詹仙园

个人简历

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清华大学智能产业研究院　　个人主页: http://zhanxianyuan.xyz
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研究方向 离线强化学习，离线模仿学习，复杂工业系统控制优化，具身智能，自动驾驶

教育背景

美国普渡大学 交通工程博士 （导师：Satish V. Ukkusuri 教授）	2013/01 – 2017/08
美国普渡大学 计算机科学硕士	2014/01 – 2016/12
美国普渡大学 交通工程硕士	2011/08 – 2012/12
清华大学 土木工程学士	2007/08 – 2011/07

工作经历

副研究员/副教授	2024/12 – 至今
清华大学智能产业研究院	
助理研究员/助理教授	2021/07 – 2024/12
清华大学智能产业研究院	
双聘青年研究员	2022/10 – 至今
上海人工智能实验室	
数据科学家，资深研究员	2018/01 – 2021/06
京东科技，京东智能城市研究院	
副研究员	2017/08 – 2018/01
微软亚洲研究院，北京	
客座研究员	2015/05 – 2015/08
微软亚洲研究院，北京	

荣誉奖励

- 入选北京智源人工智能研究院（BAAI）智源学者　2024
- ICML 2024 Multi-modal Foundation Model meets Embodied AI (MFM-EAI)研讨会杰出论文奖（**两篇论文，通讯作者**）　2024
- 中国自动化学会科技进步奖二等奖　2023
- 入选百度“AI 华人青年学者榜”（AI+X）　2022
- 吴文俊人工智能科学技术奖（科技进步奖三等奖）　2022
- 2019 机器之心人工智能年度奖项三十大最佳 AI 应用案例　2020
- 2018 年中国人工智能峰会（CAIS2018）创新奖　2018
- James S. McDonnell Foundation (JSMF) Postdoctoral Fellowship Award in Studying Complex Systems（**全球范围授予 10 人**）　2016
- 普渡大学 Pai Tao Yeh 奖学金（两次）　2013，2014
- 第五届全国大学生交通科技大赛二等奖　2010
- 清华大学郑格如奖学金　2009
- 清华大学金门奖学金（两次）　2008，2010

学术/技术落地影响

➢ **研究成果：**

- 在数据驱动决策优化（离线强化学习、离线模仿学习等），数据挖掘，城市计算，交通工程等领域发表 70 余篇论文，引用量近 3000，在学术界和工业界产生广泛的影响力。
- 提出的多模态大模型高泛化具身智能决策与控制方法 DecisionNCE (ICML’24), IVM (NeurIPS’24)获 ICML MFM-EAI 研讨会杰出论文奖。
- 研发的开源大模型 OpenChat 及基于 C-RLFT 的轻量级大模型微调方法(OpenChat, ICLR’24)，项目在 GitHub 上星标 5.3k+，Hugging Face 全球趋势榜连续三周位居 Top 5，总共 300K+模型，在国内外引起广泛关注。
- 提出的算法 FISOR (ICLR’24)是安全离线强化学习领域的 SOTA 方法，也是首个可保证硬安全约束满足的方法。

- 提出了隐式价值约束机制(IVR, ICLR'23 oral，前 2%)，为现有多种离线强化学习方向提供了统一的理论解释。
- 首次揭示了对偶形式下离线强化学习方法性能不佳的理论原因（ODICE, ICLR'24 spotlight），并提出解决方法。
- 提出的算法 POR (NeurIPS'22 oral，前 2%), DOGE (ICLR'23), TSRL (NeurIPS'23) 大幅提升了离线策略学习的泛化能力，TSRL 是首个可实现极小样本下高性能离线策略学习的方法。
- 提出的算法 H2O (NeurIPS'22 spotlight)首次提出了离线-在线混合强化学习的新范式。
- 提出的算法 CPQ (AAAI'22)是首篇安全离线强化学习工作，开启了离线强化学习的一个重要的子领域。

