Chun-Hung Liu | Curriculum Vitae

Texas Tech University, Box 43102, 910 Boston Ave., Lubbock, TX 79409

chun-hung.liu@ttu.edu https://sites.google.com/view/chunhungliu

EDUCATION

The University of Texas at Austin — **Austin, TX**
Ph.D. in Electrical and Computer Engineering — *May 2011*
(Major in Communications, Signal Processing, and Networking)

Massachusetts Institute of Technology — **Cambridge, MA**
M.S. in Mechanical Engineering (*Major in Controls and Robotics*)

National Taiwan University — **Taipei, Taiwan**
B.S. and M.S. in Mechanical and Electrical Engineering

RESEARCH INTERESTS

- Wireless Communication, Networking, and Signal Processing
- Deep Learning and Data Analytics
- Stochastic Optimization, Decision, and Control
- Cybersecurity and Trustworthy AI

WORK EXPERIENCES

Texas Tech University — **Lubbock, TX**
Associate Professor (*tenured*), *Department of Electrical and Computer Engineering* — *August 2026 - present*

Mississippi State University — **Starkville, MS**
Associate Professor (*tenured*), *Department of Electrical and Computer Engineering* — *August 2023 - August 2026*
Assistant Professor, Department of Electrical and Computer Engineering — *August 2018 - August 2023*

National (Yang-Ming) Chaio Tung University — **Hsinchu, Taiwan**
Assistant Professor, Department of Electrical and Computer Engineering — *February 2014 - July 2017*

National Cheng Kung University — **Tainan, Taiwan**
Assistant Professor, Department of Engineering Science — *February 2013 - January 2014*

Qualcomm, Inc. — **San Diego, CA**
Research Intern; Senior System Engineer — *May 2010 - August 2010; May 2011 - January 2013*

Intel,Research Lab. — **Santa Clara, CA**
Research Intern — *May 2009 - August 2009; May 2009 - January 2010*

AWARDED GRANTS (2019-present, total 4.71M awarded, >50% awarded as PI)

- **NSF NeTS Award** (#2614256): Fundamentals of Integrated Sensing, Communication, and Computing for Mission-Critical Reconfigurable UAV Networks, 08/01/2026-7/31/2029 (PI, Awarded Amount: $450,000).
- **NSF REU Award** (#2348711): Intelligent Edge Computing Systems, 2/1/2024-1/31/2027. (Co-PI, Awarded Amount: $333,643, My share: 15%)
- **Air Force Research Lab. (AFRL/AFOSR)**: Resilient Federated Meta-Learning over Networks, 06/01/2023 - 5/31/2026. (PI, Awarded Amount: $382,000)
- **AFRL/AFOSR** (#FA8650-20-2-5853): Adaptable Spectrum Sensing and Learning in UAV-Enabled Networks with Intelligent Reflecting Surfaces, 08/01/2022 - 07/31/2025. (PI, Awarded Amount: $222,202)

- **NSF ECCS-EPCN Award** (#2210106): Degradation-Aware Self-Healing Control of Power Electronics Systems, 08/16/2022 - 08/15/2025. (Co-PI, Awarded Amount: $400,001, My Share: 40%)
- **Department of Homeland Security** (#364007): Networked Privacy-preserved Learning for Secure Cyber-Physical Systems, 02/01/2022 - 01/31/2025. (PI, Awarded Amount: $2,103,872, My Share: 40%)
- **NSF CNS Core Award** (#2006453): Fundamentals of Ultra-Dense Wireless Networks with Generalized Repulsion, 10/01/2021 - 07/31/2025. (PI, Awarded Amount: $500,000, My Share: 60%)
- **NSF US-EU Collaborative Research Award** (#2126151): Federated Learning for Resource-limited Devices, 07/01/2021 - 09/30/2023. (PI, Awarded Amount: $100,000)
- **C Spire, Inc., MS** (#316419): Optimal Deployment and Trajectory Management of UAV-Enabled Networks, 08/01/2020 - 07/31/2022. (PI, Awarded Amount: $100,000)
- **High Performance Computing Center (HPC^2) at MSU** (#312233): Adaptable Deep Learning and Computing over Large-Scale Random Networks, 08/16/2019 - 08/16/2021. (PI, Awarded Amount: $125,985)

SELECTED PUBLICATIONS (Please refer to Google Scholar for my complete publication list.)

