YAN, LI

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Research Interests

My research addresses the issue of bridging extreme-scale sensor infrastructure, effective data analysis & system design and privacy preservation for complex Cyber-Physical Systems in an interdisciplinary perspective. Currently, I am especially interested in the following topics: *Data-driven Cyber-Physical Systems*, *Privacy Computing* and *Computer Networking*.

Research Experience

Xi'an Jiaotong University *Associate Professor* **Mar. 2021 – Present**
↪ School of Cyber Science and Engineering

Massachusetts Institute of Technology *Postdoctoral Fellow* **Mar. 2020 – Feb. 2021**
↪ Senseable City Lab *Prof. Carlo Ratti*

Shenzhen Institutes of Advanced Technology *Visiting Scholar* **Jun. 2015 – Aug. 2015**
↪ Research Center for Cloud Computing *Prof. Chengzhong Xu*

Clemson University *Research Assistant* **Aug. 2013 – Jul. 2016**
↪ Department of Electrical and Computer Engineering *Prof. Helen Shen*

Education

University of Virginia **Aug. 2016 – Dec. 2019**
Ph.D., Computer Science *CGPA: 4.0/4.0* *Charlottesville, VA, USA*

University of Florida **Aug. 2011 – May 2013**
M.S., Electrical and Computer Engineering *CGPA: 3.88/4.0* *Gainesville, FL, USA*

Xi'an Jiaotong University **Sep. 2010 – Jun. 2011**
Direct Admission to Ph.D. program, Information Engineering *Xi'an, China*

Xi'an Jiaotong University **Sep. 2006 – Jun. 2010**
B.S., Information Engineering *Xi'an, China*

Awards and Honors

Xiaomi Young Scholar Xiaomi Corporation *1/20* **2024**
Siyuan Scholar Huawei Technologies Co., Ltd *1/5* **2021**
George N. Saridis Best Transactions Paper Award IEEE ITS Society *2 per year* **2020**
Outstanding Research Award University of Virginia *1/9* **2018**
Best-in-Session-Presentation Award IEEE INFOCOM *1 per session* **2017**

Funded Research Projects

Xiaomi Young Scholar Program *Principal Investigator* **Jan. 2025 – Dec. 2027**
↪ Xiaomi Corporation *¥ 0.1 million*

National Key R&D Program of China *Principal Investigator* **Oct. 2022 – Sep. 2025**
↪ Ministry of Science and Technology, PRC *¥ 5.4 million*

NSFC Youth Program *Principal Investigator* **Jan. 2022 – Dec. 2024**
↪ National Natural Science Foundation of China *¥ 0.3 million*

Shaanxi High-Level Talent Program *Principal Investigator* **Jan. 2022 – Dec. 2025**
↪ Shaanxi Provincial Bureau of Science and Technology *¥ 1.5 million*

Siyuan Research Program *Principal Investigator* **Jul. 2021 – Jun. 2024**
↪ Huawei Technologies Co., Ltd *¥ 0.75 million*

Publication

- **Conference Publications:**

[1] **[ACM ICPP]** X. Yong, **L. Yan**, and Z. Li, "Heterogeneity-aware Task Scheduling based on Personalized Federated Reinforcement Learning," in *Proc. of ACM International Conference on Parallel Processing*, 2025.

[2] **[IEEE IPDPS]** Y. Kuang, **L. Yan**, and Z. Li, "P^{3}Forecast: Personalized Privacy-Preserving Cloud Workload Prediction Based on Federated Generative Adversarial Networks," in *Proc. of IEEE International Parallel & Distributed Processing Symposium*, 2025.

[3] **[ACM ICPR]** K. Li, J. Zhao, **L. Yan**, X. Gao, Y. Li, and K. Ye, "GCompletor: A Graph-Based Deep Learning Method for Traffic State Imputation on Urban Road Networks," in *Proc. of ACM International Conference on Pattern Recognition*, 2024.

[4] **[SIGSPATIAL]** C. Qiu, **L. Yan**, A. Squicciarini, J. Zhao, C. Xu, and P. Pappachan, "TrafficAdaptor: An Adaptive Obfuscation Strategy for Vehicle Location Privacy Against Traffic Flow Aware Attacks," in *Proc. of International Conference on Advances in Geographic Information Systems*, 2022.