➢ 技术落地：

- 带领团队研发了基于离线强化学习的数据中心空调冷却系统节能控制优化技术，已在万国数据的常熟大型数据中心完成了超过 2000+小时的安全运行测试，实现了空调冷却系统 20%的能效提升，可帮助大型数据中心年节省超 60 万度电，产业转化已获无锡市政府 1500 万元应用孵化资金支持。
- 研发了 5G 基站大规模天线阵列权值优化模型，可提高 5G 网络信号覆盖质量超过 5%，已由亚信科技应用于中国移动在全国 5000 余个 5G 基站的信号调优，荣获吴文俊人工智能科技进步奖三等奖。
- 与毫末智行合作研发多项样本高效、高泛化数据驱动决策优化算法，发表于 NeurIPS, ICML, ICLR 等人工智能顶级学术会议，并应用于毫末物流配送车自动驾驶规划模型之中，荣获中国自动化学会科技进步二等奖。
- 带领团队研发了世界首个将离线强化学习应用于火电机组燃烧控制优化的 AI 系统 DeepThermal (AAAI'22)，已产品化落地于国内 6 家大型火电厂，帮助机组年节煤超 3000 吨，引起了能源领域及国内外媒体的广泛关注，荣获 2018 中国人工智能峰会(CAIS 2018)人工智能创新奖和 2019 机器之心人工智能三十大最佳 AI 应用案例。

发表论文

- **共发表论文 73 篇**，会议论文 45 篇，期刊论文 25 篇，书籍章节 3 篇；**42 篇为第一、共同第一、或通讯作者**。
- 论文分类统计：(1) NeurIPS/ICML/ICLR: 18 篇 **(6 篇 oral/spotlight paper, 2 篇 ICML MFM-EAI 研讨会杰出论文奖)**; (2) AAAI/IJCAI/KDD/ECCV: 8 篇; (3) CoRL/RLC/AAMAS/ECAI/ICPP: 5 篇; (4) CCF-A 类/交通/物理领域顶级期刊(IEEE TKDE/TVCG/ITS, TR-Part C, Autom. Constr., PRE): 11 篇; 其他会议/期刊: 28 篇。

➢ 会议论文：

1. Wang, G, Niu, H., Li, J., Jiang, L., Hu, J., **Zhan, X.** Are Expressive Models Truly Necessary for Offline RL? In the *Thirty-Ninth AAAI Conference on Artificial Intelligence (AAAI 2025)*.
2. Li, J, Wang, Z., Zheng, J., Zhou, X., Wang, G., Song, G., Liu, Y., Liu, J., Zhang, Y., **Zhan, X.** Robo-MUTUAL: Robotic Multimodal Task Specification via Unimodal Learning. In the *NeurIPS 2024 Workshop on Open-World Agents (OWA)*
3. Niu, H, Chen, Q., Liu, T., Li, J., Zhou, G., Zhang, Y., Hu, J., **Zhan, X.** xTED: Cross-Domain Adaptation via DiffusionBased Trajectory Editing. In the *NeurIPS 2024 Workshop on Open-World Agents (OWA)*.
4. Mao, L., Xu, H., Zhang, W., **Zhan, X.**, Zhang, A. Diffusion-DICE: In-Sample Diffusion Guidance for Offline Reinforcement Learning. In the *Thirty-Eighth Annual Conference on Neural Information Processing Systems (NeurIPS 2024)*.
5. Zheng, J., Li, J., Cheng, S., Zheng, Y., Li, J., Liu, J., Liu, Y., Liu, J., **Zhan, X.** Instruction-Guided Visual Masking. In the *Thirty-Eighth Annual Conference on Neural Information Processing Systems (NeurIPS 2024)* **(Outstanding paper award of ICML 2024 MFM-EAI Workshop)**.
6. Qin, H., **Zhan, X.**, Li, Y., Zheng, Y. FlexSSL: A Generic and Efficient Framework for Semi-Supervised Learning. In the *27th European Conference on Artificial Intelligence (ECAI-2024)*.
7. Yin, J., **Zhan, X.**, Ji, T., Xu, B., He, Y., Zhang, D., Li, L. Motion Planning Integrated with Vehicle-terrain Interactions for Off-road Autonomous Ground Vehicles. In the *27th IEEE International Conference on Intelligent Transportation Systems (ITSC 2024)*
8. Geng, H., Sun, Y., Li, Y., Leng, J., Zhu, X., **Zhan, X.**, Li, Y., Zhao, F., Liu, Y. TESLA: Thermally Safe, Load-Aware, and Energy-Efficient Cooling Control System for Data Centers. In the *53rd International Conference on Parallel Processing (ICPP 2024)*.
9. Luo, Y., Sun, F., Ji, T., **Zhan, X.** Bidirectional-Reachable Hierarchical Reinforcement Learning with Mutually Responsive Policies. In the *1st Reinforcement Learning Conference (RLC 2024)*.
10. Li, J., Zheng, J., Zheng, Y., Mao, L., Hu, X., Cheng, S., Niu, H., Liu, J., Liu, Y., Liu, J., Zhang, Y. Q., **Zhan, X.**

DecisionNCE: Embodied Multimodal Representations via Implicit Preference Learning. In the *41st International Conference on Machine Learning (ICML 2024)* **(Outstanding paper award of ICML 2024 MFM-EAI Workshop)**.