Selected Journal Papers (totally published more than 40 papers)

(1) T. Siameh and **C.-H. Liu**, "A-GRPO: Adaptive Group Relative Policy Optimization for Stable Reinforcement Fine-Tuning of Lightweight Language Models," submitted to IEEE Trans. on Artificial Intelligence, Aug. 2026. (Under revision)

(2) **C.-H. Liu**, W.-C. Kao, J.-Y. Wu, and K.-T. Feng, "Position-Agile ISAC for Fluid-Antenna IoT: Effective DoF and Fundamental Tradeoff," submitted to IEEE Internet of Things Journal, Aug. 2026.

(3) N. Wu, D. A. Pham, **C.-H. Liu**, and P.-Y. Chen, "Beam-Reconfigurable Fluid Antenna Systems: A Liquid-Metal Yagi-Uda Approach for Quad-Directional Azimuth Switching," accepted and to appear in IEEE Antennas and Wireless Propagation Letters, Jul. 2026.

(4) H. Chen, H.-J. Su, and **C.-H. Liu**,"Complete Spectral and Angular Beam Split Compensation for THz Massive MIMO Using Dual-Resolution True-Time-Delay Precoding," submitted to IEEE Trans. on Wireless Communications, Jun. 2026.

(5) Y. Luo, Lina Pu, J. Diao, **C.-H. Liu**, and A. Song, "Underwater Acoustic Reconfigurable Intelligent Surfaces: From Principle to Practice," IEEE Communications Standards Magazine, May 2025.

(6) Y. Luo, Lina Pu, and **C.-H. Liu**, "Computing Power and Battery Charging Management for Sustainable Edge Computing," IEEE Trans. on Mobile Computing, vol. 24, No.3, pp. 1913-1927, Mar. 2025.

(7) J.-Y. Wu, L.-C. Huang, W.-H. Li, **C.-H. Liu**, and R.-H. Gau, "Greedier Is Better: Selecting Multiple Neighbors per Iteration for Sparse Subspace Clustering," Trans. on Machine Learning Research, Nov. 2023.

(8) Y. Luo, Lina Pu, and **C.-H. Liu**, "CPU Frequency Scaling Optimization in Sustainable Edge Computing," IEEE Trans. on Sustainable Computing, vol. 8, No. 2, pp. 194-207, Apr.-Jun. 2023.

(9) L.-C. Wang, H. Gačanin, D. Niyato, Y.J. Chen, **C.-H. Liu**, and A. Anpalagan,"Artificial Intelligence for Autonomous Vehicular Communication Networks," IEEE Vehicular Technology Magazine, Vo. 17, No. 2, pp. 83-84, Feb. 2022.

(10) **C.-H. Liu**, D.-C. Liang, M. A. Syed, and R.-H. Gau, "A 3D Tractable Model for UAV-Enabled Cellular Networks with Multiple Antennas," IEEE Trans. on Wireless Communications, vol. 20, no. 6, pp. 3538-3554, Jun. 2021.

(11) J.-Y. Wu, L.-C. Huang, M.-H. Yang, and **C.-H. Liu**, "Sparse Subspace Clustering via Two-Step Reweighted L1-Minimization: Algorithm and Provable Neighbor Recovery Rates," IEEE Trans. on Information Theory, vol. 67, no. 2, pp. 1216-1263, Feb. 2021.

(12) **C.-H. Liu**, D.-C. Liang, K.-C. Chen, and R.-H. Gau, "Ultra-Reliable and Low-Latency Communications Using Proactive Multi-cell Association," IEEE Trans. on Communications, vol. 69, no. 6, pp. 3879-3897, Jun. 2021.

