第 7 回 INSTR の参加・発表とシドニー大学への研究短期留学

工学研究科　博士後期課程　１年
孫　文哲
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計画の概要

　　I had a 3-week stay in Sydney, Australia, from Jan. 11th to Feb. 5th. Comfortable weather, extraordinarily beautiful scenery and beneficial research activities made this trip indeed pleasant and unforgettable. I visited Institute of Transport and Logistics Studies in the University of Sydney and particularly participated the 7th International Symposium on Transportation Network Reliability (INSTR) as a presenter.

1. Participate and present in INSTR, Jan. 17th – 19th, 2018
2. Visit to Institute of Transport and Logistics Studies in the University of Sydney, Jan. 12th – Feb. 5th, 2018

成果

　　INSTR is putting the emphasis on robustness, reliability and resilience concerns of transportation network, and it was held by the University of Sydney Business School this year during Jan. 17th -19th, getting more than 120 scholars participated and ending with inspirable discussions and a huge success. (I am holding the board of "8")

I presented my recent research on Analysis of delay propagation within a bus network based on GPS data, in which bus bunching event observed from Bus GPS data is treated as rare event. And the methodology to predict random bus bunching by logistic regression is discussed in my presentation. The bus GPS data of Kyoto City Bus is used in the case study. Logistic regression basically underestimates the probability of rare events, because it tends to be biased towards the majority class. Therefore, I balanced rare event and non-rare event in the dataset by equally-sampling method and derived decent day-to-day bus bunching prediction result. And I received many valuable advices in Q&A, e.g. combining dynamic prediction and data sampling method. Advices and comments collected from this symposium are literally helpful to me and give me some new directions for my PhD research. Also, thanks to free talk opportunities provided by the organizer, I networked with researchers of shared research interests all over the world, with name card and creative ideas exchanged. The friendly but active conversations between researchers are shown in the picture on the right.
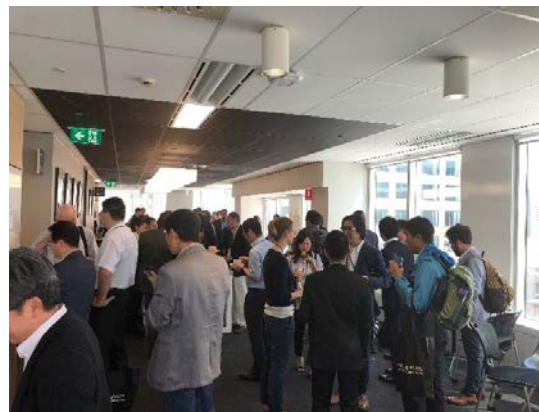
Another important purpose of my stay in Sydney is to visit Institute of Transport and Logistics Studies in the University of Sydney (ITLS). ITLS is in the University of Sydney Business School, and it is a renowned international center of thought leadership in the crucially linked areas of transport, infrastructure, logistics and supply chain management.

During my stay, I not only discussed with professors and students in ITLS, but also met with numbers of visitor scholars from different universities home and abroad. I joined the weekly group meeting of Prof. Michael Bell's team, and found that they already had 3 other international visitors: Elise Miller-Hooks, Professor from George Mason University; Nikolaos

Geroliminis, Associate Professor from EPFL; Josephine Bonvin, Master's Course student from ETH Zurich. I am amazed at the high level of global collaborations and communications in ITLS, and feel that there is something our department can literally learn from. (In the picture below, from the left, Elise, Nikolaos, Prof. Bell, me, Josephine and students in Prof. Bell's team). The group meeting was also impressive. Basically, the students presented the up-to-date progress of their research work, and were exposed to deliberate suggestions from their colleagues and naturally the professor who were quite familiar with their topics and research work so far. On the other hand, the newly coming visitors actively gave their brand-new ideas which stimulated the creativity of the research team. The student

University of Sydney

Institute of Transport and Logistics Studies

can absolutely benefit from the integration of closely associated comment and inspirable ideas. Also, I had some meetings with Prof. Bell to discuss my PhD research in detail. He gave many valuable advices, e.g. different payment scenarios should be considered in my analytical model of common line effect, because the equilibrium in my model is based on boarding demand equalization. In fact, for the countries where alighting time is longer than alighting time, equalization of alighting demand or origin-destination demand appears more important. Besides, he thought that using logistic regression in my presented paper is a good job as it has great interpretation power on causality, and the comparison between logistic regression and other regression should be conducted.