

Dr. Dongjie Wang

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EXECUTIVE SUMMARY

My research and teaching have been recognized by: 1) Winning three best paper (runner-up, finalist) awards: ACM SIGSpatial20 Best Paper Runner-up, and two IEEE ICDM21 Best Paper Finalist; 2) Receiving one university-level award: UCF Doctoral Research Support Award; 3) Publishing over 25 papers in prestigious proceedings such as NeurIPS, KDD, AAAI, TKDE; 4) Mentoring four graduate students (Master's and Ph.D. level) to publish papers at esteemed conferences including ICDM, PAKDD, and SDM.

RESEARCH INTERESTS

General Interests: data mining, machine learning, interdisciplinary applications

Recent Focuses: data-centric AI, causal learning and root cause analysis, spatial-temporal data mining, anomaly detection, user profiling and recommendation

EDUCATION

Ph.D., Computer Science, University of Central Florida, 2020.01-Present.

M.E., Software Engineering, Southwest Jiaotong University, 2016.09-2019.06

B.E., Computer Science, Sichuan University, 2012.09-2016.06

HONORS

- **2021 IEEE ICDM Best Paper Finalist Award (Top 1%)**, for the paper "Deep Human-guided Conditional Variational Generative Modeling for Automated Urban Planning", published at IEEE Conference on Data Mining (ICDM'21), 2021
- **2021 IEEE ICDM Best Paper Finalist Award (Top 1%)**, for the paper "Efficient Reinforced Feature Selection via Early Stopping Traverse Strategy", published at IEEE Conference on Data Mining (ICDM'21), 2021
- **2020 ACM SIGSpatial Best Paper Runner-Up Award (Top 1%)**, for the paper "Reimagining City Configuration: Automated Urban Planning via Adversarial Learning", published at 28th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL'20), 2020
- **2022 UCF Doctoral Research Support Award**
- 2018 Dell EMC Mars Data Challenge Hackathon (Chengdu, China): Second Place

PROFESSIONAL EXPERIENCES

Research Intern, Data Science and Security Department
NEC Laboratories America Inc., August 2023 - December 2022

Research Intern, Bell Labs Solution Research Department
Nokia Bell Labs, May 2023 - July 2023

Research Intern, Data Science and Security Department
NEC Laboratories America Inc., May 2022 - August 2022

Research Intern, JD Group Silicon Valley Research Center
JD.com Inc., May 2021 - August 2021

Algorithm Engineer, Recommendation Algorithm Technology Center
JOYY Inc., July 2019 - December 2019

Research Intern, Urban and Social Computing Group
Jingdong Digits Technology Holding Co., Ltd., August 2018 - December 2018

SELECTED PUBLICATIONS

Refereed Journal Publications

I have published more than 25 papers in top data mining and machine learning journals and conference proceedings, including TKDE, TIST, KAIS, TKDD, NeurIPS, KDD, AAAI, WWW, ICDM, SDM, SIGSPATIAL. I received the Best Paper Runner-up Award at the SIGSpatial'20 and the Best Paper Finalist at ICDM'21.