(13) K.-C. Chen, S.-C. Lin, J.-H. Hsiao, **C.-H. Liu**, A. F. Molisch, and G. Fettweis, "Wireless Networked Multi-Robot Systems in Smart Factories," Proceedings of the IEEE, vol. 109, no. 4, pp. 468-494, Apr. 2021.

(14) **C.-H. Liu**, Y.-H. Shen, and C.-H. Lee, "Energy-Efficient Activation and Uplink Transmission for Cellular IoT," IEEE Internet of Things Journal, vol. 7, no. 2, pp. 906-921, Feb. 2020.

(15) **C.-H. Liu**, K.-H. Ho, and J.-Y. Wu, "MmWave UAV Networks with Multi-cell Association: Performance Limit and Optimization," IEEE Journal on Selected Areas in Communications, vol. 37, no. 12, pp. 2814-2831, Dec. 2019.

(16) **C.-H. Liu** and H.-M. Hu, "Full-Duplex Heterogeneous Networks with Decoupled User Association: Rate Analysis and Traffic Scheduling," IEEE Trans. on Communications, vol. 67, no. 3, pp. 2084-2100, Mar. 2019.

(17) **C.-H. Liu**, "Coverage-Rate Tradeoff Analysis in mmWave Heterogeneous Cellular Networks," IEEE Trans. on Communications, vol. 67, no. 2, pp. 1720-1736, Feb. 2019.

(18) **C.-H. Liu** and C.-S. Hsu, "Fundamentals of Simultaneous Wireless Information and Power Transmission in Heterogeneous Networks: A Cell Load Perspective", IEEE Journal on Selected Areas in Communications, vol. 37, no. 1, pp. 100-115, Jan. 2019.

(19) **C.-H. Liu** and D.-C. Liang, "Heterogeneous Networks with Power-Domain NOMA: Coverage, Throughput, and Power Allocation Analysis", IEEE Trans. on Wireless Communications, vol. 17, no. 5, pp. 3524-3539, May 2018.

(20) **C.-H. Liu** and H.-C. Tsai,"Traffic Management for Heterogeneous Networks with Opportunistic Unlicensed Spectrum Sharing", IEEE Trans. on Wireless Communications, vol. 16, no. 9, pp. 5717-5731, Sep. 2017.

(21) **C.-H. Liu** and H.-C. Tsai, "On the Limits of Coexisting Coverage and Capacity in Multi-RAT Heterogeneous Networks," IEEE Trans. on Wireless Communications, vol. 16, no. 5, pp. 3086-3101, May 2017.

(22) **C.-H. Liu** and K. L. Fong, "Fundamentals of Downlink Green Coverage and Energy Efficiency in Heterogeneous Networks," IEEE Journal on Selected Areas in Communications, vol. 34, no. 12, pp. 3271-3287, Dec. 2016.

(23) **C.-H. Liu** and L.-C. Wang, "Optimal Cell Load and Throughput in Green Small Cell Networks with Generalized Cell Association," IEEE Journal on Selected Areas in Communications, vol. 34, no. 5, pp. 1058-1072, May 2016.

(24) X. Ding, **C.-H. Liu** et al., "Coexisting Success Probability and Throughput of Multi-RAT Wireless Networks with Unlicensed Band Access," IEEE Wireless Communications Letters, vol. 5, no. 1, pp. 4-7, Feb. 2016.

(25) **C.-H. Liu**, B. Rong, and S. Cui, "Optimal Discrete Power Control in Poisson-Clustered Ad Hoc Networks," IEEE Trans. on Wireless Communications, vol. 14, no. 1, pp. 138-151, Jan. 2015.

(26) P. Xia, **C.-H. Liu** and J. G. Andrews, "Downlink Coordinated Multi-Point with Overhead Modeling in Heterogeneous Cellular Networks," IEEE Trans. on Wireless Communications, vol. 12, no. 8, pp. 4025-4037, Aug. 2013.

