Sijie RUAN (阮思捷)

Tel: +86-185-1016-8967
Email: sjruan@bit.edu.cn
Address: No. 5 Zhongguancun South Street, Haidian District, Beijing, China

SHORT BIO

Dr. Sijie RUAN is currently an Assistant Professor and Special Research Associate of Beijing Institute of Technology (BIT). His research interests include spatio-temporal data mining, and GeoAI. He has authored more than 50 referred publications at prestigious international conferences and journals (ICML, AAAI, TKDE, KDD, ICDE) with 22 papers as the primary authors and 1500+ citations. He was awarded SIGSPATIAL **Best Demo Paper Award twice**. He leads **5 national or provincial grants** and serves as **Senior Area Chairs** for KDD, and **Session Chairs** for ICDE and UrbComp. He received **Science and Technology Progress Award (First Prize)** of Chinese Institute of Command and Control, **Outstanding Ph.D. Thesis Award** of ACM SIGSPATIAL CHN Chapter, and **Doctoral Dissertation Incentive Program** of Chinese Institute of Electronics.

WORKING EXPERIENCE

- **School of Computer Science and Technology, Beijing Institute of Technology** — Beijing, China
  Assistant Professor and Special Research Associate — *Jul. 2022 – Present*
- **JD Intelligent Cities Research, JD.com** — Beijing, China
  Research Intern — *Jan. 2018 – Jun. 2021*
- **School of Computer Science and Technology, Xidian University** — Xi'an, Shaanxi, China
  Teaching Assistant — *Sept. 2017 – Nov. 2017*
- **Urban Computing Group, Microsoft Research Asia** — Beijing, China
  Research Intern — *Jul. 2016 – Aug. 2017*

EDUCATION EXPERIENCE

- **School of Computer Science and Technology, Xidian University** — Xi'an, Shaanxi, China
  Ph.D. in Computer Science; Advisor: Prof. Yu Zheng (IEEE Fellow) — *Sept. 2017 – Jun. 2022*
- **School of Computer Sci. and Eng., Nanyang Technological University** — Singapore
  Visiting Ph.D. Student; Advisor: Assoc. Prof. Cheng Long — *Sept. 2019 – Apr. 2022*
- **School of Computer Science and Technology, Xidian University** — Xi'an, Shaanxi, China
  Bachelor of Engineering in Computer Science; Excellent Class; Rank: 1/29 — *Aug. 2013 – Jul. 2017*

GRANTS

Research Grants

- **Guizhou Provincial Key Technology R&D Program**, (PA[2025]002), CNY¥2.00M, 2024.04-2027.03, **PI**.
- **National Natural Science Foundation of China**, Research on Methods for Fine-grained Geographical Information Collecting and Urban Space Modeling Driven by Spatio-temporal Big Data (62306033), CNY¥300K, 2024.01-2026.12, **PI**.

- **National Key Research and Development Program of China**, (2023YFC3321505), CNY¥1.10M, 2023.11-2026.10, **Co-PI**.
- **National Key Research and Development Program of China**, Research on Intelligent Methods for Societal-Data-Driven Governance of Major Infectious Disease Transmission Risks (2023YFC2308703), CNY¥350K, 2023.12-2026.11, **Co-PI**.
- **State Scholarship Fund**, Real-time Delivery Time Prediction Based on Couriers' Trajectories (202006960044), 2021.09-2022.04, USD$24K, **PI**.
- **Beijing Institute of Technology Research Fund Program for Young Scholars**, Research on Methods of Crowd-sourced Spatio-temporal Data-centric Urban Geospatial Entity Understanding (6120220113), CNY¥400K, 2022.07-2025.12, **PI**.

- **Beijing Institute of Technology Library Research Fund (Key Program)**, Research on Algorithms of Personalized Article Recommendation Based on Multi-sourced Data Fusion, 2023.07-2024.06, CNY$10K, **PI**.

Education Grants

- **Industry-Academia Cooperation Collaborative Education Program of Ministry of Education**, Teaching Method Reform on Data Science and Algorithms Based on KQGIS, CNY¥50K, 2024.1-2024.12, **PI**.

