

Sijie Ruan

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ABOUT ME

I am currently a fourth-year Ph.D. student at Xidian University advised by Prof. Yu Zheng, who is also a Vice President of JD. My research interests include trajectory data mining and urban computing. I have published 4 papers in refereed conferences as the first author, and participated in 18 papers in AAI, KDD, WWW, etc. I was awarded National Scholarship for 3 times. I am also an algorithm engineer intern at JD, working closely with Dr. Jie Bao and Prof. Cheng Long at NTU. Prior to that, I took an internship at MSRA.

EDUCATION

- **Xidian University** Xi'an, Shaanxi, China
Doctor of Philosophy in Computer System Architecture; GPA: 3.8/4.0 *Sept. 2017 – Jul. 2022 (expected)*
- **Xidian University** Xi'an, Shaanxi, China
Bachelor of Engineering in Computer Science, Excellent Engineer Class; GPA: 3.8/4.0 *Aug. 2013 – Jul. 2017*

WORKING EXPERIENCES

- **JD iCity, JD Group** Beijing, China
Algorithm Engineer Intern *Jan. 2018 - Present*
 - **Trajectory-based Road Network Augmentation:** Updated and accurate road networks are essential for urban applications. The proposed solution fills missing roads and removes out-dated roads based on trajectories via a CNN-based map generation framework DeepMG, which is ubiquitous, and thus at low cost (outcomes: [C3][H7]).
 - **Trajectory-based Delivery Location Inference:** The delivery location knowledge for each address can be used for 1) delivery route planning, 2) fake delivery detection, 3) trajectory-based delivery time inference, etc. The proposed solution infers the delivery location for each address based on couriers' trajectories via an attentional neural network LocMatcher, which is robust against Geocoding failures and mis-annotated behaviors of couriers.
 - **Trajectory-based Delivery Time Inference:** The delivery time of each parcel is vital for 1) waybill management, 2) customer availability prediction, 3) courier performance evaluation, etc. The proposed solution infers the delivery time for each parcel based on couriers' trajectories via an attentional neural network SPSelector, which eases the annotation burdens of couriers and is more accurate than manually recording (outcomes: [C1][H6]).
- **School of Computer Science and Technology, Xidian University** Xi'an, Shaanxi, China
Teaching Assistant *Sept. 2017 - Nov. 2017*
 - **Teaching Courses:** Giving lectures on *Urban Computing* (X19CS0250) to graduate students.
- **Urban Computing Group, Microsoft Research Asia** Beijing, China
Research Intern *Jul. 2016 - Aug. 2017*
 - **Distributed Trajectory Data Management:** Pre-processing and managing massive trajectories based on distributed computing engine (e.g., Spark, Storm) and distributed NoSQL database (e.g., Azure Table) with specially designed spatio-temporal index (outcomes: [J2][S1][S2][S3][H10]).

PUBLICATIONS

Conference Full Paper

- [C1] **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 2020 (CCF A)**.
- [C2] **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 2020 (CCF A)**.
- [C3] **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 2020 (CCF A)**.
- [C4] Jie Bao, Tianfu He, **Sijie Ruan**, Yanhua Li, Yu Zheng. *Planning Bike Lanes based on Sharing-Bikes' Trajectories*. **KDD 2017 (CCF A)**.
- [C5] 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 2020 (CCF B)**.

- [C6] Yuxuan Liang, Kun Ouyang, Lin Jing, **Sijie Ruan**, Ye Liu, Junbo Zhang, Yu Zheng. *UrbanFM: Inferring Fine-Grained Urban Flows*. **KDD 2019 (CCF A)**.
- [C7] Tianfu He, Jie Bao, Ruiyuan Li, **Sijie Ruan**, Yanhua Li, Chao Tian, Yu Zheng. *Detecting Illegal Vehicle Parking Events using Sharing Bikes' Trajectories*. **KDD 2018 (CCF A)**.
- [C8] 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 2020 (CCF A)**.
- [C9] 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 2020 (CCF B)**.
- [C10] 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 2019**.
- [C11] 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 2020 (CCF A)**.

Journal Paper

- [J1] Kun Ouyang, Yuxuan Liang, Ye Liu, Zekun Tong, **Sijie Ruan**, Yu Zheng, David S. Rosenblum. *Fine-Grained Urban Flow Inference*. **TKDE (CCF A, CAS II)**, 2020.
- [J2] 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 (CCF C)**, 2018.
- [J3] Tianfu He, Jie Bao, **Sijie Ruan**, Ruiyuan Li, Yanhua Li, Hui He, Yu Zheng. *Interactive Bike Lane Planning using Sharing Bikes' Trajectories*. **TKDE (CCF A, CAS II)**, 2019.

Short & Demo Paper

- [S1] **Sijie Ruan**, Ruiyuan Li, Jie Bao, Tianfu He, Yu Zheng. *CloudTP: A Cloud-based Flexible Trajectory Preprocessing Framework*. **ICDE 2018 (CCF A)**.
- [S2] Ruiyuan Li, **Sijie Ruan**, Jie Bao, Yanhua Li, Yingcai Wu, Yu Zheng. *Querying Massive Trajectories by Path on the Cloud*. **SIGSPATIAL 2017**.
- [S3] Ruiyuan Li, **Sijie Ruan**, Jie Bao, Yu Zheng. *A Cloud-Based Trajectory Data Management System*. **SIGSPATIAL 2017 [H10]**.
- [S4] Ruiyuan Li, Huajun He, Rubin Wang, **Sijie Ruan**, Yuan Sui, Jie Bao, Yu Zheng. *TrajMesa: A Distributed NoSQL Storage Engine for Big Trajectory Data*. **ICDE 2020 (CCF A)**.

HONORS AND AWARDS

- [H1] **The 3rd Prize in JD Outstanding Patent**: JD Group, 4/436, 2021
- [H2] **National Scholarship**: Ministry of Education of P.R.C., 0.2%, 2020, 2017, 2016 (3 times)
- [H3] **State Scholarship Fund**: China Scholarship Council, 2020
- [H4] **Outstanding Graduate Student**: Xidian University, 2020
- [H5] **Conference Travel Grants**: AAAI 2020, KDD 2020
- [H6] **The 2nd Prize in "TanSuo" Cup Patent Competition**: JD Digits, 2/434, 2020
- [H7] **The 2nd Prize in JDD Hackathon**: JD Digits, 2/238, 2019
- [H8] **The 4th Prize in Global Optimization Challenge**: JD Logistics, 4/46, 2018
- [H9] **Outstanding Intern**: JD iCity, 2018
- [H10] **Best Demonstration Runners-up**: ACM SIGSPATIAL, 2017
- [H11] **Outstanding Graduates**: Xidian University, 3%, 2017

PROFESSIONAL ACTIVITIES

- **Journal Reviewer**: TIST, TDS, TBD
- **Conference Program Committee**: AAAI (2021), MDM (2021), UrbComp (2020)
- **Conference External Reviewer**: AAAI (2020), KDD (2018,2019,2020), ICDE (2021), SIGIR (2018,2019,2021), CIKM (2018), SIGSPATIAL (2018,2019,2020), DASFAA (2020), SSTD (2019)

MISCELLANEOUS

- **Leadership**: VP of Xidian Microsoft Student Club, VP of JD iCity Students' Union
- **Languages**: TOEFL 89, CET6 533
- **Programming Languages & Frameworks**: Python (e.g., PyTorch, Scikit-Learn), Java (e.g., Spark), HiveQL
- **Skills**: Final Cut Pro, Visio, L^AT_EX