(27) **C.-H. Liu** and J. G. Andrews, "Ergodic Transmission Capacity of Wireless Ad Hoc Networks with Interference Management," IEEE Trans. on Wireless Communications, vol. 11, no. 6, pp. 2136-2147, Jun. 2012.

(28) **C.-H. Liu** and J. G. Andrews, "Multicast Outage Probability and Transmission Capacity of Multihop Wireless Networks," IEEE Trans. on Information Theory, vol. 57, no. 7, pp. 4344-4358, Jul. 2011.

Selected Recent Conference Papers (totally published more than 75 papers)

(1) **C.-H. Liu**, P.-Y. Chen, W.-C. Kao, J.-Y. Wu, and K.-T. Feng, "Position-Agile ISAC with Fluid Antennas: Diversity-Overhead Frontier and Effective DoF," in Proc. of IEEE Globecom, Dec. 2026.

(2) **C.-H. Liu**, W.-C. Kao, P.-Y. Chen, J.-Y. Wu, and K.-T. Feng, "Position Control Meets Fluid-Antenna ISAC: Rate-Estimation-Overhead-Energy Tradeoffs," in Proc. of IEEE Globecom, Dec. 2026.

(3) L.-C. Huang, C.-E. Kuo, M.-H. Yang, **C.-H. Liu**, and J.-Y. Wu, "Robust One-Bit Compressed Sensing Against Sign Flips via ℓ_1-ℓ_2 Sparse Regularization," in Proc. of IEEE Globecom, Dec. 2026.

(4) T. Siameh, A. A. Addobea, **C.-H. Liu**, E. K. Fiah"A Systematic Security Analysis of Model Context Protocol: Vulnerabilities, Exploits, and Mitigations", IEEE 5th Int. Conf. on AI in Cybersecurity Feb. 2026.

(5) S. Kurma, **C.-H. Liu**, S. Dhamala, U. Upadhyay, and V. Marojevic, and S. Mumtaz, "Secure and Privacy-Preserving ISAC in RIS-Aided IAB Networks with Delay Alignment Modulation," in Proc. of IEEE Int. Conf. on Commun. (ICC), May 2026.

(6) S. Kurma, **C.-H. Liu**, U. Upadhyay, S. Dhamala and V. Marojevic, and S. Mumtaz, "Hybrid Actor DRL for

Secrecy Optimization in RIS-Aided IAB Networks with DAM," in Proc. of IEEE Int. Conf. on Commun. (ICC), May 2026.

(7) A. M. Huroon, **C.-H. Liu**, and L.-C. Wang, "Distributed Deep Reinforcement Learning for Hybrid Beamforming in Cooperative UAV-ISAC Networks," in Proc. of IEEE Int. Conf. on Commun. (ICC), May 2026.

(8) R.-H. Gau, D.-C. Liang, and **C.-H. Liu**, "Edge-to-cloud Latency Aware User Association in Heterogeneous Hierarchical Federated Learning," in Proc. of IEEE Vehicular Technology Conference (VTC), Spring 2024.

(9) **C.-H. Liu**, N. Thawdar, and J.-Y. Wu, "On the Performance Limits of RIS-Assisted Massive MIMO Systems," in Proc. of IEEE Int. Conf. on Commun. (ICC), June 2024.

(10) F. Freitag, L. Wei, **C.-H. Liu**, Me. Selimi, and L. Veiga, "Server-side Adaptive Federated Learning over Wireless Mesh Network," in Proc. of Int. Conf. on Information Technology & Systems, 2023.

(11) P.-C. Hsu, L.-H. Shen, **C.-H. Liu**, and K.-T. Feng, "Federated Deep Reinforcement Learning for THz-Beam Search with Limited CSI", in Proc. of IEEE Vehicular Technology Conference (VTC), Fall 2022.

(12) **C.-H. Liu**, D.-C. Liang, R-H. Gau, and L. Wei, "Modeling and Analysis of Intermittent Federated Learning Over Cellular-Connected UAV Networks," In Proc. of IEEE Vehicular Technology Conference (VTC), Spring 2022.