11. Luo, Y., Ji, T., Sun, F., Zhang, J., Xu, H., **Zhan, X.** OMPO: A Unified Framework for Reinforcement Learning under Policy and Dynamics Shifts. In the *41st International Conference on Machine Learning (ICML 2024)* **(oral)**.
12. Luo, Y., Ji, T., Sun, F., Zhang, J., Xu, H., **Zhan, X.** Offline-Boosted Actor-Critic: Adaptively Blending Optimal Historical Behaviors in Deep Off-Policy RL. In the *41st International Conference on Machine Learning (ICML 2024)*.
13. Ji, T., Luo, Y., Sun, F., **Zhan, X.**, Zhang, J., Xu, H. Seizing Serendipity: Exploiting the Value of Past Success in Off-Policy Actor-Critic. In the *41st International Conference on Machine Learning (ICML 2024)*.
14. Niu, H., Hu, J., Zhou, G., **Zhan, X.** A Comprehensive Survey of Cross-Domain Policy Transfer for Embodied Agents. In the *33rd International Joint Conference on Artificial Intelligence (IJCAI 2024)* **(oral)**.
15. Niu, H., Ji, T., Liu, B., Zhao, H., Zhu, X., Zheng, J., Huang, P., Zhou, G., Hu, J., **Zhan, X.** H2O+: An Improved Framework for Hybrid Offline-and-Online RL with Dynamics Gaps. In *ICLR 2024 Workshop on Data-centric Machine Learning Research (DMLR): Harnessing Momentum for Science*.
16. Mao, L., Xu, H., Zhang, W., **Zhan, X.** Revealing the Mystery of Distribution Correction Estimation via Orthogonal gradient Update. In the *Twelfth International Conference on Learning Representations (ICLR 2024)* **(spotlight)**.
17. Hu, X., Li, J., **Zhan, X.**, Jia, Q., Zhang, Y. Query-Policy Misalignment in Preference-Based Reinforcement Learning. In the *Twelfth International Conference on Learning Representations (ICLR 2024)* **(spotlight)**.
18. Zheng, Y., Li, J., Yu, D., Yang, Y., Li, S., **Zhan, X.**, Liu, J. Safe Offline Reinforcement Learning with Feasibility-Guided Diffusion Model. In the *Twelfth International Conference on Learning Representations (ICLR 2024)*.
19. Wang, G., Cheng, S., **Zhan, X.**, Li, X., Song, S., Liu, Y. OpenChat: Advancing Open-source Language Models with Mixed-Quality Data. In the *Twelfth International Conference on Learning Representations (ICLR 2024)*.
20. Cheng, P.[*], **Zhan, X.**[*], Wu, Z., Zhang, W., Song, S., Wang, H., Lin, Y., Jiang, L. Look Beneath the Surface: Exploiting Fundamental Symmetry for Sample-Efficient Offline Reinforcement Learning. In the *Thirty-seventh Annual Conference on Neural Information Processing Systems (NeurIPS 2023)*.
21. Wang, X., Xu, H., Zheng, Y., and **Zhan, X.** Offline Multi-Agent Reinforcement Learning with Implicit Global-to-Local Value Regularization. In the *Thirty-seventh Annual Conference on Neural Information Processing Systems (NeurIPS 2023)*.
22. Hu, X., Jiang, L., Li, J., Yang, Z., Wang, Z., Chan, V., **Zhan, X.** Offline RL with No OOD Actions: In-Sample Learning via Implicit Value Regularization. In the *Eleventh International Conference on Learning Representations (ICLR 2023)* **(oral)**.
23. Li, J., **Zhan, X.**, Xu, H., Zhu, X., Liu, J., and Zhang, Y. When Data Geometry Meets Deep Function: Generalizing Offline Reinforcement Learning. In the *Eleventh International Conference on Learning Representations (ICLR 2023)*.
24. Li, J., Hu, X., Xu, H., Liu, J., **Zhan, X.**, Jia, Q., Zhang, Y. Mind the Gap: Offline Policy Optimization for Imperfect Rewards. In the *Eleventh International Conference on Learning Representations (ICLR 2023)*
25. Jiang, L., Wang, X., Yang, A., Wang, X., Jin, X., Wang, W., Ye, X., Ouyang, Y., and **Zhan, X.** An Efficient Multi-Agent Optimization Approach for Coordinated Massive MIMO Beamforming. In *IEEE International Conference on Communications (ICC 2023)*
26. Wang, X. and **Zhan, X.** Offline Multi-Agent Reinforcement Learning with Coupled Value Factorization. In the *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2023)* (Extended Abstract).
27. Xu, H., Li, J., Li, J. and **Zhan, X.** A Policy-Guided Imitation Approach for Offline Reinforcement Learning. In the *Thirty-Sixth Annual Conference on Neural Information Processing Systems (NeurIPS 2022)* **(oral)**.
28. Niu, H., Sharma, S., Qiu, Y., Li, M., Zhou, G., Hu, J. and **Zhan, X.** When to Trust Your Simulator: Dynamics-Aware Hybrid Offline-and-Online Reinforcement Learning. In the *Thirty-Sixth Annual Conference on Neural Information Processing Systems (NeurIPS 2022)* **(spotlight)**.
29. Wang, G., Niu, H., Zhu, D., Hu, J., **Zhan, X.**, and Zhou, G. A Versatile and Efficient Reinforcement Learning Framework for Autonomous Driving. In *NeurIPS 2022 Reinforcement Learning for Real Life (RL4RealLife) Workshop.*
30. Zhang, W., Xu, H., Niu, H., Cheng, P., Li, M., Zhou, G., and **Zhan, X.** Discriminator-Guided Model-Based Offline Imitation Learning. In the *6th Annual Conference on Robot Learning (CoRL 2022)*.
31. Yu, Q., Lou, J., **Zhan, X.**, Li, Q., Liu, J., Zuo W. and Liu Y. Adversarial Contrastive Learning via Asymmetric InfoNCE. In the *17th European Conference on Computer Vision (ECCV 2022)*, 17(5), 53-69.

