

OGUCHI LAB.

The Secrets for Road Transport



Department of Human and Social Systems
Harmonic Mobility Research Center (ITS Center)

Department of Civil Engineering, Graduate School of Engineering
Interfaculty Initiative in Information Studies, Graduate School of Arts and Sciences

Traffic Management and Control

<https://www.transport.iis.u-tokyo.ac.jp/?lang=en&shown=5>

Scientific Approach for Traffic Flow

We research road traffic from various aspects and develop traffic management methods to realize sustainable road traffic with less traffic crash, congestion, and negative impact on environment.

Innovative policy

How to manage road traffic?

Studies on road management policies (including planning, design, and operation) for more safe and efficient traffic flow:

- Theoretical development of hierarchical street network with multimodal considerations
- Evaluation of geometric design and traffic operation policy around bus stop
- Social implementation of automated driving based on technological change forecasts
- Proposal of adaptive traffic signal control using reinforcement learning methods

Large-scale traffic simulation for the whole Tokyo metropolitan network

Technology

How to assess road management policies?

Development and application of traffic simulation models, open data utilization, etc., for assessment of road management policies:

- Operational evaluation for three-ring expressways in the Tokyo Metro area
- Quality management strategy for network traffic safety
- Simulation analysis of public transit priority signal control and its impact on various road users
- Evaluating urban street safety measures using ETC2.0 probe data
- Origin-destination prediction via knowledge-enhanced hybrid learning
- Impact of low-speed autonomous buses on mixed traffic flow in the Kashiwanoha area

Evaluation of the proposed systems at Kashiwa ITS R&D field

ITS
Intelligent Transport Systems

Science

What's happening in road traffic?

Development of fundamental theories, and analysis of various kinds of traffic observation data to understand road traffic phenomena:

- Development of fundamental theory on traffic signal coordination
- Impacts of weather conditions on motorway traffic performance
- Empirical analysis of the effects of separation structures between pedestrian spaces and roadways
- Evaluating the impact of bulb-out crosswalk through field experiments
- Studies on rail transit patron behaviours using transportation-card data: multidimensional perspective on activities and travel

