

Seminar Series #3

# Collective Impact in Transportation Systems

(171th TAOYAKA Program Seminar)

Date: Feb. 17 (Wed), 2021

Time: 17:00 - 19:00 (JST)

Place: online (zoom)

Language: English

17:00-18:00 Invited talk:

## Estimation and implementation of large scale Dynamic Discrete Choice models, application to activity-based travel demand models

By Prof. Anders Karlström (KTH Royal Institute of Technology)

**Abstract:** In this seminar we will give an overview our current research using the Dynamic Discrete Choice using the Recursive Logit approach. We will start with a brief background with roots of Recursive Logit as part of the Dynamic Programming literature in econometrics. Then, there are two challenges that needs to be addressed in order to be useful in transportation and urban planning application. First, to be useful in applications, including travel demand forecasting, the curse of dimensionality needs to be considered. For an estimated model, we would like to apply the model to a large population, or a sample thereof. Second, an even more challenging task is to be able to estimate the model. It should be noted that the models that we estimate are quite large, compared with the applications in the Dynamic Discrete Choice literature at large. But on the other hand, they often possess a particular feature that makes it feasible to estimate anyway. By using the particular property of the logit class of models, we demonstrated in Fosgerau et al (2011) how it was possible to estimate such a model, and it was demonstrated on a large scale in Västberg et al (2017, 2019). We will discuss the Scaper model, our activity-based travel demand model, in some detail. Identification of RL will also be briefly discussed. Then we will give a brief outlook of extensions and applications: (i) Scaper: application of panel mixed logit vs state-space persistence. (ii) Another flavour: Recurrent recursive logit in graph analysis. (ii) Scaper: estimation on mobile phone data (ongoing). Finally, we will give an outlook into the future, and discuss the implementation of estimation and implementation of such models using Machine Learning (ongoing research).

18:00-19:00 Research talks:

## An efficient dual-type algorithm for generalized Markovian traffic equilibrium assignment

By Dr. Yuki Oyama (Shibaura Institute of Technology)

## Impact of Transport Network Disruption on Travel Demand: A Case Study of July 2018 Heavy Rain Disaster, Japan

By Diana Safitri (Hiroshima University)

Registration:

<https://cutt.ly/NkWvSCD>

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Supported by:

- Ministry of Land Infrastructure Transport and Tourism, Japan
- JSPS Grants-in-Aid for Scientific Research (#17H04938, #19H00784)
- Taoyaka Program, Hiroshima University, Japan

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