32. Xu, H., **Zhan, X.**, Yin, H., and Qin, H. Discriminator-Weighted Offline Imitation Learning from Suboptimal Demonstrations. In the *Thirty-ninth International Conference on Machine Learning (ICML 2022)*.
33. **Zhan, X.**, Zhu, X. and Xu, H. Model-Based Offline Planning with Trajectory Pruning. In *31st International Joint Conference on Artificial Intelligence (IJCAI 2022)*.
34. **Zhan, X.**, Xu, H., Zhang, Y., Zhu, X. and Yin, H. DeepThermal: Combustion Optimization for Thermal Power Generating Units Using Offline Reinforcement Learning. In the *Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI 2022)*, 36(4), 4680-4688 **(Spotlight paper at ICML 2021 RL4RealLife workshop).**
35. Xu, H., **Zhan, X.**, and Zhu, X. Constraints Penalized Q-Learning for Safe Offline Reinforcement Learning. In the *Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI 2022)*, 36(8), 8753-8760 **(Spotlight paper at ICML 2021 RL4RealLife workshop)**.
36. Xu, H., **Zhan, X.**, Li, J., and Yin, H. Offline Reinforcement Learning with Soft Behavior Regularization. In *NeurIPS 2021 Offline RL Workshop*.
37. Qin, H., **Zhan, X.**, Li, Y., Yang, X. and Zheng, Y. Network-Wide Traffic States Imputation Using Self-interested Coalitional Learning. In the *Twenty-Seventh ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2021)*.
38. Qin, H., Ke, S., Yang, X., Xu, H., **Zhan, X.** and Zheng, Y. Robust Spatio-Temporal Purchase Prediction via Deep Meta Learning. In *Proceedings of the AAAI Conference on Artificial Intelligence 35 (5), 4312-4319 (AAAI 2021)*.
39. Yang, C., Zhang, Y., **Zhan, X.**, Ukkusuri, S. V., and Qiu, W. Activity Chain Inference Using Travel Survey and Mobile Phone data. In *Proceedings of Transportation Research Board Meeting*, Washington D.C., January 2017.
40. Zischg, J., Klinkhamer, C., **Zhan, X.**, Krueger, E., Ukkusuri, S., Rao, P. S. C., Rauch, W. and Sitzenfrei, R. Evolution of Complex Network Topologies in Urban Water Infrastructure. In *World Environmental and Water Resources Congress* 2017, 648-659.
41. **Zhan, X.**, Ukkusuri, S. V. A Probabilistic Urban Link Travel Time Estimation Model Using Large-scale Taxi Trip Data. In *Proceedings of 94th Transportation Research Board Meeting*, Washington D.C., January 2015.
42. **Zhan, X.**, Qian, X., Ukkusuri, S. V. Measuring the Efficiency of Urban Taxi Service System. In P*roceedings of 94th Transportation Research Board Meeting*, Washington D.C., January 2015.
43. Qian, X., **Zhan, X.**, Ukkusuri, S. Characterizing Urban Dynamics Using Large Scale Taxicab Data. In *Proceedings of 93nd Transportation Research Board Meeting*, Washington D.C., January 2014.
44. **Zhan, X.**, Ukkusuri, S. V. Multi-User Class, Simultaneous Route and Departure Time Choice Dynamic Traffic Assignment with an Embedded Spatial Queuing Model. In the *5th International Symposium on Dynamic Traffic Assignment*. Salerno, Italy, June, 2014.
45. Hasan, S., **Zhan, X.**, and Ukkusuri, S. V. Understanding Urban Human Activity Patterns Using Large-scale Location-based Data from Online Social Media. In the *Proceedings of the 2nd ACM SIGKDD International Workshop on Urban Computing*, 2013.