1. [TKDE] **Dongjie Wang**, Pengyang Wang, Yanjie Fu, Kunpeng Liu, Hui Xiong, Charles Hughes. "Reinforced Imitative Graph Learning for Mobile User Profiling," in IEEE Transactions on Knowledge and Data Engineering (2023). Page(s): 1 - 13. DOI: 10.1109/TKDE.2023.3270238. Date of Publication: 25 April 2023.
2. [KAIS] **Dongjie Wang**, Kunpeng Liu, Yanyong Huang, Leilei Sun, Bowen Du, Yanjie fu. "Automated Urban Planning aware Spatial Hierarchies and Human Instructions," in Knowledge and Information Systems 65, no. 3 (2023): 1337-1364. (**Honor of ICDM Best**) DOI: 10.1007/s10115-022-01801-6. Date of Publication: 29 November 2022.
3. [TSAS] **Dongjie Wang**, Yanjie Fu, Kunpeng Liu, Fanglang Chen, Pengyang Wang, Chang-Tien Lu. "Automated Urban Planning for Reimagining City Configuration via Adversarial Learning: Quantification, Generation, and Evaluation," in ACM Transactions on Spatial Algorithms and Systems 9, no. 1 (2023): 1-24. DOI: 10.1145/3524302.
4. [TBD] **Dongjie Wang**, Kunpeng Liu, Hui Xiong, Yanjie Fu. "Online POI Recommendation: Learning Dynamic Geo-Human Interactions in Streams," in IEEE Transactions on Big Data, vol. 9, no. 3, pp. 832-844, 1 June 2023, DOI: 10.1109/TBDDATA.2022.3215134.
5. [Frontiers in Big Data] **Dongjie Wang**, Kunpeng Liu, David Mohaisen, Pengyang Wang, Chang-Tien Lu, Yanjie Fu. "Towards Semantically-rich Spatial Network Representation Learning via Automated Feature Topic Pairing," in Frontiers in Big Data 4:762899. DOI: <https://doi.org/10.3389/fdata.2021.762899>. Date of Publication: 20 October 2021.
6. [TKDE] Yanyong Huang, Zongxin Shen, Yuxin Cai, Xiuwen Yi, **Dongjie Wang**, Fengmao Lv, Tianrui Li. "C²IMUFS: Complementary and Consensus Learning-based Incomplete Multi-view Unsupervised Feature Selection," in IEEE Transactions on Knowledge and Data Engineering, vol. 35, no. 10, pp. 10681-10694, 1 Oct. 2023, DOI: 10.1109/TKDE.2023.3266595.
7. [Frontiers] Fanglan Chen, **Dongjie Wang**, Shuo Lei, Jianfeng He, Yanjie Fu, and Chang-Tien Lu. "Adaptive Graph Convolutional Imputation Network for Environmental Sensor Data Recovery," in Frontiers in Environmental Science 10 (2022): 2120.
8. [KAIS] Kunpeng Liu, **Dongjie Wang**, Wan Du, Dapeng Oliver Wu, Yanjie Fu. "Interactive Reinforced Feature Selection with Traverse Strategy," in Knowledge and Information Systems 65, no. 3 (2023): 1935–1962. (**Honor of ICDM Best**) DOI: 10.1007/s10115-022-01812-3. Date of Publication: 21 January 2023.
9. [TIST] Lu Jiang, Kunpeng Liu, Yibin Wang, **Dongjie Wang**, Pengyang Wang, Yanjie Fu, and Minghao Yin. "Reinforced Explainable Knowledge Concept Recommendation in MOOCs," in ACM Transactions on Intelligent Systems and Technology 14, no. 3 (2023): 1-20. DOI: 10.1145/3579991. Date of Publication: 01 April 2023.
10. [Frontiers in Big Data] Pengyang Wang, Kunpeng Liu, **Dongjie Wang**, Yanjie Fu. "Measuring Urban Vibrancy of Residential Communities Using Big Crowdsourced Geotagged Data," in Frontiers in big Data, 4:690970. DOI: 10.3389/fdata.2021.690970. Accepted: 12 May 2021; Date of Publication: 10 June 2021.
11. [KBS] Wei Zhou, Yan Yang, Yiling Zhang, **Dongjie Wang**, Xiaobo Zhang. "Deep Flexible Structured Spatial-Temporal Model for Taxi Capacity Prediction," in Knowledge-Based Systems, vol. 205, pp. 106286, (2020): 0950-7051, DOI: 10.1016/j.knosys.2020.106286. Date of Publication: 12 October 2020.

