

京都大学教育研究振興財団助成事業
成果報告書

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会長 辻 井 昭 雄 様

所属部局・研究科 情報学研究科

職名・学年 博士課程3年

氏名 ZHUANG CHENYI

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発表題目	Understanding People Lifestyles: Construction of Urban Movement Knowledge Graph from GPS Trajectory		
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当財団の助成について	(今回の助成に対する感想、今後の助成に望むこと等お書き下さい。助成事業の参考にさせていただきます。) I would like to thank for your subsidy, which was very convenient and efficient. The subsidy helped me to cover most of the cost during my travel to Australia. As a Ph.D. student, an oral presentaion in a famous international conference is a valuable experience. In the conference, I have met a lot of researchers from the Artificial Intelligence research area and exchanged novel ideas with them. Without your subsidy, it may be impossible for such a great opportunity.		

成果の概要／Chenyi Zhuang

This time, I have attended the 26th International Joint Conference on Artificial Intelligence (IJCAI 2017). IJCAI is the main international gathering of researchers in Artificial Intelligence (AI) research area. IJCAI were held biennially in odd-numbered years since 1969. Starting with 2016, since AI is becoming more and more popular, it will be held annually. This year, the conference was sponsored by more than 48 companies, organizations, and universities. More than 3,000 researchers from all around world came to attend this conference to share and discuss state-of-the-art research achievements. About the numbers of papers accepted by this conference, here is a brief statistics grouped by countries: China: 475; EU: 334; US: 255; Australia: 112; Singapore: 64; Japan: 37; Rest: 126.

About my research work, in this conference, our team published a work about how to construct an urban movement knowledge graph from GPS (Global Positioning System) trajectory data. By analyzing the taxis' GPS trajectories, we proposed a matrix factorization and neural network based method to mine the underlying lifestyles in a city. In our experiments, I did find several interesting lifestyles (moving patterns) in the city Beijing. The impacts of this work are two-fold: the first one is that, from a theoretical point of view, we proposed a strategy to ensemble the totally different techniques: matrix factorization and neural network; on the other hand, as the second contribution, we constructed a knowledge graph of describing different moving patterns (i.e., lifestyles) in a city. The knowledge graph could be further utilized in the future work. For example, it could be used to predict the traffic conditions in a city; it could be applied to simulate the user mobilities in a city, and so on.

I have given an oral presentation in the morning (10:30 am – 12:00 am) on Aug. 24th. In the same morning, I have also attended a poster session and presented our work in that session. During the oral presentation and the poster session, I have received a lot of questions, comments and even some new ideas for further improvements. For example, Dr. Chang Xu asked a question about how to improve the scalability of our algorithm to deal with a much bigger dataset. Our work also attracted some attentions from the industry area. For example, the researchers from different companies (e.g., IBM, Microsoft, DiDi, JingDong, and so on) were interested in our work.

In addition to my own presentation, I have also attended some other sessions that interested me. For example, Prof. Stuart Russell from University of California, Berkeley has given a keynote about “Provably Beneficial AI”. The main concern of this keynote is to pursue the benefits of AI and meanwhile to avoid the bad potential impacts that would bring by AI. Another talk is given by Dr. Devi Parikh, a research scientist from Facebook AI Lab. She listed some open directions in the research area of obtaining human-like consistency. Some sub-topics were mentioned in her talk, like learning by playing, learning by asking, reasoning, and so on.

To make a conclusion, in this conference, I have published our team’s work and got a lot of feedbacks from the audiences. Meanwhile, I have listened to a lot of research achievement reports, which helped me to better understand the overview of the AI research area.

At last, I would like to thank “京都大学教育研究振興財団” again for your grant of “国際研究集会発表助成”. The grant covered most of my cost during my travel to Australia. I wish your business become further better in the future.