➢ 期刊论文：

1. Liu, S., Weng, D., Tian, Y., Deng, Z., Xu, H., Zhu, X., Yin, H., **Zhan, X.**, Wu, Y., 2023. ECoalVis: Visual Analysis of Control Strategies in Coal-fired Power Plants. *IEEE Transactions on Visualization and Computer Graphics*, 29(1), 1091-1101.
2. Feng, J., Jiang, L., Yu, X., Xu, H., Sun, X., Wang, J., **Zhan, X.**, Chan., W., 2022. Curriculum Goal-conditioned Imitation for Offline Reinforcement Learning. *IEEE Transactions on Games*.
3. Qin, H., **Zhan, X.**, and Zheng, Y. CSCAD: Correlation Structure-based Collective Anomaly Detection in Complex System. *IEEE Transactions on Knowledge and Data Engineering (TKDE).*
4. **Zhan, X.**, Li, R., and Ukkusuri, S. V., 2020. Traffic State Estimation for Arterial Networks Using License-plate Recognition Data. *Transportation Research Part C: Emerging Technologies*, 117, 102660.
5. Yang, C., Zhang, Y., **Zhan, X.**, Ukkusuri, S. V. and Chen, Y., 2020. Fusing Mobile Phone and Travel Survey Data to Model Urban Activity Dynamics. *Journal of Advanced Transportation*.
6. **Zhan, X.**, and Ukkusuri, S. V., 2019. Spatial Dependency of Urban Sprawl and the Underlying Road Network Structure. *Journal of Urban Planning and Development*, 145(4), 04019014.
7. Zischg, J., Klinkhamer, C., **Zhan, X.**, Rao, S. C., and Sitzenfrei, R., 2019 A Century of Topological Co-Evolution of

Complex Infrastructure Networks in an Alpine City. *Complexity*, 2019, 2096749.

