

# IWCTS 2017: Tenth ACM SIGSPATIAL International Workshop on Computational Transportation Science Redondo Beach, California, USA, 7 November 2017

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The 10th International Workshop on Computational Transportation Science (IWCTS 2017) was held in conjunction with the 25th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL 2017) on November 7, Redondo Beach, California, USA. This workshop has built upon the success of previous workshops with a focus on data, computation, and knowledge discovery aspects of transportation systems. There were 17 registrations to the workshop.

IWCTS 2017 had received 7 submissions, all accepted after careful peer-review. The program of the workshop consists of a keynote speech by Huei Peng from University of Michigan on connected and automated vehicles with an emphasis on the MCity project, an invited talk by Josh Auld from Argonne National Laboratory on the POLARIS traffic simulator, seven research paper presentations, and a panel discussion on trajectory computing. The panel theme had been chosen based on the trend that trajectories become treasure nowadays for understanding travelers, traffic, and locations. Making sense out of trajectories is an increasingly active research theme in computational transportation science. In fact, more than half of the submissions to this year's IWCTS are about trajectory computing. With a variety of backgrounds from academia and industry, this panel provided expert perspectives on challenges and solutions of trajectory computing. The panelists include Jane Macfarlane (UC Berkeley), Asif Haque (Lyft), Goce Trajcevski (Iowa State University), Matei Stroila (HERE Technologies), Shashi Shekhar (University of Minnesota). The research paper presentations are summarized below.

- Sergio Di Martino (IKG, Leibniz Universitt) presented "A 2-Step Approach to Improve Data-driven Parking Availability Predictions". The approach is based on the observation that the number of parking spaces in a road segment is typically small and therefore the step-wise curve tends to have high variance that hides the underlying trends; by smoothing the raw curve, the underlying trend is preserved.
- Abhinav Jauhri (Carnegie Mellon University) presented "Data Driven Analysis of the Potentials of Dynamic Ride Pooling". This paper provides an approach to determining the benefits of dynamic ride pooling using an extensive ride-request data set (from a ride-sharing service) for three major US cities: San Francisco, New York, and Los Angeles. The authors find that roughly one out of every three vehicles operated by ride-sharing services can be removed from the roads if riders are willing to pool and accept a travel time penalty of slightly over two minutes.
- Reem Ali (University of Minnesota) presented "Supply and Demand Aware Synthetic Data Generation for On-demand Traffic with Real-world Characteristics". The supply is generated from a database of

business locations. The demand is generated based on population and home-work traffic taking into account market competition and consumer constraints such as maximum travel distance, maximum travel time and maximum wait time.

- Bo Xu (HERE Technologies) presented "Temporal Sampling Constraints for GeoSpatial Path Reconstruction in a Transportation Network". The paper discovers a sufficient and necessary condition of location sampling rates such that the path traveled by any trajectory in a road network can be exactly reconstructed. The authors make an analogy that their theory is an equivalent of the Nyquist-Shannon sampling theorem in geospatial signal processing.
- Jingyu Xin (Washing University in St. Louis) presented "Geographical Huff Model Calibration using Taxi Trajectory Data". Based on one million GPS taxi trajectories collected from the city of Shenzhen, China, the authors discover a novel phenomenon that there is a significant linear relationship between localized house prices and shopping center attractiveness. This phenomenon suggests that wealthy customers are more sensitive to shopping center attractiveness than customers with less wealth.
- Alex Zolotovitski (HERE Technologies) presented "Analysis of Potential to Improve Maps Using Car Probe Data". This paper proposes using current OEM (original car manufacturers) sensor data for high-frequency map change detection and maintenance. To evaluate this potential source of map updates, the authors apply predictive modeling to a set of OEM sensor data for traffic sign change detection.
- Nikhil Vementala (Arizona State University) presented "A Framework for Interactive Geospatial Map Cleaning using GPS Trajectories". The framework uses map matching to identify trajectories that do not match any existing roads and therefore are candidate new roads. The framework also employs trajectory clustering to find the center line of new roads and provides a user interaction system for human validation.

IWCTS 2017 established a Best Paper award which was issued to "Geographical Huff Model Calibration using Taxi Trajectory Data" authored by Shuhui Gong, John Cartlidge, Yang Yue, Guoping Qiu, Qingquan Li and Jingyu Xin.

We would like to thank the authors for publishing and presenting their papers at IWCTS 2017, and the program committee members for their professional evaluation and help in the paper review process. We would also like to give very special thanks to our keynote speaker, invited speaker, and panelists.