Peer-reviewed Conference Proceedings

1. [NeurIPS] **Dongjie Wang**, Meng Xiao, Min Wu, Pengfei Wang, Yuanchun Zhou, Yanjie Fu. Reinforcement-Enhanced Autoregressive Feature Transformation: Gradient-steered Search in Continuous Space for Postfix Expressions. The 37-th Conference on Neural Information Processing Systems, 2023. (Spotlight)
2. [KDD] **Dongjie Wang**, Zhengzhang Chen, Yanjie Fu, Yanchi Liu, and Haifeng Chen. Incremental Causal Graph Learning for Online Unsupervised Root Cause Analysis. The 29th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2023), pp. 2269–2278, Long Beach, 2023.
3. [KDD] **Dongjie Wang**, Zhengzhang Chen, Jingchao Ni, Liang Tong, Zheng Wang, Yanjie Fu, and Haifeng Chen. Interdependent Causal Networks for Root Cause Localization. The 29th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2023), pp. 5051-5060, Long Beach, 2023.
4. [AAAI] **Dongjie Wang**, Lingfei Wu, Denghui Zhang, Jingbo Zhou, Leilei Sun, and Yanjie Fu. Human-instructed Deep Hierarchical Generative Learning for Automated Urban Planning. In Proceedings of the 37th AAAI Conference on Artificial Intelligence, Vol. 37, No. 4, pp. 4660-4667, Washington DC, 2023.
5. [KDD] **Dongjie Wang**, Yanjie Fu, Kunpeng Liu, Xiaolin Li, Yan Solihin. Group-wise Reinforcement Feature Generation for Optimal and Explainable Representation Space Reconstruction. The 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2022), pp. 1826-1834, 2022.
6. [AAAI] **Dongjie Wang**, Pengyang Wang, Kunpeng Liu, Yuanchun Zhou, Charles Hughes, and Yanjie Fu. Reinforced Imitative Graph Representation Learning for Mobile User Profiling: An Adversarial Training Perspective. In Proceedings of The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI-2021), pp. 4410-4417, Virtual Event, 2021.
7. [ICDM] **Dongjie Wang**, Kunpeng Liu, Pauline Johnson, Leilei Sun, Bowen Du, Yanjie Fu. Deep Human-guided Conditional Variational Generative Modeling for Automated Urban Planning. The 2021 IEEE International Conference on Data Mining (ICDM-2021), pp: 679-688. December 7-10, 2021. Virtual Event. (Best Paper Finalist)
8. [SIGSpatial] **Dongjie Wang**, Kunpeng Liu, David Mohaisen, Pengyang Wang, Chang-Tien Lu, Yanjie Fu. Automated Feature-Topic Pairing: Aligning Semantic and Embedding Spaces in Spatial Representation Learning. The 29th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, pp. 450-453, Beijing, 2021.
9. [ICDM] **Dongjie Wang**, Pengyang Wang, Jingbo Zhou, Leilei Sun, Bowen Du, Yanjie Fu. Defending Water Treatment Networks: Exploiting Spatio-temporal Effects for Cyber Attack Detection. In Proceedings of the 20th IEEE International Conference on Data Mining (ICDM-2020), pp. 32-41, 2020. Sorrento, Italy.
10. [SIGSpatial] **Dongjie Wang**, Yanjie Fu, Pengyang Wang, Bo Huang, and Chang-Tien Lu. "Reimagining City Configuration: Automated Urban Planning via Adversarial Learning." In Proceedings of the 28th International Conference on Advances in Geographic Information Systems, pp. 497-506, 2020. Virtual Event. (Best Paper Runner-up)
11. [IJCNN] **Dongjie Wang**, Yan Yang, Shangming Ning. DeepSTCL: A Deep Spatio-temporal ConvLSTM for Travel Demand Prediction. In Proceedings of 2018 International Joint Conference on Neural Networks, pp. 1-8, Brazil.
12. [ICDM] Kunpeng Liu, Pengfei Wang, **Dongjie Wang**, Wan Du, Dapeng Oliver Wu, Yanjie Fu. The 2021 IEEE International Conference on Data Mining (ICDM), pp: 399-408. December 7-10, 2021. Virtual Event. (Best Paper Finalist)

13. [WWW] Xiting Wang, Kunpeng Liu, **Dongjie Wang**, Le Wu, Yanjie Fu, Xing Xie. Multi-level Recommendation Reasoning over Knowledge Graphs with Reinforcement Learning. In Proceedings of the ACM Web Conference (WWW), pp. 2098-2108, 2022. Virtual Event.
14. [AAAI] Wei Fan, Pengyang Wang, Dongkun Wang, **Dongjie Wang**, Yuanchun Zhou, Yanjie Fu. Dish-TS: A General Paradigm for Alleviating Distribution Shift in Time Series Forecasting. In Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI-2023), pp. 7522-7529, Washington DC, 2023.
15. [SDM] Meng Xiao, **Dongjie Wang**, Min Wu, Ziyue Qiao, Pengfei Wang, Kunpeng Liu, Yuanchun Zhou, and Yanjie Fu. Traceable Automatic Feature Transformation via Cascading Actor-Critic Agents. In Proceedings of the 2023 SIAM International Conference on Data Mining (SDM-2023), pp. 775-783, 2023.
16. [SDM] Pengfei Wang, Daniel Wang, Kunpeng Liu, **Dongjie Wang**, Yuanchun Zhou, Leilei Sun, Yanjie Fu. Hierarchical Reinforced Urban Planning: Jointly Steering Region and Block Configurations. In Proceedings of the 2023 SIAM International Conference on Data Mining (SDM-2023), pp. 343-351, 2023.
17. [PAKDD] Ehtesamul Azim, **Dongjie Wang**, Yanjie Fu. Deep Graph Stream SVDD: Anomaly Detection in Cyber-Physical Systems. In the 26th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-2023), pp 83-95, 2023.
18. [ICDM] Meng Xiao, **Dongjie Wang**, Min Wu, Pengfei Wang, Yuanchun Zhou, Yanjie Fu. Beyond Discrete Selection: Continuous Embedding Space Optimization for Generative Feature Selection. In the 23rd IEEE International Conference on Data Mining (ICDM-2023), 2023.
19. [ICDM] Wangyang Ying, **Dongjie Wang**, Kunpeng Liu, Leilei Sun, and Yanjie Fu. Self-optimizing Feature Generation via Categorical Hashing Representation and Hierarchical Reinforcement Crossing. In the 23rd IEEE International Conference on Data Mining (ICDM-2023), 2023.
20. [ACML] Wei Zhou, Hao Wang, Yiling Zhang, Cheng Long, Yan Yang, **Dongjie Wang**. Multi-scale Progressive Gated Transformer for Physiological Signal Classification. In the 14th Asian Conference on Machine Learning, pp. 1293-1308, 2022.

