

Yaguang Li

CONTACT INFORMATION

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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: 3.94/4.0

- 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

UNDER REVIEW

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, Submitted.

Hanpeng Liu, **Yaguang Li**, Michael Tsang, Yan Liu. Convolutional Neural Tensor Decomposition, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining*(KDD), 2018, Submitted.

REFEREED 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, 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*

REFEREED
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

REFEREED
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

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. The work was published on International Conference on Learning Representations (ICLR) 2018.
- 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.

DiDi Chuxing AI Labs, Beijing, China

Visiting Student

Dec. 2017 - Feb. 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.

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

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 **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

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

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

Reviewer, IEEE Transactions on Intelligent Transportation Systems (TITS), 2016, 2017, 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, Computer Science Department, University of Southern California, 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