[5] **[IEEE BigData]** J. Liu, L. Cheng, A. Sarker, **L. Yan**, and R. A. Alo, "DeepTrack: An ML-Based Approach to Health Disparity Identification and Determinant Tracking for Improving Pandemic Health Care," in *Proc. of IEEE International Conference on Big Data*, 2021.

[6] **[ACM CIKM]** C. Qiu, A. Squicciarini, Z. Li, C. Pang, and **L. Yan**, "Time-Efficient Geo-Obfuscation to Protect Worker Location Privacy Over Road Networks in Spatial Crowdsourcing," in *Proc. of ACM International Conference on Information & Knowledge Management*, 2020.

[7] **[IEEE MASS] L. Yan**, H. Shen, L. Kang, J. Zhao, and C. Xu, "Reinforcement Learning Based Scheduling for Cooperative EV-to-EV Dynamic Wireless Charging," in *Proc. of IEEE International Conference on Mobile Ad Hoc and Sensor Systems*, 2020.

[8] **[IEEE MASS] L. Yan**, H. Shen, L. Kang, J. Zhao, and C. Xu, "CD-Guide: A Reinforcement Learning Based Dispatching and Charging Approach for Electric Taxicabs," in *Proc. of IEEE International Conference on Mobile Ad Hoc and Sensor Systems*, 2020.

[9] **[IEEE ICDCS] L. Yan**, S. Mahmud, H. Shen, N. Z. Foutz, and J. Anton, "MobiRescue: Reinforcement Learning Based Rescue Team Dispatching in a Flooding Disaster," in *Proc. of IEEE International Conference on Distributed Computing Systems*, 2020.

[10] **[IEEE ICDCS] L. Yan**, H. Shen, L. Kang, J. Zhao, and C. Xu, "MobiCharger: Optimal Scheduling for Cooperative EV-to-EV Dynamic Wireless Charging," in *Proc. of IEEE International Conference on Distributed Computing Systems*, 2020.

[11] **[IEEE MASS] L. Yan** and H. Shen, "Optimizing In-Motion Wireless Charging Service Efficiency for Electric Vehicles: A Game Theoretic Approach," in *Proc. of IEEE International Conference on Mobile Ad Hoc and Sensor Systems*, 2019.

[12] **[IEEE ICCCN] L. Yan**, S. Mahmud, H. Shen, N. Z. Foutz, D. E. Brown, W. Yusuf, D. Loftis, L. Lyons, J. L. Goodall, and J. Anton, "MobiAmbulance: Optimal Scheduling of Emergency Vehicles in Catastrophic Situations," in *Proc. of International Conference on Computer Communication and Networks*, 2019.

[13] **[ACM IMWUT/UbiComp] L. Yan**, H. Shen, Z. Li, A. Sarker, J. A. Stankovic, C. Qiu, J. Zhao, and C. Xu, "Employing Opportunistic Charging for Electric Taxicabs to Reduce Idle Time," *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, vol. 2, no. 1, pp. 1–25, 2018.

[14] **[ACM/IEEE IoTDI] L. Yan**, H. Shen, and K. Chen, "MobiT: A Distributed and Congestion-Resilient Trajectory Based Routing Algorithm for Vehicular Delay Tolerant Networks," in *Proc. of ACM/IEEE International Conference on Internet-of-Things Design and Implementation*, 2017.

[15] **[IEEE INFOCOM] L. Yan**, H. Shen, J. Zhao, C. Xu, F. Luo, and C. Qiu, "CatCharger: Deploying Wireless Charging Lanes in a Metropolitan Road Network Through Categorization and Clustering of Vehicle Traffic," in *Proc. of IEEE Conference on Computer Communications*, 2017.

[16] **[IEEE ICNP] L. Yan**, J. Zhao, H. Shen, C. Xu, and F. Luo, "CatCharge: Deploying Wireless Charging Lane in Metropolitan Scale Through Categorization and Clustering of Vehicle Mobility," in *Proc. of IEEE International Conference on Network Protocols*, 2016.

