

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

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Research Activities

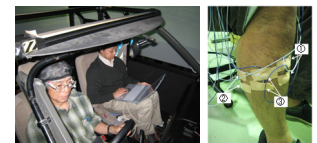
Smart Tourism

- 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.



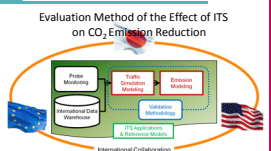
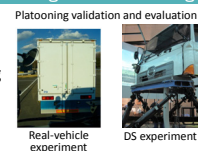
Driver Sensing

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

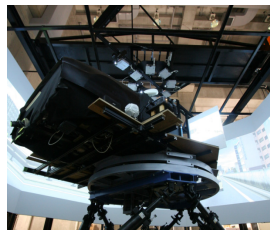
To reduce energy consumption in the transportation sector by using ITS technology, Energy ITS Project launched in 2008 for five years



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



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

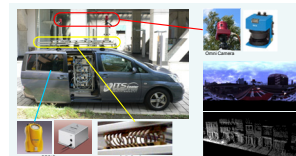
Anechoic Room

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



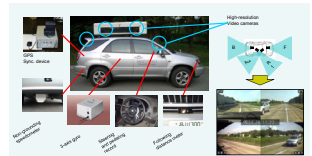
Development of Sensing Vehicles

● 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

Various Traffic Simulation Models (TS)

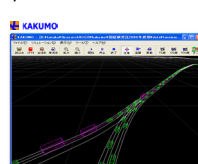
- Traffic simulators (TS) of various scales developed, and ITS technologies and policies simulated and evaluated with high accuracy
- SOUND : A network traffic simulator, covering a wide network including expressways, while vehicles are considered individually .
- AVENUE : A street-level traffic simulator, 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)

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.

