ITS Center
THE UNIVERSITY OF TOKYO
先進モビリティ研究センター

Advanced Mobility Research Center
(ITS Center)

先進モビリティ研究センター（ITSセンター）
http://www.its.iis.u-tokyo.ac.jp/

Intelligent Transport Systems

Suda Lab, Nakano Lab, and Suzuki Lab (Dept. of Mechanical and Biofunctional Systems)
Ikeuchi Lab and Oishi Lab (Dept. of Informatics and Electronics)
Oguchi & Kuwahara Lab, Tanaka Lab, Sakamoto Lab, and Makino Lab (Dept. of Human and Social Systems)

Research Activities

Smart Tourism

- The "Smart Tourism" is a novel ITS service for tourism taking advantage of mixed-reality (MR) technologies, next-generation mobility, etc.
- We classify actions of tourists as four steps: (1) Motivation (2) Visiting (3) Impression (4) Revisit, and provide visual information services using WWW and MR system, and mobility aid service using EV and PMV.
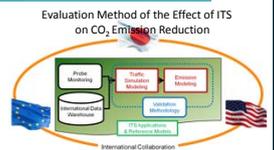

Driver Sensing

Driver's fatigue and stress level analyzed for the improvement of driving safety by measuring psychological signals, such as perspiration rate, electromyography, heart beat rate, EEG, etc

Development of Energy-Saving ITS Technologies

To reduce energy consumption in the transportation sector by using ITS technology, Energy ITS Project launched in 2008 for five years

Platooning validation and evaluation

Real-vehicle experiment | DS experiment

Evaluation Method of the Effect of ITS on CO_2 Emission Reduction

International Collaboration

Research Facilities

Universal Driving Simulator (DS)

- Six-DOF motion platform with one-DOF turntable mechanism and image generation system for 360-degree view and door mirrors adopted with a car navigation system
- Reproducing driving environment and traffic condition close to the real world
- Used for experiments about driving behavior, assessment of driving safety on a new road infrastructure, etc

Various Traffic Simulation Models (TS)

- Traffic simulators (TS) of various scales developed, and ITS technologies and policies simulated and evaluated with high accuracy
- SOUND : A network traffic simulator, covering a wide network including expressways, while vehicles are considered individually .
- AVENUE : A street-level traffic simulator, based on the detailed maneuvers of individual vehicles, such as lane changing at an intersection. Used for evaluating traffic operation strategies, reducing congestion on streets, etc.
- KAKUMO : A micro traffic simulator, connecting TS and DS. It fills the gap of spatiotemporal resolution between TS and DS by calculating driver's behavior and vehicle dynamics of hundreds of vehicles around the test driver in DS. Simultaneously, the behavior of the test driver in DS is reflected to TS, and then the movements of surrounding vehicles and the traffic condition change interactively.

Street-level traffic simulator (mesoscopic)

Network traffic simulator (mesoscopic)

Microscopic traffic simulator (connecting DS and TS)

Chiba Experiment Station

- Experiment and verification field constructed for testing next generation traffic systems, such as Eco-Ride, in the Chiba Experiment Station of IIS, the Univ. of Tokyo

Traffic signal and intersection | Test Track for LRT | Eco-Ride

Anechoic Room

- Psycho-acoustical influence of an acoustical environment on human evaluated in an anechoic room equipped with 6-channel recording/reproduction system
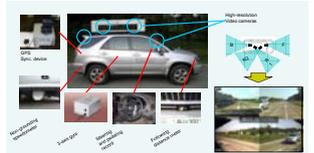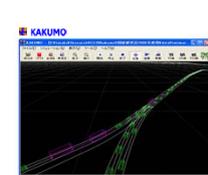

Development of Sensing Vehicles

- ARGUS

Using omnidirectional cameras, laser range scanner, etc., 3D geometry and photometric attributes of surrounding structures such as buildings and roads are collected

- MAESTRO

Positions of the own and peripheral vehicles, gap distance, steering, pedaling, etc. recorded and synchronized with high accuracy

Human Resource Development and Social Return Activities

- **ITS Seminar**: Series of seminars organized about three times a year, and ITS based on needs from local areas as well as central administration promoted
- **Lectures**: Not only lectures for students but also a special course for private sectors organized for developing human resource in ITS industry
- **Research Committee**: Informal discussions about latest ITS topics hosted every month inviting speakers from academia, industry, and government

Global Collaboration

ITS Center hosts an international symposium every year and exchanges faculty members and students with other universities and institutes through international collaboration as well as domestic collaboration.

Institute of Industrial Science