

Songtao He

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Education

- Sept.2016-present **Massachusetts Institute of Technology**
Ph.D candidate in Electrical Engineering and Computer Science Department
Advisor: Hari Balakrishnan
Thesis Title: Enriching Digital Maps with Aerial Imagery and GPS Data
- Sept.2016-Sept.2018 **Massachusetts Institute of Technology**
M.S. in Electrical Engineering and Computer Science
- Sept.2011-June 2015 **University of Science and Technology of China**
B.E. in Computer Science and Technology

Research Interests

Mobile and Sensing Systems, Machine Learning, Remote Sensing, ML for Systems and Systems for ML.

Selected Publications

- 1. Inferring high-resolution traffic accident risk maps based on satellite imagery and GPS trajectories**
Songtao He, Amin Sadeghi, Sanjay Chawla, Mohammad Alizadeh, Hari Balakrishnan, Samuel Madden
ICCV, Virtual, October 2021
- 2. Sat2Graph: Road Graph Extraction through Graph-Tensor Encoding**
Songtao He, Favyen Bastani, Satvat Jagwani, Mohammad Alizadeh, Hari Balakrishnan, Sanjay Chawla, Mohamed M. Elshrif, Samuel Madden, Amin Sadeghi
ECCV, Glasgow, Scotland, August 2020
- 3. BeeCluster: Drone Orchestration via Predictive Optimization**
Songtao He, Favyen Bastani, Arjun Balasingam, Karthik Gopalakrishnan, Ziwen Jiang, Mohammad Alizadeh, Hari Balakrishnan, Michael Cafarella, Tim Kraska, Sam Madden
MobiSys, Toronto, Canada, June 2020
- 4. MIRIS: Fast Object Track Queries in Video**
Favyen Bastani, Songtao He, Arjun Balasingam, Karthik Gopalakrishnan, Mohammad Alizadeh, Hari Balakrishnan, Michael Cafarella, Tim Kraska, Sam Madden
SIGMOD, Portland, OR, June 2020
- 5. RoadTagger: Robust Road Attribute Inference with Graph Neural Networks**
Songtao He, Favyen Bastani, Satvat Jagwani, Edward Park, Sofiane Abbar, Mohammad Alizadeh, Hari Balakrishnan, Sanjay Chawla, Samuel Madden, Mohammad Amin Sadeghi
AAAI, New York, NY, February 2020
- 6. RoadRunner: improving the precision of road network inference from GPS trajectories**
Songtao He, Favyen Bastani, Sofiane Abbar, Mohammad Alizadeh, Hari Balakrishnan, Sanjay Chawla, Sam Madden
ACM SIGSPATIAL, Seattle, WA, November 2018
- 7. RoadTracer: Automatic Extraction of Road Networks from Aerial Images**
Favyen Bastani, Songtao He, Mohammad Alizadeh, Hari Balakrishnan, Samuel Madden, Sanjay Chawla, Sofiane Abbar, David DeWitt
Computer Vision and Pattern Recognition (CVPR), Salt Lake City, UT, June 2018
- 8. Reducing Latency by Eliminating Synchrony**
Min Hong Yun, Songtao He, Lin Zhong
World Wide Web conference (WWW), Perth, Australia, April 2017
- 9. Optimizing Smartphone Power Consumption through Dynamic Resolution Scaling**
Songtao He, Yunxin Liu and Hucheng Zhou
MobiCom, Paris, France, Sept 2015

Honors and Awards

- Best Demo Award, ACM MobiCom 2015
- Award of Excellence in the Microsoft Star of Tomorrow Internship Program (2015)
- Guo Moruo Scholarship, the highest honor of undergraduates at USTC (2015)
- 2nd Place Overall Winner, World Final, ISC14 Student Cluster Competition (2014)
- Google Excellence Scholarship (2014)
- National Scholarship, Ministry of Education, China (2012,2013)

Research Experience

- 2019 **Research Intern**, Mobility and Networking Group, Microsoft Research (Redmond)
Advisor: Sanjeev Mehrotra, Project: Edge computing with Kubernetes
- 2015-2016 **Research Intern**, Rice Efficient Computing Group (RECG), Rice University
Advisor: Prof. Lin Zhong, Project: Reducing Smartphone Latency
- 2014-2015 **Research Intern**, Wireless and Networking Group, Microsoft Research Asia (MSRA)
Advisor: Dr. Yunxin Liu, Project: Improving Smartphone Energy Efficiency
- 2014 **Research Intern**, Systems Research Group, The University of Hong Kong (HKU)
Advisor: Prof. Cho-li Wang, Project: Automatic Parallelization for GPU

Teaching

- TA, 6.S062 Mobile and Sensor Computing, Spring 2016

Professional Service

- Reviewer, International Conference on Learning Representations (ICLR), 2022
- Reviewer, Neural Information Processing Systems (NeurIPS), 2021
- Reviewer, IEEE International Conference on Computer Vision (ICCV), 2021
- External Reviewer, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2021
- Reviewer, IEEE Transactions on Neural Networks and Learning Systems, 2021
- Reviewer, IEEE Conference on Computer Vision and Pattern Recognition(CVPR), 2021,2022
- Reviewer, AAAI Conference on Artificial Intelligence (AAAI), 2021, 2022
- Reviewer, ACM Transactions on Spatial Algorithms and Systems, 2020
- Reviewer, IEEE Transactions on Pattern Analysis and Machine Intelligence, 2019
- Reviewer, IEEE Geoscience and Remote Sensing Letters, 2019