

# Yaguang Li

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## CONTACT INFORMATION

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University of Southern California  
Los Angeles, CA 90089 USA

## RESEARCH INTERESTS

Machine learning, deep learning on graphs with application in transportation, spatiotemporal forecasting and recommendation

## EDUCATION

**University of Southern California**, Los Angeles, California, USA  
*Department of Computer Science*  
Ph.D. Candidate, Computer Science, Aug. 2014 - May 2019, GPA: 3.94/4.0  
• Advisors: Cyrus Shahabi, Yan Liu

**University of Chinese Academy of Sciences**, Beijing, China  
*Institute of Software*  
M.S in Computer Science, Sep. 2011 - Jul. 2014, Ranked Top 1%  
• Advisor: Zhiming Ding

**University of Science and Technology Beijing**, Beijing, China  
*Department of Computer Science*  
B.Eng in Computer Science, Sep. 2007 - Jul. 2011, GPA: 3.75/4.0  
• Advisor: Xu-Cheng Yin

## REFEREED CONFERENCE PUBLICATIONS

**Yaguang Li\***, Xu Geng\*, Leye Wang, Lingyu Zhang, Qiang Yang, Yan Liu, Jieping Ye (\*Equal Contribution). Spatiotemporal Multi-graph Convolution Network for Ride-hailing Demand Forecasting. *The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, 2019 (**Oral presentation**)

Hanpeng Liu, **Yaguang Li**, Michael Tsang, Yan Liu. CoSTCo: A Nonlinear Sparse Tensor Completion Model, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2019 (Research Track)

**Yaguang Li**, Kun Fu, Zheng Wang, Cyrus Shahabi, Jieping Ye, Yan Liu. Multi-task Representation Learning for Travel Time Estimation, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2018 (Research Track)

**Yaguang Li**, Rose Yu, Cyrus Shahabi, Yan Liu. Diffusion Convolutional Recurrent Neural Network: Data-Driven Traffic Forecasting, *International Conference on Learning Representations (ICLR)*, 2018

Yijun Lin, Nikhit Mago, Yu Gao, **Yaguang Li**, Yao-Yi Chiang, Cyrus Shahabi, Jos Luis Ambite. Exploiting Spatiotemporal Patterns for Accurate Air Quality Forecasting using Deep Learning. *International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS)*, 2018

**Yaguang Li\***, Rose Yu\*, Ugur Demiryurek, Cyrus Shahabi, Yan Liu (\*Equal Contribution). Deep Learning: A Generic Approach for Extreme Condition Traffic Forecasting. *Proceedings of the Seventeenth SIAM International Conference on Data Mining (SDM)*, 2017 **Best Research Paper Nomination**

**Yaguang Li**, Han Su, Ugur Demiryurek, Bolong Zheng, Tieke He, Cyrus Shahabi. PaRE: A System for Personalized Route Guidance. *Proceedings of the 26th International Conference on World Wide Web (WWW)*, 2017

**Yaguang Li**, Han Su, Ugur Demiryurek, Bolong Zheng, Kai Zeng, Cyrus Shahabi. PerNav: A Route Summarization Framework for Personalized Navigation. *ACM International Conference on Management of Data (demonstration) (SIGMOD)*, 2016

Mohammad Asghari, Dingxiong Deng, Cyrus Shahabi, Ugur Demiryurek, **Yaguang Li**. Price-aware Real-time Ridesharing at Scale - An Auction-based Approach. *International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS)*, 2016

**Yaguang Li**, Dingxiong Deng, Ugur Demiryurek, Cyrus Shahabi, Siva Ravada. Towards Fast and Accurate Solutions to Vehicle Routing in a Large-Scale and Dynamic Environment. *14th International Symposium on Spatial and Temporal Databases (SSTD)*, 2015

Kuijen Liu, **Yaguang Li**, Zhiming Ding, Shuo Shang, Kai Zheng. Benchmarking big data for trip recommendation. *Int'l Conference on Computer Communication and Networks (ICCCN)*, 2014

**Yaguang Li**, Chengfei Liu, Kuijen Liu, Jiajie Xu, Fengcheng He, Zhiming Ding. On Efficient Map-matching According to Intersections You Pass By. *International Conference on Database and Expert Systems Applications (DEXA)*, 2013

Kuijen Liu, Bin Yang, Shuo Shang, **Yaguang Li**, Zhiming Ding. MOIR/uots: Trip recommendation with user oriented trajectory search. *International Conference on Mobile Data Management (demonstration) (MDM)*, 2013

Kuijen Liu, **Yaguang Li**, Fengcheng He, Jiajie Xu, Zhiming Ding. Effective Map-matching on the Most Simplified Road Network. *International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS) 2012, Contest Paper*

JOURNAL  
PUBLICATIONS

**Yaguang Li**, Cyrus Shahabi. A Brief Overview of Machine Learning Methods for Short-term Traffic Forecasting and Future Directions. *ACM SIGSPATIAL Special*, 2018

Zhiming Ding, Bin Yang, Ralf Hartmut Güting, **Yaguang Li**. Network-Matched Trajectory-Based Moving-Object Database: Models and Applications. *IEEE Transactions on Intelligent Transportation Systems (TITS)*, 2015

WORKSHOP  
PUBLICATIONS

**Yaguang Li**, Rose Yu, Cyrus Shahabi, Yan Liu. Diffusion Convolutional Recurrent Neural Network: Data-Driven Traffic Forecasting. *The Thirty-first Annual Conference on Neural Information Processing Systems (NIPS) Time Series Workshop*, 2017, **Oral Presentation**