8. Gehlot, H., **Zhan, X.**, Qian, X., Thompson, C., Kulkarni, M. and Ukkusuri, S. V., 2018. A-Rescue 2.0: A High Fidelity, Parallel, Agent-based Evacuation Simulator. *Journal of Computing in Civil Engineering*, 33(2), 04018059.
9. **Zhan, X.**, Ukkusuri, S. V., and Rao, S. C., 2017. Dynamics of Functional Failures and Recovery in Complex Road Networks. *Physical Review E*, 96(5), 052301.
10. **Zhan, X.**, and Ukkusuri, S. V., 2017. Multiclass, Simultaneous Route and Departure Time Choice Dynamic Traffic Assignment with an Embedded Spatial Queuing Model. *Transportmetrica B: Transport Dynamics*, doi: 10.1080/21680566 .2017.1354738.
11. Mo, B., Li, R., **Zhan, X.**, 2017. Speed Profile Estimation Using License Plate Recognition Data. *Transportation Research Part C: Emerging Technology*, 82, 358–378.
12. Kreuger, E., Klinkhamer, C., Urich C., **Zhan, X.**, and Rao, S. C., 2017. Generic Patterns in the Evolution of Urban Water Networks: Evidence from a Large Asian City. *Physical Review E*, 95(3), 032312.
13. Li, R. Ye, Z., Li. B. and **Zhan, X.**, 2017. Simulation of Hard Shoulder Running Combined with Queue Warning During Traffic Accident with CTM model. *IET Intelligent Transport Systems*, 11(9), 553-560.
14. **Zhan, X.**, Zheng, Y., Yi, X., and Ukkusuri, S. V., 2016. Citywide Traffic Volume Estimation Using Trajectory Data. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 29(2), 272-285.
15. **Zhan, X.**, Qian, X., Ukkusuri, S. V., 2016. A Graph Based Approach to Measure the Efficiency of Urban Taxi Service System. *IEEE Transactions on Intelligent Transportation Systems*, 17(9), 2479-2489.
16. **Zhan, X.**, Ukkusuri, S., V., Yang, C., 2016. A Bayesian Mixture Model for Short-term Average Link Travel Time Estimation Using Large-scale Limited Information Trip-based Data. *Automation in Construction*, 72(3), 237-246.
17. Mesa-Arango, R., **Zhan, X.**, Ukkusuri, S. V., Mitra, A., 2016. Direct Transportation Economic Impacts of Highway Networks Disruptions Using Public Data from United States. *Journal of Transportation Safety & Security*, 8(1), 36-55.
18. Hasan, S., Ukkusuri, S., **Zhan, X.**, 2016. Understanding Social Influence in Activity-Location Choice and Life-Style Patterns Using Geo-location Data from Social Media. *Frontiers in ICT*, 3:10, doi: 10.3389/fict.2016.00010.
19. Aziz, H. M., Ukkusuri, S., **Zhan, X.**, 2016. Determining the Impact of Personal Mobility Carbon Allowance Schemes in Transportation Networks. *Network and Spatial Economics*, 17(2), 505-545.
20. Ukkusuri, S., Hasan, S., Doan, K., Luong, B., **Zhan, X.**, Murray-Tuite, P., Yin, W., 2016. A-RESCUE: An Agent-based Regional Evacuation Simulator Coupled with User Enriched Behavior. *Network and Spatial Economics*, 17(1), 197-223.
21. **Zhan, X.**, Aziz, H. M., Ukkusuri, S. V., 2015. An Efficient Parallel Sampling Technique for Multivariate Poisson-Lognormal Model: Analysis with Two Crash Count Datasets. *Analytic Methods in Accident Research*, 8, 45-60.
22. **Zhan, X.**, Li, R., Ukkusuri, S. V., 2015. Lane-based Real Time Queue Length Estimation Using License Plate Recognition Data. *Transportation Research Part C: Emerging Technology*, 57, 85-102.
23. **Zhan, X.**, Ukkusuri, S., V., Zhu, F., 2014. Inferring Urban Land Use Using Large-Scale Social Media Check-in Data. *Network and Spatial Economics*, 14, 647-667.
24. **Zhan, X.**, Hasan, S., Ukkusuri, S. V., Kamga, C., 2013. Urban Link Travel Time Estimation Using Large-scale Taxi Data with Partial Information. *Transportation Research Part C: Emerging Technologies*, 33, 37-49.
25. Ukkusuri, S., **Zhan, X.**, Sadri A., Ye, Q., 2013. Exploring Crisis Informatics Using Social Media Data: A Study on 2013 Oklahoma Tornado. *Transportation Research Record*, 2459, 110-118.

- **书籍章节：**

1. **Zhan, X.** *Miscellaneous Topics: Offline Reinforcement Learning*. In Reinforcement Learning for Sequential Decision and Optimal Control. Springer Verlag, Singapore, 2022.
2. Qian, X, **Zhan, X.**, Ukkusuri, S. V. Characterizing Urban Dynamics Using Large Scale Taxicab Data. *Engineering and Applied Sciences Optimization*: Vol. 38, 17-32, Springer International Publishing, 2015.
3. Ukkusuri, S. V., Hasan, S., and **Zhan, X.** Checking the Urban Pulse: Social Media Data Analytics for Transportation Applications. *Best Practices for Transportation Agency Use of Social Media* Data. Taylor and Francis/CRC Press, 2013.