PROFESSIONAL APPOINTMENTS

- **Senior Area Chair:** KDD (2026)
- **Session Chair:** ICDE (2024), UrbComp (2021)
- **Publicity Chair:** UrbComp (2024, 2025)
- **Executive Committee Member:** CCF Expert Committee on Big Data, ACM SIGSPATIAL CHN Chapter, Health Statistics and Applications of Big Data of Beijing Association of Preventive Medicine
- **Journal Reviewer:** TKDE, TMC, INS, IMWUT, TITS, TGIS, CJE, TIST, TBD, TDS
- **Program Committee:** KDD (2023-2026), NeurIPS (2024-2025), ICLR (2025-2026), WWW (2025), AAAI (2021, 2026), CIKM (2022-2025)

HONORS AND AWARDS

[H1] **The 1st Place Award of Travel Planning Challenge**: IJCAI, 2025
[H2] **Doctoral Dissertation Incentive Program**: Chinese Institute of Electronics, 2024
[H3] **The 1st Prize in Science and Technology Progress Award**: Chinese Institute of Command and Control, 2023
[H4] **Outstanding Ph.D. Thesis Award**: ACM SIGSPATIAL CHN Chapter, Only one in China, 2022
[H5] **National Scholarship**: Ministry of Education of P.R.C., 0.2%, 2020, 2017, 2016 (3 times)
[H6] **Best Demo Paper Award**: ACM SIGSPATIAL, 1/27, 2021
[H7] **Best Demo Paper Runners-up**: ACM SIGSPATIAL, 2017
[H8] **Graduate Principal Award Nomination**: Xidian University, Only 10 in the university, 0.1%, 2021
[H9] **Outstanding Graduates**: Education Department of Shaanxi Province, 1%, 2022
[H10] **The 3rd Prize in JD Outstanding Patent**: JD Group, 4/436, 2021
[H11] **The 2nd Prize in "TanSuo" Cup Patent Competition**: JD Digits, 2/434, 2020
[H12] **The 2nd Prize in JDD Hackathon**: JD Digits, 2/238, 2019
[H13] **The 4th Prize in Global Optimization Challenge**: JD Logistics, 4/46, 2018

BOOKS

[B1] Translated by Xin Zou, **Sijie Ruan**, Zhiyi Liu, Shuliang Wang. *Deep Learning: Foundations and Concepts (in Chineses)*. Posts & Telecommunications Press.

PUBLICATIONS (PRIMARY AUTHORS)

[P1] **Sijie Ruan**, Yiqing Zou, Qianyu Yang, Haoyu Han, Yeting Zhang, Ziqiang Yuan, Hanning Yuan, Shuliang Wang. *Spatial Hierarchical Meta-Learning for Single-Point Map Matching.* **KDD'25**.
[P2] Kaijun Liu, **Sijie Ruan**[†], Liang Zhang, Cheng Long, Shuliang Wang, Liang Yu. *Generative Human Trajectory Recovery via Embedding-Space Conditional Diffusion.* **ICML'25**.
[P3] Huaxu Han, Shuliang Wang, **Sijie Ruan**[†], Qianyu Yang, Yuxuan Liang, Ziqiang Yuan, Cheng Long, Hanning Yuan, Yu Zheng. *AdaMove: Efficient Test-Time Adaptation for Human Mobility Prediction.* **ICDE'25**.
[P4] Shuliang Wang, Jiabao Zhu, Yi Wang, Chen Ma[†], Xin Zhao, Yansen Zhang, Ziqiang Yuan, **Sijie Ruan**[†]. *Hierarchical Gating Network for Cross-Domain Sequential Recommendation.* **TOIS**, 2025.
[P5] Shuliang Wang, Qianyu Yang, **Sijie Ruan**[†], Cheng Long, Ye Yuan, Qi Li, Ziqiang Yuan, Jie Bao, Yu Zheng. *Spatial Meta Learning with Comprehensive Prior Knowledge Injection for Service Time Prediction.* **TKDE**, 2025.
[P6] Shuliang Wang, Xinyu Pan, **Sijie Ruan**[†], Haoyu Han, Ziyu Wang, Hanning Yuan, Jiabao Zhu, Qi Li. *DiffCrime: A Multimodal Conditional Diffusion Model for Crime Risk Map Inference.* **KDD'24**.
[P7] Shuliang Wang, Song Tang, **Sijie Ruan**[†], Cheng Long, Yuxuan Liang, Qi Li, Ziqiang Yuan, Jie Bao, Yu Zheng. *Urban Sensing for Multi-Destination Workers via Deep Reinforcement Learning.* **ICDE'24**.
[P8] Shuliang Wang, Ziyu Wang, **Sijie Ruan**[†], Haoyu Han, Keqin Xiong, Hannning Yuan, Ziqiang Yuan, Guoqing Li, Jie Bao, Yu Zheng. *DelvMap: Completing Residential Roads in Maps Based on Couriers' Trajectories and Satellite Imagery.* **TGRS**, 2024.
[P9] **Sijie Ruan**, Cheng Long, Jie Bao, Chunyang Li, Zisheng Yu, Ruiyuan Li, Yuxuan Liang, Tianfu He, Yu Zheng. *Learning to Generate Maps from Trajectories.* **AAAI'20**.
[P10] **Sijie Ruan**, Cheng Long, Xiaodu Yang, Tianfu He, Ruiyuan Li, Jie Bao, Yiheng Chen, Shengnan Wu, Jiangtao Cui, Yu Zheng. *Discovering Actual Delivery Locations from Mis-Annotated Couriers' Trajectories.* **ICDE'22**.

