

# Yaguang Li

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## CONTACT INFORMATION

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Computer Science Department      *Homepage:* <http://yaguang.li>  
University of Southern California  
Los Angeles, CA 90089 USA

## RESEARCH INTERESTS

Machine learning, spatiotemporal forecasting and recommendation, deep learning for transportation

## EDUCATION

**University of Southern California**, Los Angeles, California, USA  
*Department of Computer Science*

Ph.D., Computer Science, Aug. 2014 - May 2019 (Expected), GPA: 3.93/4.0

- 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

## CONFERENCE PUBLICATIONS

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

Kuien 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

Kuien 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

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

WORKSHOPS  
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

Kuien 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**, Kuien 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

EMPLOYMENT

**University of Southern California**, Los Angeles, CA, US

*Research Assistant*

Aug. 2014 - Present

- Proposed graph convolutional recurrent neural network for structured time series forecasting. Experimental results on real-world traffic time series data showed the proposed model consistently outperformed state-of-the-art baselines.
- Proposed novel mixture architecture based on long short term memory (LSTM) unit and auto-encoder for traffic forecasting in extreme conditions, e.g., post-accident, the model achieved more than 30% error reduction. The work was published on the SIAM International Conference on Data Mining 2017.

**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

- Designed and implemented framework to obtain high quality business information (which is shown on Google Maps) from various low-quality data sources, e.g., street view image, untrusted

third-party websites. The designed framework has produced over 100K pieces of high quality business information.

- Designed and implemented deep learning model in Tensorflow to predict whether a website is the authority website of a small business. The AUC score of the model was greater than 0.96.

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

*Software Engineer Intern*

May 2015 - Aug. 2015

- Designed and implemented video summarization algorithm that automatically selects interesting frames based on audio, visual and motion information. The proposed method consistently outperforms baseline methods, e.g., k-means, in terms of attractiveness and informativeness.
- Developed tool that converts video to deck of slides with audio based on the video summarization algorithm. The resulting videos have extremely low bitrate (<40kbit/s) and reasonable good image quality which makes them suitable for video preview in poor Internet conditions.

**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

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

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

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

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

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

**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