[17] **[IEEE MASS] L. Yan** and H. Shen, "TOP: Vehicle Trajectory Based Driving Speed Optimization Strategy for Travel Time Minimization and Road Congestion Avoidance," in *Proc. of IEEE International Conference on Mobile Ad Hoc and Sensor Systems*, 2016.

[18] **L. Yan**, H. Shen, S. Li, and Y. Huang, "Electrical Vehicle Charging Station Deployment Based on Real World Vehicle Trace," in *Proc. of International Conference on Internet of Vehicles*, 2016.

[19] **[IEEE INFOCOM] L. Yan**, H. Shen, and K. Chen, "TSearch: Target-Oriented Low-Delay Node Searching in DTNs With Social Network Properties," in *Proc. of IEEE Conference on Computer Communications*, 2015.

[20] **[IEEE SECON] L. Yan**, K. Chen, H. Shen, and G. Liu, "MobileCopy: Resisting Correlated Node Failures to Enhance Data Availability in DTNs," in *Proc. of IEEE International Conference on Sensing, Communication, and Networking*, 2015.

- **Journal Publications:**

[1] **[IEEE/ACM ToN]** B. Yang, **L. Yan**, Z. Li, M. Kao, H. Gao, X. Sun, and C. Shen, "Joint Privacy-Preserving Cloud Workload Prediction Based on Federated Learning," *IEEE/ACM Transactions on Networking*, vol. Early Access, pp. 1–15, 2025.

[2] **[IEEE/ACM ToN]** X. Wang, X. Wang, R. Zeng, **L. Yan**, D. Wu, Q. He, and M. Huang, "Truthful Padding-Based Auction Mechanisms for Cross-Cloud Link Bandwidth Allocation and Pricing," *IEEE/ACM Transactions on Networking*, vol. Early Access, pp. 1–16, 2025.

[3] **[IEEE TMC] L. Yan**, B. Yang, H. Shen, S. Mahmud, N. Z. Foutz, and J. Anton, "MobiRescue: Optimal Dispatching of Rescue Teams under Flooding Disasters," *IEEE Transactions on Mobile Computing*, vol. 24, no. 10, pp. 10 622–10 639.

[4] **[IEEE TMC]** G. Yue, **L. Yan**, L. Kang, and C. Shen, "AdapLDP-FL: An Adaptive Local Differential Privacy for Federated Learning," *IEEE Transactions on Mobile Computing*, vol. 24, no. 6, pp. 5569–5583, 2025.

[5] **[IEEE TMC]** Z. Zhang and **L. Yan**, "A Dispatching Strategy of Autonomous Robotic Charger Boats for Charging Electric Vessels," *IEEE Transactions on Mobile Computing*, vol. 23, no. 11, pp. 10 429–10 442, 2024.

[6] **[IEEE IoT-J]** J. Han and **L. Yan**, "Adaptive Batch Homomorphic Encryption for Joint Federated Learning in Cross-Device Scenarios," *IEEE Internet of Things Journal*, vol. 11, no. 6, pp. 9338–9354, 2023.

[7] C. Heine, K. P. O'Keeffe, P. Santi, **L. Yan**, and C. Ratti, "Travel Distance, Frequency of Return, and the Spread of Disease," *Scientific Reports*, vol. 13, no. 1, p. 14064, 2023.

[8] **[IEEE TMC] L. Yan**, H. Shen, L. Kang, J. Zhao, Z. Zhang, and C. Xu, "MobiCharger: Optimal Scheduling for Cooperative EV-to-EV Dynamic Wireless Charging," *IEEE Transactions on Mobile Computing*, vol. 22, no. 12, pp. 6889–6906, 2022.

[9] **[IEEE IoT-J] L. Yan**, H. Shen, L. Kang, J. Zhao, Z. Zhang, and C. Xu, "CD-Guide: A Dispatching and Charging Approach for Electric Taxicabs," *IEEE Internet of Things Journal*, vol. 9, no. 23, pp. 23 302–23 319, 2022.

[10] **[IEEE IoT-J] L. Yan**, H. Shen, J. Zhao, C. Xu, F. Luo, C. Qiu, Z. Zhang, and S. Mahmud, "CatCharger: Deploying In-Motion Wireless Chargers in a Metropolitan Road Network via Categorization and Clustering of Vehicle Traffic," *IEEE Internet of Things Journal*, vol. 9, no. 12, pp. 9525–9541, 2021.

