

研究内容

Our research activities aim to contribute an achievement of development of sustainable cities and transport systems. We are trying to develop the theory for urban and transport planning, and analyzing/evaluating it based on transport big data which are collected from advanced ICT Technology. Especially we are focusing and challenging on solving recent issues in rural cities in Japan which are improvement of traffic jam and traffic accident, and revitalization of public transport and city activities due to population reduction and growing of aging society.

専門分野

Traffic Engineering, Public Transport Planning, Transport Big Data Analytics

博士の学生が研究室で学べること

The research topic of PhD study will be discussed based on the interest of the candidates and our recent studies. Followings are the examples.

Example 1) Mixed Traffic Flow Management Condensing the Impact of the Air Pollution

This project is aimed at investigation of road traffic management schemes considering the air impact on air pollution under mixed traffic conditions in which passenger cars, trucks, and motorcycle all use a given section of road. This project focusses on the evaluation of road network performance of whole cities, from a macroscopic point of view in eastern Asian countries in which is the population and economy are both expanding. Therefore a macroscopic mixed traffic flow model will be formulated, and a scheme to improve traffic conditions and reduce air pollution will be proposed by evaluation of road network performance based on the model developed in this project.

Example 2) Development of a travel behavior model to evaluate end-user oriented public transport service

This project is aimed at examination of (a) new public transport services and fares in a rural city which is trying to remove all barriers to the use of public transport systems, and (b) approaches such as Mobility as a Service (MaaS). This project focuses on developing suggestions for end-user oriented public transport services and fares in regions or cities needing to promote public transport utilization, and implementing those suggestions. The study topics related to this project include: development of travel behavior modeling for proposed public transport services; development of an AI model for prediction of the risk of trip frequency decline, based on 10 years' historical smart card data; and evaluation of the

social equity of proposed public transport services. Use of the knowledge resulting from this project, and ways of social implementation of end-user oriented public transport service will be discussed.

博士の学生に求められる知識とスキル

- (a) Knowledge on Traffic engineering, Transport and infrastructure planning, and public transport management including the mobility service design and related statistics
- (b) Programming skills and knowledge of relevant computer technologies, including Python, R, and SPSS

研究室の環境

- (a) Traffic Simulation Model (AIMSUM, SOUND, AVENUE)
- (b) Traffic and Public Transport Data set collected in Kochi
- (c) High-spec computer for each student