 2023); Kananart Kuwarananchaoen, Purdue Electrical and Computer Engineering (Defended June 2023); Abhishek Umrawal, Purdue Industrial Engineering (Defended July 2023); Liren Yu, Purdue Electrical and Computer Engineering (Defended October 2023); Matthew Bliss, Purdue Electrical and Computer Engineering (Defended October 2023); Tianqi Wang, Purdue Electrical and Computer Engineering (Defended April 2024); Jiayu Chen, Purdue Industrial Engineering (Defended May 2024); Ajinkya Mulay, Purdue Electrical and Computer Engineering (Defended June 2024); Bhargav Ganguly, Purdue Industrial Engineering (Defended September 2024); Qinbo Bai, Purdue Industrial Engineering (Defended October 2024); Chang-Lin Chen, Purdue Electrical and Computer Engineering (Defended November 2024); Vishnu Chellapandi, Purdue Electrical and Computer Engineering (Defended November 2024)

### **Masters Committee Membership Completed**

Thomas Kennell, Purdue Electrical and Computer Engineering (Defended August 2022); Sravani Ramishetty, Purdue Electrical and Computer Engineering (Defended July 2023)

## PROFESSIONAL AND HONORARY SOCIETY AFFILIATIONS

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### **IEEE**

Senior Member	<i>2020 - Present</i>
Member	<i>2016 - 2020</i>
Student Member	<i>2008 - 2016</i>

**Tau Beta Pi** (NJ Zeta) Engineering Honor Society *2013 - Present*

## UNDERGRADUATE RESEARCH POSITIONS

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<i>AT&amp;T Labs</i> , Optical Systems Research Group, Middletown, NJ	<i>Jun 2010 - Aug 2010</i>
<i>Linearizer Technology</i> , RF Research Group, Hamilton, NJ	<i>May 2009 - Dec 2009</i>
<i>AT&amp;T</i> , Transport Field Technical Support, Bedminster, NJ	<i>Jun 2008 - Aug 2008</i>

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