[P11] **Sijie Ruan**, Zi Xiong, Cheng Long, Yiheng Chen, Jie Bao, Tianfu He, Ruiyuan Li, Shengnan Wu, Zhongyuan Jiang, Yu Zheng. *Doing in One Go: Delivery Time Inference Based on Couriers' Trajectories.* **KDD'20**.

[P12] **Sijie Ruan**, Xi Fu, Cheng Long, Zi Xiong, Jie Bao, Ruiyuan Li, Yiheng Chen, Shengnan Wu, Yu Zheng. *Filling Delivery Time Automatically Based on Couriers' Trajectories.* **TKDE**, 2023.

[P13] **Sijie Ruan**, Cheng Long, Zhipeng Ma, Jie Bao, Tianfu He, Ruiyuan Li, Yiheng Chen, Shengnan Wu, Yu Zheng. *Service Time Prediction for Delivery Tasks via Spatial Meta-Learning.* **KDD'22**.

[P14] **Sijie Ruan**, Jie Bao, Yuxuan Liang, Ruiyuan Li, Tianfu He, Chuishi Meng, Yanhua Li, Yingcai Wu, Yu Zheng. *Dynamic Public Resource Allocation Based on Human Mobility Prediction.* **UbiComp'20**.

[P15] **Sijie Ruan**, Keqin Xiong, Shuliang Wang, Jing Geng, Jie Bao, Yu Zheng. *A Survey of Urban Geographic Information Inference Driven by Crowdsourced Spatio-Temporal Data (in Chinese).* **Acta Electronica Sinica**, 2023.

[P16] Zhenghong Wang*, **Sijie Ruan***, Tianqiang Huang*, Haoyi Zhou, Shanghang Zhang, Yi Wang, Leye Wang, Yu Liu. *A Lightweight Multi-Layer Perceptron for Efficient Multivariate Time Series Forecasting.* **KBS**, 2024.

[P17] Xiaodu Yang, **Sijie Ruan**[†], Yinliang Yue, Bo Sun[†]. *Plaintext-aware Encrypted Traffic Detection Network for Identifying Cobalt Strike HTTPS Traffics.* Computer Networks, 2024.

[P18] Yue Hu, **Sijie Ruan**[†], Yuting Ni, Huajun He, Jie Bao, Ruiyuan Li, Yu Zheng. *SALON: A Universal Stay Point-Based Location Analysis Platform (Demo Paper).* SIGSPATIAL'21 (**Best Demo Paper Award**).

[P19] Kaijun Liu, **Sijie Ruan**[†], Cheng Long, Liang Yu. *Modeling On-road Trajectories with Multi-task Learning.* TKDD, 2024.

