Scientific Approach for Traffic Flow

Our missions are to research road traffic from various aspects and develop traffic management methods, which are expected 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:

- Network control based on spatial congestion patterns
- Impact of AV sharing on parking allocation strategy
- Scenarios for automated driving systems
- Comparison of crosswalk design and operation
- Planning method for functionally hierarchical road network
- Promotion of open public transit data

**Science**

What’s happening in road traffic?

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

- Theory of capacity drop of sag and tunnel bottlenecks
- Left-turn trajectory estimation using jerk minimization principle
- Analysis of spatial distributions of throughputs in a congested network
- Macroscopic and dynamic model of urban rail transit
- Analysis of taxi time of aircraft at international airports
- Impact of location of traffic lights on drivers’ behavior

**Technology**

How to assess road management policies?

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

- AVENUE (Street-level traffic simulator)
- SOUND (Regionwide-level traffic simulator)
- Operational evaluation system for three-ring expressways in Tokyo metro area
- Traffic data imputation using matrix completion