(13) **C.-H. Liu**, K.-T. Feng, L. Wei, and Y. Luo,"Spatio-Temporal Federated Learning for Massive Wireless Edge Networks", in Proc. of IEEE Int. Conf. on Commun. (ICC), May 2022.

(14) **C.-H. Liu**, M. D. Syed, and L. Wei, "Toward Ubiquitous and Flexible Coverage of UAV-IRS-Assisted NOMA Networks", in Proc. of IEEE Wireless Communication and Networking Conference (WCNC), Apr. 2022.

(15) S. A. Jawdeh, S. Choi, and **C.-H. Liu**, "Model-Based Deep Learning for Cyber-Attack Detection in Electric Drive Systems," in Proc. of IEEE Applied Power Electronics Conf. (APEC), Mar. 2022.

(16) F. Freitag, P. Vilchez, L. Wei, **C.-H. Liu**, and M. Selimi, "Performance Evaluation of Federated Learning Over Wireless Mesh Networks with Low-Capacity Devices," Int. Conf. on Information Technology & Systems, Feb. 2022.

(17) F. Freitag, P. Vilchez, L. Wei, **C.-H. Liu**, M. Selimi, and I. Koutsopoulos, "An Experimental Environment Based OnMini-PCs For Federated Learning Research," in Proc. of IEEE 19th Annual Consumer Commun. & Net. Conf. (CCNC), Jan. 2022.

(18) F. Freitag, P. Vilchez, L. Wei, **C.-H. Liu**, and M. Selimi, "Poster: Testbed in Wireless City Mesh Network with Application to Federated Learning Experiment," in Proc. of the 11th Int. Conf. on the Internet of Things, Nov. 2021.

(19) Y. Luo, L. Pu, and **C.-H. Liu**,"Optimal CPU Frequency Scaling Policies for Sustainable Edge Computing," in Proc. of IEEE Int. Symp on Personal, Indoor, and Mobile Radio Commun. (PIMRC), Sep. 2021.

(20) **C.-H. Liu**, Y. Luo, and L. Pu, "A Multi-Cell Open-Loop Communication Approach to Ultra-Reliable Mobile Networks," in Proc. of IEEE Int. Symp on Personal, Indoor, and Mobile Radio Commun. (PIMRC), Sep. 2021.

(21) **C.-H. Liu**, D.-C. Liang, and R.-H. Gau, "A 3D Modeling Approach to Tractable Analysis in UAV-Enabled Cellular Networks", in Proc. of IEEE Int. Conf. on Commun., Jun. 2021.

(22) J.-Y. Wu, W.-H. Li, L.-C. Huang, Y.-P. Lin, **C.-H. Liu**, and R.-H. Gau, "Deterministic Coherence-Based Performance Guarantee for Noisy Sparse Subspace Clustering using Greedy Neighbor Selection", in Proc. of IEEE Sensor Array and Multichannel Signal Processing Workshop, Jun. 2020.

(23) J.-Y. Wu, L.-C. Huang, W.-H. Li, H.-H. Chan, **C.-H. Liu**, and R.-H. Gau, "Sparse Subspace Clustering with Linear Subspace-Neighborhood-Preserving Data Embedding," in Proc. of IEEE Sensor Array and Multichannel Signal Processing Workshop, Jun. 2020. (Invited)

(24) **C.-H. Liu**, D.-C. Liang, and R.-H. Gau, "On Achieving High PHY-Layer Security in D2D-Enabled Heterogeneous Networks", in Proc. of IEEE VTC Fall, 2019.

(25) **C.-H. Liu**, "Energy Efficiency Optimization of Heterogeneous Networks with SWIPT: A Cell-Load Perspective", in Proc. of IEEE VTC Fall, 2019.

(26) J.-Y. Wu, L.-C. Huang, M.-H. Yang, L.-H. Chang, and **C.-H. Liu**,"Sparse Subspace Clustering With Sequentially Ordered and Weighted L1 - Minimization", in Proc. of IEEE Int. Conf. Image Processing, Sep. 2019.

