PredictGIS 2018 Workshop Report
Held in conjunction with ACM SIGSPATIAL 2018

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The prediction of human and vehicle mobility in a city is becoming an attracting field. This topic attracts researchers from broad fields including behavioral sciences, where understanding the complexity of the human mobility behavior is one of the hot topic, and also to the industrial partners, who apply such results to many beneficial applications. Recent progress to sensing human mobility via smartphones is boosting this trend. However, due to the complexity and context-dependence of human behavior and the incompleteness and noise of geospatial data collecting from various sensors, the prediction of human and vehicle mobility is still far from solved. This workshop aimed at collecting contributions on the cutting-edge studies in human mobility description, modeling, intelligent computational method which can advance the human and vehicle prediction research. Potential topics included, but were not limited to 1) The next location prediction of individual mobility, 2) The crowd or population mobility prediction, 3) Dynamics of pedestrians, 4) commute flow and migration flow, 5) Traffic congestion, road usage forecast and optimal vehicle routing, 6) Social event forecast using geospatial data, 7) Novel agent mobility simulators, and 8) Case studies of mobility estimation in academia as well as in industrial field.

The second PredictGIS workshop was held on 6th November 2018 at the ACM SIGSPATIAL conference in Seattle, USA. At PredictGIS 2018, there were 7 presentations, of which 5 were full papers, 1 was a review paper, and 1 was a keynote presentation. The average number of attendees were around 10 people, with a maximum of around 15 people. There were 12 people who registered for the workshop. Overall, the workshop attracted papers with various topics, methods, and datasets. The variety of papers increased the number of topics covered in the workshop, and triggered an intense discussion between attendees on the current trends, issues, and also future research opportunities related to the prediction of human mobility.

Our keynote presentation was delivered by Dr. Naoya Fujiwara*, an Associate Professor from Tohoku University, Japan with the title, "Towards prediction of complex geospatial phenomena". Professor Fujiwara, an expert on complex networks and non-linear dynamics, covered various interesting cutting edge topics that utilized mathematical models and large scale data, including prediction of evacuation under severe disasters using mobile ad hoc wireless networks, spread of infectious diseases in cities, and urban level clustering of human mobility patterns. The theme of Professor Fujiwara's topic was on the fusion of geospatial big data (e.g. mobile phone data, social media data) with mathematical models for better understanding and prediction of complex phenomena. His keynote talk provided a novel direction of future research on human mobility

*https://sites.google.com/site/nfnetz/home?authuser=0

prediction, and inspired many of the attendants in this session.

In our first presentation, Dr. Christian Schreckenberger from University of Mannheim gave a talk on the review of next place prediction models. He was able to organize the large collection of works very well, focusing on the 4 points: Which features are used? (2) Which input data is required? (3) Which technique is used? (4) How is the prediction evaluated? This talk provided a good overview of the works in the field, and worked very well an an introduction to the workshop. The second talk was Sungha Ju's paper on understanding student characteristics from smart card data.

After the coffee break, Abdeltawab Hendawi gave a talk on a novel system named SimilarMove to predict the future paths of moving objects on road networks without relying on their past trajectories. Then, Douglas Teixeira gave a talk on the predictability of a user's next check-in using data from different social networks, and presented the interesting conclusion that the use of data from different social networks does not necessarily increase the predictability of a person next check-in, and that user behavioral characteristics play an important role on the predictability of the next check-in. Yuqin Jiang gave a talk on the analysis of Twitter geo-tag data to analyze the inter city connectivity. Applying this study to more detailed data such as mobile phone data could increase the impact of the work. Finally, Sung Bum Yun gave a talk on the implementation of floating population analysis which contains more information than traditional census population such as hourly based population and weekly based population. They presented a case study on Songdo area in South Korea.

As a whole, this workshop had very fruitful discussions along with very interesting and cutting-edge talks from the presenters. We would like to thank the presenters and attendees of the workshop for making it a huge success, and also the organizing members of ACM SIGSPATIAL 2018 for giving us an opportunity to hold this workshop.