发明专利

- **申请发明专利 57 项，16 项已授权，列表如下：**

1. 自动驾驶训练方法、装置、设备、存储介质及程序产品（CN114372501B，2024-11-29）
2. 一种动力学模型支持的有偏好模仿学习方法及系统（CN115099037B，2024-11-29）
3. 一种基于凸包约束的离线强化学习方法和装置（CN114970881B，2024-08-20）
4. 用于销量数据预测的方法、装置、设备及存储介质（CN113743969B，2024-08-20）
5. 控制模型的训练方法、装置、计算机设备及存储介质（CN113721456B，2024-07-16）
6. 系统的优化控制方法、装置和电子设备（CN113759708B，2024-07-16）
7. 一种汽温控制方法、装置、电子设备和计算机存储介质（CN113885607B，2022-12-27）
8. 火力发电机组燃烧控制优化方法、装置及可读存储介质（CN110888401B，2022-09-06）
9. 磨煤机的控制优化及模型训练的方法、装置、设备和介质（CN112130538B，2022-02-01）。
10. 磨煤机组合运行控制方法、装置、设备及存储介质（CN111389575B，2021-11-02）。
11. 强化学习方法、装置、计算机可读介质及电子设备（CN110533192B，2021-05-04）。
12. 样本池构建方法和装置、以及算法训练方法和装置（CN110717600B，2021-01-26）。
13. 用于燃烧控制的模型训练方法、装置、电子设备以及介质（CN110673485B，2020/11/24）。
14. 磨煤机的控制方法、装置、系统及储存介质（CN1106734788，2020/9/29）。
15. 数据处理方法和装置（CN110490132B，2020/9/29）。
16. 一种交叉口信号灯配时控制优化的方法和装置（CN 108805348B，2020/6/23）。

主题演讲

1. Towards Real-World Deployable Data-Driven Reinforcement Learning. Invited talk at Shanxi University. Aug 2024, Taiyuan.
2. Towards Generalizable and Data-Efficient Embodied Decision-Making. Invited talk at iDLab, Tsinghua University. Jul 2024, Beijing.
3. Towards Generalizable and Data-Efficient Embodied Decision-Making. Invited talk at Workshop on Computational Sustainability in Digital Infrastructure. Jun 2024, NTU, Singapore.
4. Towards Generalizable and Data-Efficient Embodied Decision-Making. Invited talk at ChinaMAS 2024. May 2024, Taiyuan.
5. End-to-End Autonomous Driving: From a Decision-Making Perspective. Talk at Haomo & AIR Open Course. Sep 2023.
6. Offline RL and Beyond: Towards Generalizable Data-Driven Reinforcement Learning. Invited talk at Institute of Automation, Chinese Academy of Sciences. Aug 2023.
7. Data-Driven Decision Making for Real-World Scenarios. Invited talk at UMNI Lab, Purdue University. Apr 2023.
8. Frontiers in Offline RL Research. Invited talk at iDLab, Tsinghua University. Jan 2023, Beijing.
9. Data-Driven Decision Making for Real-World Scenarios. Invited talk at DataFun Summit 2022. Sep 2022, Beijing.
10. Data-Driven Decision Making for Real-World Scenarios. Invited talk at Didi Tech Salon. Aug 2022, Beijing.
11. Data-Driven Decision Making for Real-World Scenarios. Invited talk at Haomo AI Day. Apr 2022, Beijing.
12. DeepThermal: Combustion Optimization for Thermal Power Generating Units Using Offline Reinforcement Learning. Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI2022). Feb 2022.
13. Discriminator-Weighted Offline Imitation Learning from Suboptimal Demonstrations. NeurIPS 2021 Deep RL Workshop. Dec 2021.
14. Podcast interview at “TalkRL: The Reinforcement Learning Podcast” with Robin Chauhan. Aug 30, 2021.
15. Offline RL and Its Potential Applications in Healthcare Decision Making. Guest lecture at DeeCamp 2021. Jun 2021, online.
16. Application of Deep Reinforcement Learning in Control Optimization of Thermal Power Plants. IEEE Services – Industry Symposium. Oct 2020.
17. Urban Computing: Building Intelligent Cities with Big Data and AI. Invited talk at Tsinghua University. Nov 2019, Beijing.
18. Data-driven Methods in Urban Applications: New Problems, New Directions and New Approaches. Invited talk at Tsinghua University. Dec 2018, Beijing.
19. Spatio-Temporal Deep Learning in Intelligent Cities. Smart Cities and Urban Computing Forum, China National Computer Congress (CNCC 2018). Oct 2018, Hangzhou.

