



# Oguchi Lab



## [Technologies For Safe and Sustainable Road Traffic Society]

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### Study field ●Traffic Management & Control

Department of Civil Engineering, Graduate School of Engineering, the University of Tokyo

Interfaculty Initiative in Information Studies (iii), UT Graduate Program on Environmental Sciences (GPES) in Graduate School of Arts and Sciences, the University of Tokyo

Our laboratory studies on road traffic phenomena and problems including traffic congestion as well as environmental problems. We approach and analyze those issues from various aspects based on fundamental theories of traffic engineering and traffic data collected by various sensors, propose new traffic management methods or policies, and evaluate their effects by traffic simulation.

## 1. Development of Policy-Assessment Tools

We develop various traffic simulation models to analyze temporally-dynamic traffic phenomena, such as congestion, with high accuracy.

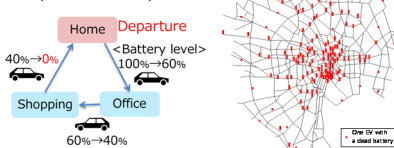
### Utilization of AVENUE & SOUND



Using two simulation models of different scales, traffic simulations for both local and wide-area are available.

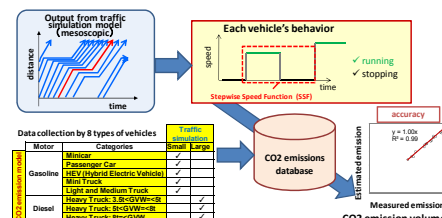
### EV Recharge Station Location Assessment Tool

● Trip Chain Concept



Based on a trip chain concept, an assessment tool for the optimization of the electric vehicle (EV) recharge station location is developed.

### Environment assessment tool



With integration of traffic simulation and CO<sub>2</sub> emission model, a road-environment assessment tool is developed.

## 2. Traffic Management for Sustainable Urban Environment

We investigate various urban traffic management methods for efficient and safe traffic flow.

### Pedestrian crossing

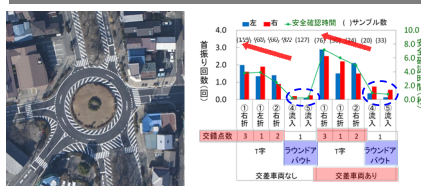
Undisciplined crossing causing most accidents with pedestrian casualties

Various safety measures for pedestrian's crossing



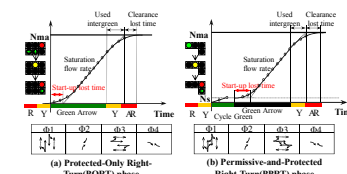
We study on the pedestrian's behavior of undisciplined crossing and propose traffic safety measures for pedestrians.

### Roundabout



We study on safety, efficiency, and installation guidelines of roundabout for the implementation in Japan, which is a representative non-signalized intersection overseas.

### Signal control



We propose signal control algorithms using ITS sensing technology, carry out its validation, and evaluate its loss time.

## 3. Research and Data Development for Better Road Traffic Society

We study on road design methods and mitigation methods of expressway congestion to improve road service quality.

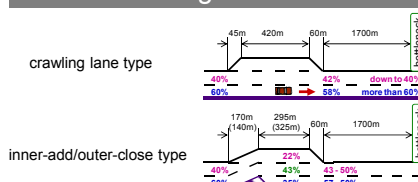
### Performance-based road design



Performance-based design is a road design concept to check whether the expected traffic performance under the given road-geometric and traffic conditions is satisfied with the desired performance determined by the objective and the function of the road and to reflect that on the design.

We propose a new concept toward Performance-based road design and planning.

### Mitigation of Expressway Congestion



To reduce congestion of expressways, bottleneck phenomena at basic segments such as sags and tunnels are analyzed.

### International traffic database



We develop and maintain an international traffic data warehouse to gather and share traffic data collected around the world.