[11] **[IEEE TMC] L. Yan**, H. Shen, K. Chen, and G. Liu, "MobileCopy: Improving Data Availability and File Search Efficiency in Delay Tolerant Networks Against Correlated Node Failure," *IEEE Transactions on Mobile Computing*, vol. 20, no. 1, pp. 188–203, 2021.

[12] **[ACM TCPS] L. Yan** and H. Shen, "Utilizing Game Theory to Optimize In-Motion Wireless Charging Service Efficiency for Electric Vehicles," *ACM Transactions on Cyber-Physical Systems*, vol. 5, no. 2, pp. 1–26, 2021.

[13] **[ACM TCPS] L. Yan** and H. Shen, "TOP: Optimizing Vehicle Driving Speed With Vehicle Trajectories for Travel Time Minimization and Road Congestion Avoidance," *ACM Transactions on Cyber-Physical Systems*, vol. 4, no. 2, pp. 1–25, 2019.

[14] **[IEEE ToN] L. Yan**, H. Shen, and K. Chen, "MobiT: Distributed and Congestion-Resilient Trajectory-Based Routing for Vehicular Delay Tolerant Networks," *IEEE/ACM Transactions on Networking*, vol. 26, no. 3, pp. 1078–1091, 2018.

[15] **[IEEE ToN] L. Yan**, H. Shen, and K. Chen, "TSearch: Target-Oriented Low-Delay Node Searching in DTNs With Social Network Properties," *IEEE/ACM Transactions on Networking*, vol. 24, no. 6, pp. 3841–3855, 2016.

[16] **[IEEE TITS]** K. C. Dey, **L. Yan**, X. Wang, Y. Wang, H. Shen, M. Chowdhury, L. Yu, C. Qiu, and V. Soundararaj, "A Review of Communication, Driver Characteristics, and Controls Aspects of Cooperative Adaptive Cruise Control (CACC)," *IEEE Transactions on Intelligent Transportation Systems*, vol. 17, no. 2, pp. 491–509, 2015.

[17] **[IEEE TPDS]** K. Chen, H. Shen, and **L. Yan**, "Efficient File Search in Delay Tolerant Networks With Social Content and Contact Awareness," *IEEE Transactions on Parallel and Distributed Systems*, vol. 27, no. 7, pp. 1982–1995, 2015.

[18] **[IEEE TMC]** K. Chen, H. Shen, and **L. Yan**, "DSearching: Using Floating Mobility Information for Distributed Node Searching in DTNs," *IEEE Transactions on Mobile Computing*, vol. 15, no. 1, pp. 121–136, 2015.

[19] **[IEEE TPDS]** K. Chen, H. Shen, and **L. Yan**, "Multicent: A Multifunctional Incentive Scheme Adaptive to Diverse Performance Objectives for DTN Routing," *IEEE Transactions on Parallel and Distributed Systems*, vol. 26, no. 6, pp. 1643–1653, 2014.

Professional Services

- **Organizer**
  1. International Conference on Advanced Data Mining and Applications, 2025, TPC Member
  2. IEEE World Forum on Public Safety Technology, 2024, TPC Member

3. IEEE International Conference on Computer Communications and Networks, 2022, TPC Member
4. ACM/IEEE Conference on Internet of Things Design and Implementation, 2021, Publication Chair

- **Journal Reviewer**
  1. IEEE Transactions on Mobile Computing (IEEE TMC)
  2. IEEE Transactions on Intelligent Transportation Systems (IEEE TITS)
  3. IEEE Transactions on Services Computing (IEEE TSC)
- **Conference Reviewer**
  1. USENIX Annual Technical Conference (USENIX ATC), 2018
  2. IEEE International Conference on Computer Communications (INFOCOM), 2014, 2017, 2018
  3. IEEE International Conference on Network Protocols (ICNP), 2014, 2016
  4. IEEE International Conference on Distributed Computing Systems (ICDCS), 2017
  5. IEEE International Parallel & Distributed Processing Symposium (IPDPS), 2017