Rose Yu, **Yaguang Li**, Cyrus Shahabi, Ugur Demiryurek, Yan Liu. Extreme Traffic Forecasting: A Deep Learning Approach. Poster accepted to *ACM SIGKDD Conference on Knowledge Discovery and Data Mining(KDD) workshop on Mining and Learning from Time Series*, 2016

Kuijen Liu, **Yaguang Li**, Jian Dai, Shuo Shang, Kai Zheng. Compressing large scale urban trajectory data. *International Workshop on Cloud Data and Platforms (CloudDP@EuroSys)*, 2014

**Yaguang Li**, Kuijen Liu, Jiajie Xu, Fengcheng He. An Efficient Map-Matching Mechanism for Emergency Scheduling and Commanding. *International Conference on Web-Age Information Management (WAIM) Workshops*, 2013

WORK  
EXPERIENCE

**DiDi Chuxing AI Labs**, Beijing, China

*Research Intern*

Dec. 2017 - Feb. 2018, May 2018 - Aug. 2018

- Proposed a multi-task representation learning framework for origin-destination travel time estimation. Experimental results on two large-scale real-world datasets showed that the proposed approach clearly outperformed state-of-the-art methods. These works were published on the International Conference on Knowledge Discovery and Data Mining (KDD) 2018, and the AAAI Conference on Artificial Intelligence (AAAI) 2019.

**Facebook Inc.**, Menlo Park, CA, US

*Software Engineer Intern*

May 2017 - Aug. 2017

- Proposed a unified machine learning model for both place visit segmentation and classification based on Hidden Markov Model and Gradient Boosted Decision Tree. Comparing to the method used in production, the proposed model improved the precision by more than 10% at the same recall. The proposed model has been deployed in the production.

**Google Inc.**, New York, NY, US

*Software Engineer Intern*

May 2016 - Aug. 2016

- Proposed a model to generate high-quality business information (that will be displayed on Google Maps) from various low-quality data sources, e.g., street view image, untrusted third-party websites. The proposed model had generated tens of thousands of high-quality business information.
- Proposed a deep learning model to predict whether a website is the authority website of a small business. This work was presented at a Google-wide machine learning workshop.

**Google Inc.**, Montreal, Quebec, Canada

*Software Engineer Intern*

May 2015 - Aug. 2015

- Proposed a video summarization algorithm to select interesting frames based on audio, visual and motion information. Results on more than 500 minutes youtube videos showed that the algorithm consistently outperforms baseline methods, e.g., k-means and uniform sampling based ones, in terms of attractiveness and informativeness.
- Proposed an approach to generate summary video for preview in poor Internet conditions. The resulted videos have bitrate at about 40kbit/s while preserving reasonable good image quality.

**Chinese Academy of Sciences**, Beijing, China

*Research Assistant*

Aug. 2012 - Jul. 2014

- Contributed to many projects funded by National Natural Science Foundation of China (NSFC) on spatial-temporal data management.
- Proposed traffic analysis model based on network matched GPS trajectories that achieved higher accuracy with less storage and communication cost. The result was published in a top-tier journal (IEEE Transactions on Intelligent Transportation Systems).

**Startup: Weidanci (weidanci.com)**, Beijing, China

*Technical Leader*

Sep. 2012 - Jun. 2014

- Weidanci is a multimedia-based dictionary where explanations are contributed by users (like Wikipedia). It supports multiple platforms including Android, iOS and Web, serving more than 20K registered users.
- Designed the architecture of the whole product; developed the website and part of the Android application.

TEACHING

**Machine Learning for Time Series Analysis** - Statistical Models and Deep Learning  
Summer 2018 in Peking University with Prof. Yan Liu

**Geospatial Information Management (CSCI 587)**

Fall 2015, Fall 2016

Teaching assistant: Advised 35 course projects; delivered several lectures; designed exams and organized weekly Q/A discussion.

ACADEMIC SERVICE **Web Chair**, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2020

**Co-organizer**, SIGKDD Workshop on Mining and Learning from Time Series (MiLeTS), 2018

**Web Chair**, International Conference on Web Search and Data Mining (WSDM), 2018

PC Member, SIGIR Workshop on Intelligent Transportation Informatics (InTI), 2018

Reviewer, International Conference on Machine Learning (ICML), 2019

Reviewer, GeoInformatica, 2019

Reviewer, Journal of Computer Science and Technology (JCST), 2019

Reviewer, IEEE Transactions on Intelligent Transportation Systems (TITS), 2016 - 2019

External Reviewer, International Joint Conference on Artificial Intelligence (IJCAI), 2018

External Reviewer, International Conference on Learning Representations (ICLR), 2018

External Reviewer, International Conference on Very Large Databases (VLDB), 2016, 2017

External Reviewer, International Conference on Distributed Computing Systems (ICDCS), 2016

External Reviewer, ACM International Conference on Management of Data (SIGMOD), 2015

SELECTED AWARDS AND HONORS **Annenberg Graduate Fellowship**, University of Southern California, 2014-Present

**Best Research Assistant**, University of Southern California, 2018

**KDD Student Travel Award**, 2018

**ICLR Travel Award**, 2018

**NIPS TSW Travel Award**, 2017

**Outstanding Graduate**, University of Chinese Academy of Sciences, 2014

**Pivot of Merit Student**, University of Chinese Academy of Sciences, 2014

**National Scholarship**, China, 2011, 2014

**Third Place in ACM SIGSPATIAL GIS CUP**, 2012

**Outstanding University Graduate**, Beijing, China, 2011