Oguchi LAB.

[Technologies for 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/en/

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:

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

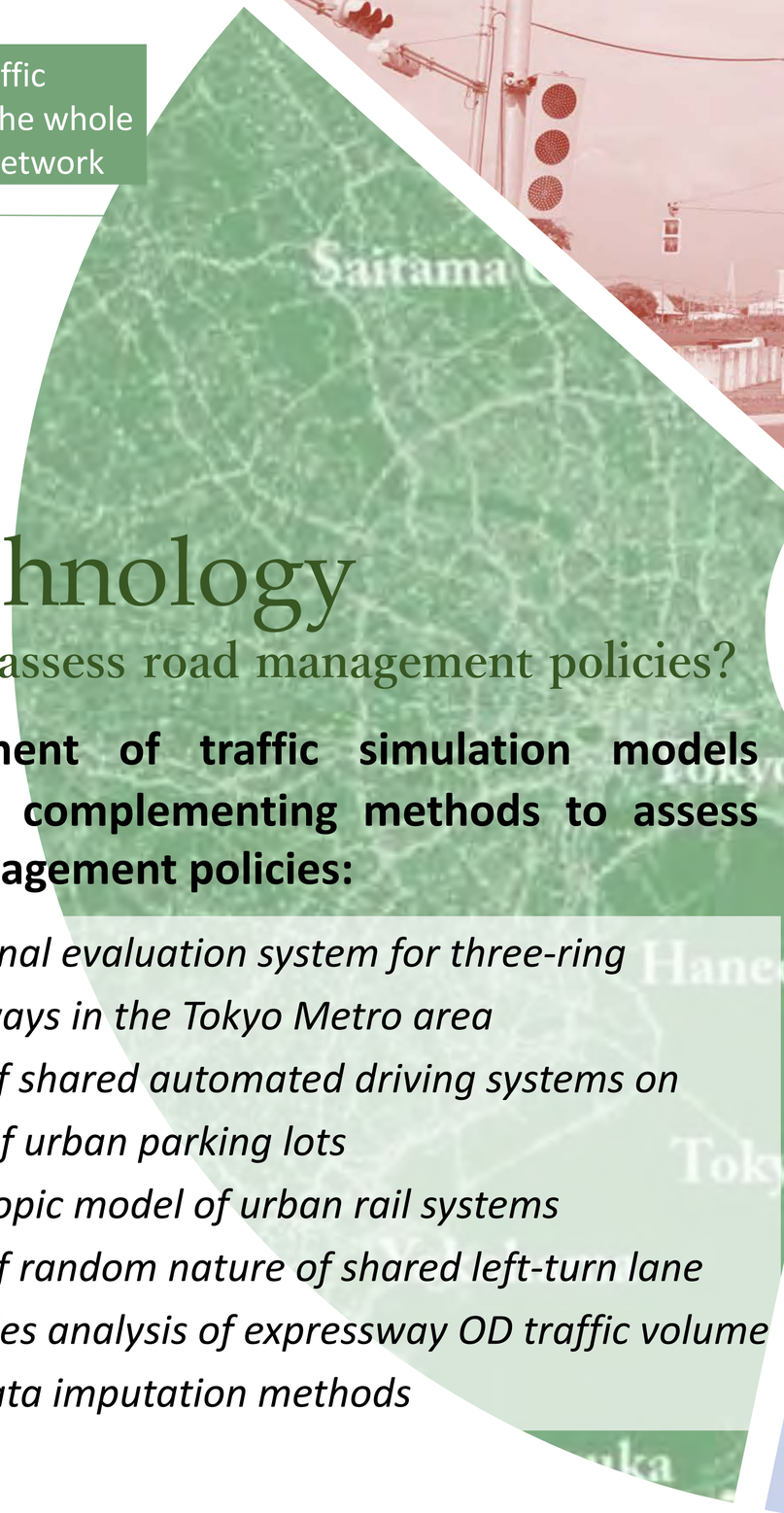
- *Development of autonomous traffic signal systems*
- *Impact of traffic lights locations on driver's behavior*
- *Requirements for deploying automated driving systems*
- *Network control based on spatial congestion patterns*
- *Optimum crosswalk locations in urban street network*
- *Planning and design for hierarchical road network*
- *Promotion of open public transit data*

Technology

How to assess road management policies?