[P20] Xiaodu Yang, **Sijie Ruan**[†], Jinyu Li, Yinliang Yue, Bo Sun[†]. *TrafCL: Robust Encrypted Malicious Traffic Detection via Contrastive Learning.* CIKM'24, 2024.

[P21] **Sijie Ruan**, Ruiyuan Li, Jie Bao, Tianfu He, Yu Zheng. *CloudTP: A Cloud-based Flexible Trajectory Preprocessing Framework (Demo Paper).* **ICDE'18**.

[P22] Huimin Ren, **Sijie Ruan**[†], Ye Yuan, Yanhua Li[†], Jie Bao, Tianfu He, Huajun He, Chuishi Meng, Yu Zheng. *A Novel Approach for Company Real Workplace Identification via E-commercial Data (Short Paper).* SIGSPATIAL'23.

OTHER PUBLICATIONS (BY AUTHOR ORDER)

[O1] Huimin Ren, **Sijie Ruan**, Yanhua Li, Jie Bao, Chuishi Meng, Ruiyuan Li, Yu Zheng. *MTrajRec: Map-Constrained Trajectory Recovery via Seq2Seq Multi-task Learning.* **KDD'21**.

[O2] Qianxiong Xu, **Sijie Ruan**, Cheng Long, Liang Yu, Chen Zhang. *Traffic Speed Imputation with Spatio-Temporal Attentions and Cycle-Perceptual Training.* CIKM'22.

[O3] Ruiyuan Li, **Sijie Ruan**, Jie Bao, Yanhua Li, Yingcai Wu, Liang Hong, Yu Zheng. *Efficient Path Query Processing over Massive Trajectories on the Cloud.* TBD, 2018.

[O4] Kaijun Liu, **Sijie Ruan**, Qianxiong Xu, Cheng Long, Nan Hu, Nan Xiao, Liang Yu, Sinno Pan. *Modeling Trajectories with Multi-task Learning (Short Paper).* MDM'22.

[O5] Ruiyuan Li, **Sijie Ruan**, Jie Bao, Yanhua Li, Yingcai Wu, Yu Zheng. *Querying Massive Trajectories by Path on the Cloud (Short Paper).* SIGSPATIAL'17.

[O6] Ruiyuan Li, **Sijie Ruan**, Jie Bao, Yu Zheng. *A Cloud-Based Trajectory Data Management System (Demo Paper).* SIGSPATIAL'17 (**Best Demo Paper Runners-up**).

[O7] Huajun He, Ruiyuan Li, **Sijie Ruan**, Tianfu He, Jie Bao, Tianrui Li, Yu Zheng *TraSS: Efficient Trajectory Similarity Search Based on Key-Value Data Stores.* **ICDE'22**.

[O8] Jie Bao, Tianfu He, **Sijie Ruan**, Yanhua Li, Yu Zheng. *Planning Bike Lanes based on Sharing-Bikes' Trajectories.* **KDD'17**.

[O9] Tianfu He, Jie Bao, **Sijie Ruan**, Ruiyuan Li, Yanhua Li, Hui He, Yu Zheng. *Interactive Bike Lane Planning using Sharing Bikes' Trajectories.* **TKDE**, 2020.

[O10] Chenyu Hou, Bin Cao, **Sijie Ruan**, Jing Fan. *TLDS: A Transfer Learning based Delivery Station Location Selection Pipeline.* TIST, 2021.

[O11] Zheng Zhu, Huimin Ren, **Sijie Ruan**, Boyang Han, Jie Bao, Ruiyuan Li, Yanhua Li, Yu Zheng. *ICFinder: A Ubiquitous Approach to Detecting Illegal Hazardous Chemical Facilities with Truck Trajectories (Short Paper).* SIGSPATIAL'21.

[O12] Zhipeng Ma, Chuishi Meng, Huimin Ren, **Sijie Ruan**, Jie Bao, Xiaoting Wang, Tianrui Li, Yu Zheng. *SAInf: Stay Area Inference of Vehicles using Surveillance Camera Records.* **KDD'23**.

