



Oguchi LAB.



[Safe and Sustainable Traffic Society]



Advanced Mobility Research Center (ITS Center)

Traffic Management and Control

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<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 accident, congestion, and negative impact on environment.

Innovative policy

How to manage road traffic?

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

Large-scale traffic simulation in the whole Tokyo Metro network

- Development of one-by-one algorithm traffic signal control
- Impact of traffic lights locations on driver's behavior
- Predictive Deep RL for isolated intersection signal control
- Road structure & traffic control enabling public transit priority
- Planning and design for multi-users' hierarchical street network
- Street design based on pedestrian roadway crossing behavior

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

Technology

How to assess road management policies?

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

- Operational evaluation for three-ring expressways in the Tokyo Metro area
- Impact of shared automated driving systems on the required parking lots reduction
- Macroscopic model of urban rail systems
- Utilization of open public transit data
- Impact of random nature of shared left-turn lane
- Trial development of autonomous traffic signal systems

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
- Parked & stalled road side vehicles as AV running environment
- Secular change of velocity of interurban expressways
- Gap distribution analysis for dedicated CAV lanes
- ACC impacts on sag sections under mixed traffic environments
- impacts of weather condition on motorway network performance