Development of traffic simulation models and data complementing methods to assess road management policies:

Large-scale traffic simulation in the whole Tokyo Metro network



- *Operational evaluation system for three-ring expressways in the Tokyo Metro area*
- *Impact of shared automated driving systems on the use of urban parking lots*
- *Macroscopic model of urban rail systems*
- *Impact of random nature of shared left-turn lane*
- *Time series analysis of expressway OD traffic volume*
- *Traffic data imputation methods*

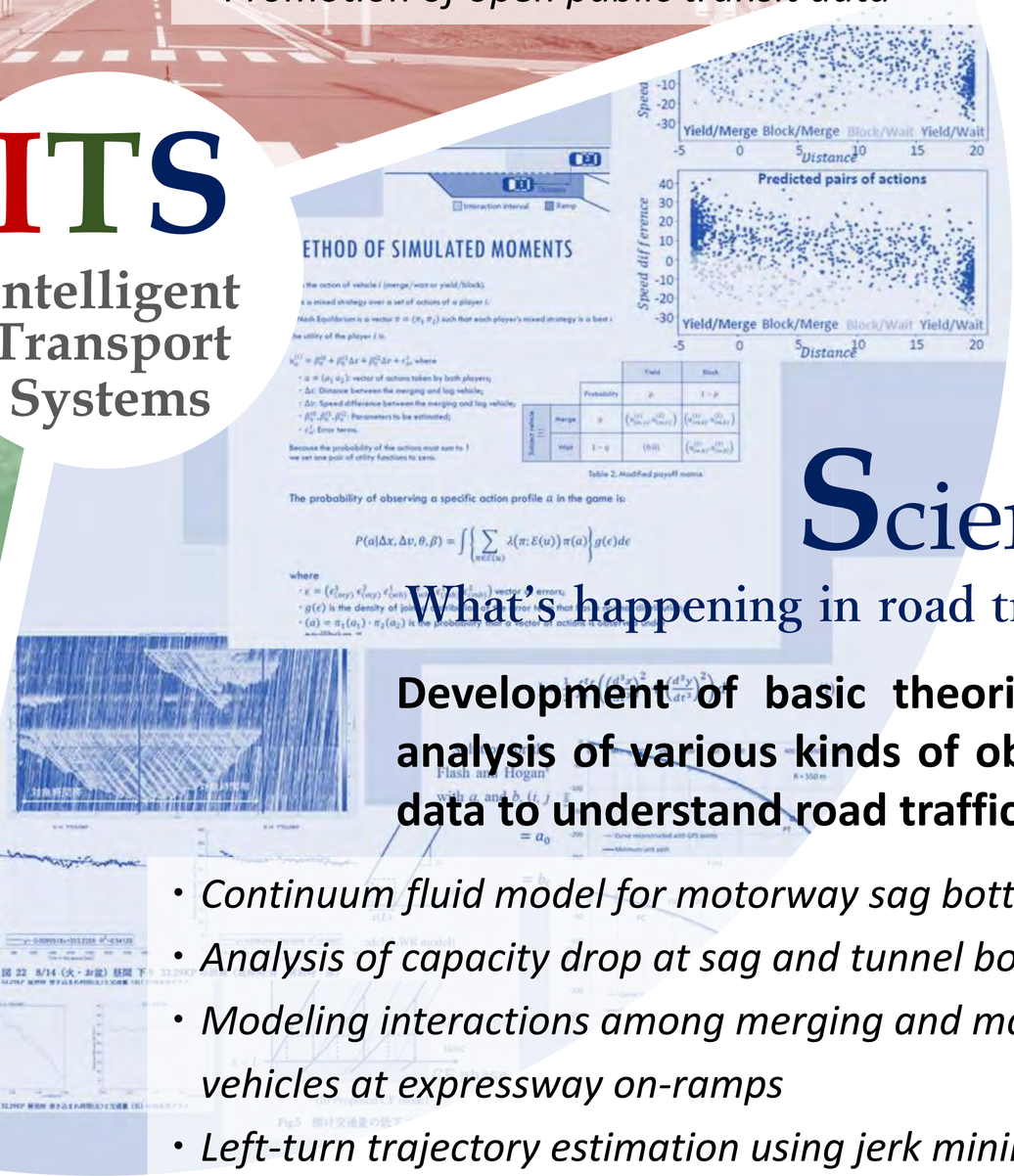
ITS

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:



- *Continuum fluid model for motorway sag bottlenecks*
- *Analysis of capacity drop at sag and tunnel bottlenecks*
- *Modeling interactions among merging and mainline vehicles at expressway on-ramps*
- *Left-turn trajectory estimation using jerk minimization principle*