

OGUCHI LAB.

Safe and Sustainable Traffic Society



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

Traffic Management and Control

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

<http://www.transport.iis.u-tokyo.ac.jp>

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 urban traffic flow:

- Development of one-by-one algorithm traffic signal control
- Reinforcement learning agents for isolated intersection control
- Effects of the Traffic System Management of the Tokyo 2020 Olympic games on the Tokyo Metropolitan Expressways
- Hierarchical street network with multimodal considerations
- Social implementation of automated driving based on technological change forecasts

Large-scale traffic simulation in the whole Tokyo Metro network

Technology

How to assess road management policies?

Development of traffic simulation models, open data utilization, and so forth, to assess road management policies:

- Operational evaluation for three-ring expressways in the Tokyo Metro area
- Quality management strategy for network traffic safety
- Road structure and traffic control for public transit priority
- Trial development of autonomous traffic signal systems
- Link traffic flow estimation using link travel speed and traffic simulation
- Multi-country survey on legislation, enforcement, and education for traffic safety

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

ITS
Intelligent
Transport
Systems

Science

What's happening in road traffic?

Development of basic theories and analysis of various kinds of observed data to understand road traffic:

- Fundamental theory on traffic signal coordination
- Secular change of traffic performance of interurban expressways
- Maneuver comparisons between ACC and human-driven vehicles
- Impacts of weather conditions on motorway traffic performance
- Parked & stalled road-side vehicles as automated-vehicles' driving environment
- Interactions between land-access vehicles and pedestrians