20. Data-driven Optimization Models for Logistics in Urban Applications. 3rd Workshop on Applications of the Mathematical Modeling in Enterprises. Jul 2018, University of Chinese Academy of Sciences, Beijing.
21. Data-driven Methods in Urban Transportation Applications. Invited talk at Tsinghua University. Sep 2017, Beijing.
22. A Vertex Split-Recovery Model for Congestion Evolution Process on Road Networks. INFORMS 2016. Nov 2016, Nashville.
23. Traffic State Estimation for Arterial Networks Using License-plate Recognition Data. INFORMS 2016. Nov 2016, Nashville.
24. A Node Split-Recovery Model for Congestion Evolution Process on Road Networks. Resilience Week 2016. Aug 2016, Chicago.
25. A Node Splitting-Recovery Model for Congestion Evolution Process on Road Networks. 4th International Symposium on Water, Feedbacks, and Complexity. Mar 2016, Purdue University.
26. A Bayesian Mixture Model for Short-term Average Link Travel Time Estimation Using Large-scale Limited Information Trip-based Data. INFORMS 2015, Nov 2015, Philadelphia.
27. A Graph-based Approach to Measure the Efficiency of Urban Taxi Service System. INFORMS 2015, Nov 2015, Philadelphia.
28. Measuring the Efficiency of Urban Taxi Service System. KDD 2014 International Workshop on Urban Computing, Aug 2014, New York.
29. Urban Link Travel Time Estimation Using Large-scale Taxi Data with Partial Information. MPE 2013+ Workshop on Sustainable Human Environments. Apr 2014, Rutgers University.
30. Multiclass Dynamic User Equilibrium with a Path Based Cell Transmission Model for General Traffic Networks. INFORMS 2013, Oct 2013, Minneapolis.
31. Real Time Link Travel Time Estimation Using License-plate Recognition Data. INFORMS 2013, Oct 2013, Minneapolis.

学术活动

➢ 国际会议领域主席：

- NeurIPS

➢ 国际会议程序委员和审稿人：

- ICML, ICLR, AAAI, IJCAI, ICRA, AISTATS, IROS, RLC, CCDM, DAI
- IEEE ITSC, CDC, TRB

➢ 国际期刊编委：

- Data Science for Transportation

➢ 国际期刊审稿人：

- IEEE TPAMI, TNNLS, TKDE, TBD, TKDD, ITS, SMC, TMC, TGCN, SPL, Access
- ACM TIST, Expert Systems with Applications, Frontiers of Computer Science, Computers & Industrial Engineering
- Transportation Research Part A, B, C, D, Transportmetrica B, Transportation, Journal of Advanced Transportation, IET ITS, Environment and Planning B
- European Journal of Operational Research, Network and Spatial Economics
- Scientific Report, PLOS One, Journal of Physics: Complexity
- Applied Energy, Sustainable Energy, Grids and Networks

学生指导

➢ 指导/共同指导博士生（清华大学智能产业研究院 AIR）

- 郑一楠（2023-至今），清华大学博士生
- 郑金亮（2023-至今），清华大学博士生
- 李健雄（2021-至今），清华大学博士生

➢ 指导科研实习生（清华大学智能产业研究院 AIR）

- 王志豪（2024-至今），北京大学硕士生
- 刘东岫（2024-至今），北京邮电大学硕士生

- 郑可馨（2024-至今），香港中文大学本科生
- 刘腾龙（2024-至今），国防科技大学博士生
- 成鹏　（2021-至今），北京交通大学博士生
- 牛浩懿（2021-至今），清华大学硕士生
- 毛力源（2023-2024），上海交通大学本科生 (当前：上海交通大学博士生)
- 罗宇　（2022-2024），清华大学博士生
- 嵇天颖（2022-2024），清华大学博士生
- 张文嘉（2021-2024），清华大学博士生
- 王翔森（2022-2023），北京交通大学硕士生 (当前：百度 AI 算法工程师)
- 姜力　（2021-2022），清华大学硕士生 (当前：McGill University 博士生)
- 席维叶（2021-2022），清华大学本科生 (当前：Columbia University 博士生)
- 邱亦文（2021-2022），清华大学本科生 (当前：CMU 硕士生)
- 王勇　（2021），北京理工大学博士生

➢ **指导科研实习生（微软亚洲研究院 & 京东智能城市研究院）**

- 秦慧琳（2017-2021），西安电子科技大学博士生 (当前：北京师范大学广州分校助理教授)
- 徐浩然（2018-2021），西安电子科技大学硕士生 (当前：UT Austin 博士生)

实践经历

• IEEE Member	2020 – 至今
• ACM Member	2023 – 至今
• 中国计算机学会智能汽车分会（CCF-IV）执行委员	2021 – 至今
• 中国计算机学会人工智能及模式识别专委会（CCF-AI）委员	2018 – 至今
• 中国计算机学会（CCF）会员	2018 – 至今
• 普渡大学交通工程协会会员	2011 – 2017
• INFORMS 普渡大学分会会员	2013– 2017
• 普渡大学清华校友会副主席	2012 – 2014