[O13] Ruiyuan Li, Huajun He, Rubin Wang, **Sijie Ruan**, Tianfu He, Jie Bao, Junbo Zhang, Liang Hong, Yu Zheng. *TrajMesa: A Distributed NoSQL-Based Trajectory Data Management System.* **TKDE**, 2023.

[O14] Tianfu He, Jie Bao, Ruiyuan Li, **Sijie Ruan**, Yanhua Li, Li Song, Hui He, Yu Zheng. *What is the Human Mobility in a New City? Transfer Mobility Knowledge Across Cities.* **WWW'20**.

[O15] Yuxuan Liang, Kun Ouyang, Lin Jing, **Sijie Ruan**, Ye Liu, Junbo Zhang, Yu Zheng. *UrbanFM: Inferring Fine-Grained Urban Flows.* **KDD'19**.

[O16] Tianfu He, Jie Bao, Ruiyuan Li, **Sijie Ruan**, Yanhua Li, Chao Tian, Yu Zheng. *Detecting Illegal Vehicle Parking Events using Sharing Bikes' Trajectories.* **KDD'18**.

[O17] Xiaodu Yang, Xiuwen Yi, Shun Chen, **Sijie Ruan**, Junbo Zhang, Yu Zheng, Tianrui Li. *You Are How You Use: Catching Gas Theft Suspects among Diverse Restaurant Users.* CIKM'20.

[O18] Ruiyuan Li, Jie Bao, Huajun He, **Sijie Ruan**, Tianfu He, Liang Hong, Zhongyuan Jiang, Yu Zheng. *Discovering Real-time Reachable Area using Trajectory Connections.* DASFAA'20.

[O19] Cong Zhang, Yanhua Li, Jie Bao, **Sijie Ruan**, Tianfu He, Hui Lu, Zhihong Tian, Cong Liu, Chao Tian, Jianfeng Lin, Xianen Li. *Effective Recycling Planning for Dockless Sharing Bikes.* SIGSPATIAL'19.

[O20] Ruiyuan Li, Huajun He, Rubin Wang, **Sijie Ruan**, Yuan Sui, Jie Bao, Yu Zheng. *TrajMesa: A Distributed NoSQL Storage Engine for Big Trajectory Data (Short Paper).* **ICDE'20**.

[O21] Huaxu Han, Shuliang Wang, Hanning Yuan, **Sijie Ruan**. *CD-BNN: Causal Discovery with Bayesian Neural Network.* ADMA'23.

[O22] Kun Ouyang, Yuxuan Liang, Ye Liu, Zekun Tong, **Sijie Ruan**, Yu Zheng, David S. Rosenblum. *Fine-Grained Urban Flow Inference.* **TKDE**, 2022.

[O23] Ruiyuan Li, Huajun He, Rubin Wang, Yuchuan Huang, Junwen Liu, **Sijie Ruan**, Tianfu He, Jie Bao, Yu Zheng. *JUST: JD Urban Spatio-Temporal Data Engine.* **ICDE'20**.

[O24] Kang Luo, Yuanshao Zhu, Wei Chen, Kun Wang, Zhengyang Zhou, **Sjie Ruan**, Yuxuan Liang. *Towards Robust Trajectory Representations: Isolating Environmental Confounders with Causal Learning.* **IJCAI'24**.

[O25] Ruiyuan Li, Rubin Wang, Junwen Liu, Zisheng Yu, Huajun He, Tianfu He, **Sijie Ruan**, Jie Bao, Chao Chen, Fuqiang Gu, Liang Hong, Yu Zheng. *Distributed Spatio-Temporal k Nearest Neighbors Join.* SIGSPATIAL'21.

[O26] Tianfu He, Guochun Chen, Chuishi Meng, Huajun He, Zheyi Pan, Yexin Li, **Sijie Ruan**, Huimin Ren, Ye Yuan, Ruiyuan Li, Junbo Zhang, Jie Bao, Hui He, Yu Zheng. *POI Alias Discovery in E-commerce Delivery Address Data using User Check-ins (Short Paper).* SIGSPATIAL'21.