TEACHING EXPERIENCE

Teaching and Evaluation

I served as a teaching assistant (two semesters) and a guest lecturer (one semester) of the CAP 5610 Machine Learning Course at the University of Central Florida.

- Spring 2023: 101 students (Guest Lecturer)
I introduced the core paradigm of Reinforcement Learning (RL) to students. This involved outlining foundational RL principles, delving into two pivotal algorithms, and illustrating real-world applications, all while weaving insights from my own research to give students a nuanced understanding of both theoretical and practical aspects of RL.
- Spring 2021: 104 students (Teaching Assistant)
I actively contributed to the course design, prepared presentation slides, addressed student questions, and graded assignments, ensuring a good learning experience for students.
- Fall 2020: 55 students (Teaching Assistant)
I actively contributed to the course design, prepared presentation slides, addressed student questions, and graded assignments, ensuring a good learning experience for students.

Mentoring Students

I advised the following four graduate (Master's or Ph.D. level) students to initiate their research projects and delivered several research papers at prestigious data mining conferences.

1. **Pauline Johnson**, Master student, Female, Computer Science, University of Central Florida.
[ICDM] [Dongjie Wang](#), Kunpeng Liu, **Pauline Johnson**, Leilei Sun, Bowen Du, Yanjie Fu. Deep Human-guided Conditional Variational Generative Modeling for Automated Urban Planning. The 2021 IEEE International Conference on Data Mining (ICDM-2021), pp: 679-688. December 7-10, 2021. Virtual Event.
2. **Ehtesamul Azim**, Ph.D. student, Male, Computer Science, University of Central Florida.
[PAKDD] **Ehtesamul Azim**, [Dongjie Wang](#), Yanjie Fu. Deep Graph Stream SVDD: Anomaly Detection in Cyber-Physical Systems. In the 26th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-2023), pp 83-95, 2023.
3. **Meng Xiao**, Ph.D. student, Male, Computer Science, University of CAS.
[SDM] **Meng Xiao**, [Dongjie Wang](#), Min Wu, Ziyue Qiao, Pengfei Wang, Kunpeng Liu, Yuanchun Zhou, and Yanjie Fu. Traceable Automatic Feature Transformation via Cascading Actor-Critic Agents. In Proceedings of the 2023 SIAM International Conference on Data Mining (SDM-2023), pp. 775-783, 2023.
4. **Wangyang Ying**, Ph.D. student, Male, Computer Science, Arizona State University.
[ICDM] **Wangyang Ying**, [Dongjie Wang](#), Kunpeng Liu, Leilei Sun, and Yanjie Fu. Self-optimizing Feature Generation via Categorical Hashing Representation and Hierarchical Reinforcement Crossing. In the 23rd IEEE International Conference on Data Mining (ICDM-2023), 2023.

PROFESSIONAL ACTIVITIES

Program Committee/Senior Program Committee Members/Area Chairs

As a PC member, I provide review comments to my assigned papers.

- The ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2023
- The International Joint Conference on Artificial Intelligence (IJCAI) 2021, 2022, 2023
- The Conference on Information and Knowledge Management (CIKM) 2022, 2023
- The ACM Web Search and Data Mining Conference (WSDM) 2023, 2024
- AAAI Conference on Artificial Intelligence (AAAI) 2023, 2024
- The SIAM International Conference on Data Mining (SDM) 2024

Journal Review

- The Journal of Knowledge-based Systems (KBS)
- The Journal of IEEE Transactions on Big Data (TBD)
- The Journal of IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

Media Coverage

- 2020, UCF Today, Where Artificial Intelligence Meets Urban Planning [link](#)
- 2020, Synced Review, Can AI Reimagine City Configuration and Automate Urban Planning? [link](#)