(27) J.-Y. Wu, L.-C. Huang, M.-H. Yang, L.-H. Chang, and **C.-H. Liu**,"Enhanced Noisy Sparse Subspace Clustering via Reweighted L1-Minimization", in the Proc. of IEEE Int. Workshop on Machine Learning for Signal Processing, Sep. 2018.

(28) **C.-H. Liu** and H.-M. Hu, "Decoupled Rate-Optimal User Association for Full-Duplex Heterogeneous Networks", in the Proc. of IEEE Int. Conf. Commun. (ICC), May 2018.

(29) H.-M. Hu and **C.-H. Liu**, "Throughput Regions and Opportunistic Scheduling for Full-Duplex HetNets with Decoupled User Association", in the Proc. of IEEE Int. Conf. Commun. (ICC), May 2018.

(30) **C.-H. Liu**, "An Analytical Model-Free Coverage Framework for Heterogeneous Device-to-Device Networks", in the Proc. of IEEE WiOpt, May 2018.

(31) **C.-H. Liu** and D.-C. Liang,"Towards Accurate Throughput Analysis for Dense Heterogeneous Networks with Cooperative NOMA", in the Proc. of IEEE Globecom, Dec. 2017.

(32) **C.-H. Liu**, D.-C. Liang, P.-C. Chen and J.-R. Yang, "Coverage Analysis for Dense Heterogeneous Networks with Cooperative NOMA", in the Proc. of IEEE VTC, Spring 2017. (invited)

(33) **C.-H. Liu** and H.-C. Tsai, "Decentralized Traffic Management for Heterogeneous Networks with Opportunistic Unlicensed Spectrum Sharing", in the Proc. of IEEE WiOpt, May 2017.

(34) **C.-H. Liu**, D.-C. Liang, J.-R. Yang and J. Chen, "A Generalized Analytical Framework for Coverage Evaluation in mmWave Heterogeneous Cellular Networks in Urban Areas", in the Proc. of IEEE Int. Conf. Commun. (ICC), May 2017.

(35) **C.-H. Liu** and P.-C. Chen, "Load-Aware Coordinated Multipoint Joint Transmission in Dense Heterogeneous Networks: Downlink Coverage and Throughput Limits", in the Proc. of IEEE Int. Conf. Commun. (ICC), May 2017. (**Finalist of the Best Paper Award**)

(36) H.-M. Hu, **C.-H. Liu** and K.-C. Chang, "Full-Duplex Heterogeneous Networks: Ergodic Rate Analysis with Realistic Interference Modeling", in the Proc. of IEEE Wireless Commun. and Net. Conf. (WCNC), Mar. 2017.

(37) **C.-H. Liu**, "On the Energy Efficiency Limit of Dense Heterogeneous Cellular Networks", in the Proc. of IEEE Globecom, Dec. 2016.

(38) H.-C. Tsai, **C.-H. Liu** and L.-C. Wang, "An Analytical Approach to Coexisting Evaluation in Multi-RAT Heterogeneous Networks with Opportunistic CSMA/CA", in the Proc. of IEEE Int. Conf. Commun. (ICC), May 2016.

(39) **C.-H. Liu**, L.-C. Wang, "Modeling and Analysis of Coexisting Multiple Radio Access Technologies in Heterogeneous Wireless Networks", in the Proc. of IEEE ICNC, Feb. 2016 (Invited).

(40) **C.-H. Liu**, L.-C. Wang,"On the Optimality of Green Cell Load and Throughput in Small Cell Networks with Weighted Channel-Aware Cell Association", in the Proc. of IEEE Globecom, Dec. 2015.

(41) K. L. Fong,**C.-H. Liu**, etal. "Energy-Efficient Cell Association and Load Analysis in Heterogeneous Cellular Networks", in the Proc. of IEEE Globecom (HetNet Workshop) 2015.

(42) **C.-H. Liu** and L.-C. Wang, "Random Cell Association and Void Probability in Poisson-distributed Cellular Networks", in the Proc. of IEEE Int. Conf. Commun. (ICC), Jun. 2015.