ITS Center
THE UNIVERSITY OF TOKYO
次世代モビリティ研究センター

Experimental vehicles, driving simulators, posters exhibited

Advanced Mobility Research Center
(ITS Center)

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.

HMI

- V2X communication-based in-vehicle information systems, e.g., in-vehicle traffic lights

Truck Platoon

- Truck platoon system to reduce energy consumption using ITS technology
- Evaluation of social acceptability of truck platoon using universal driving simulator

E-ITS Energy saving ITS

Driver Sensing

- Analysis of driver's fatigue and stress via perspiration rate, electromyography, heart beat rate, EEG, etc
- Research on the relation between the driving operations and the cortical brain activity using brain measurement (fNIRS).
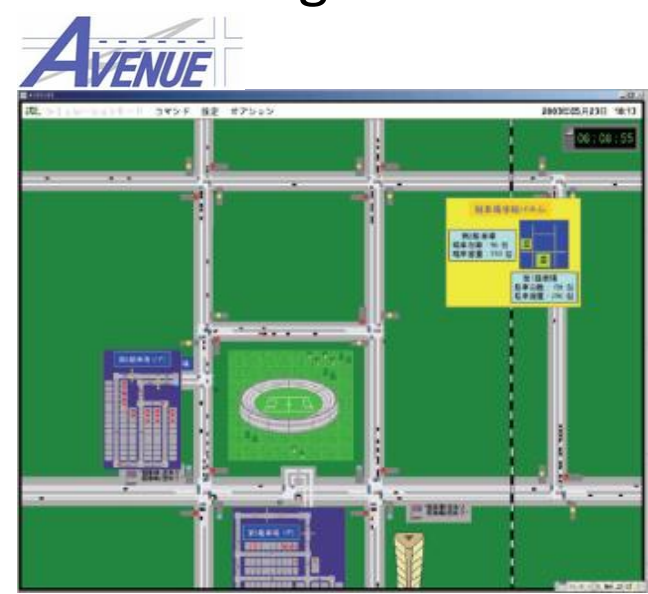
Research Facilities

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
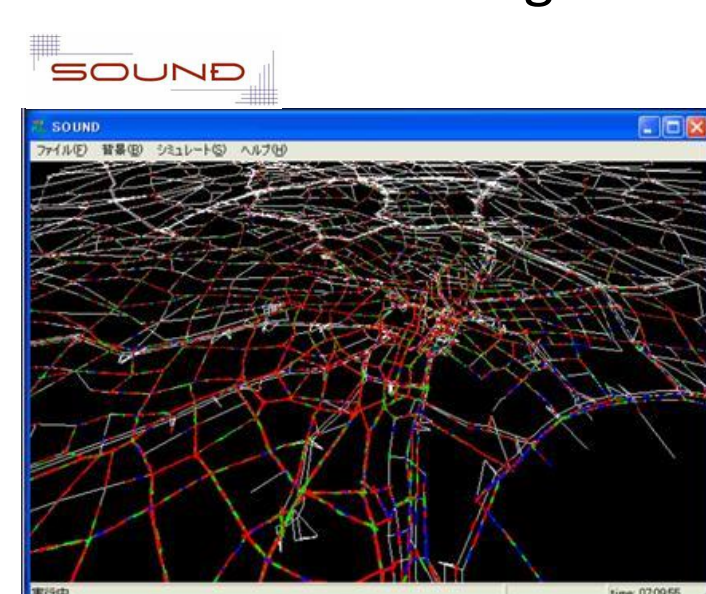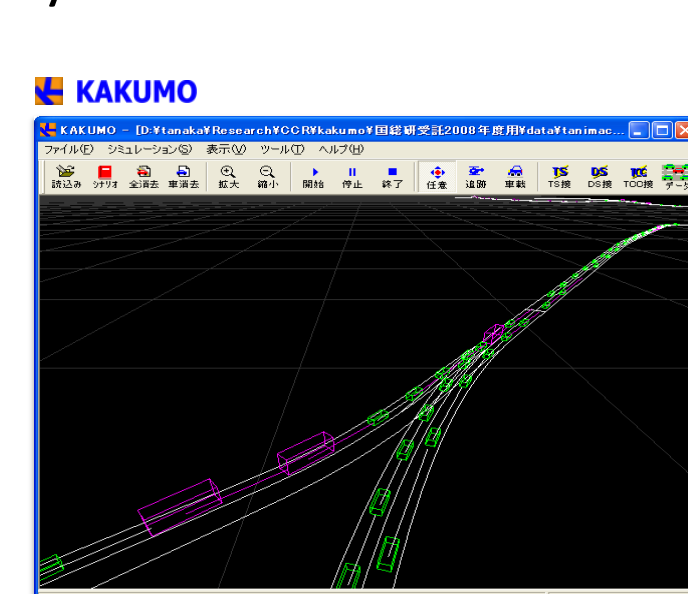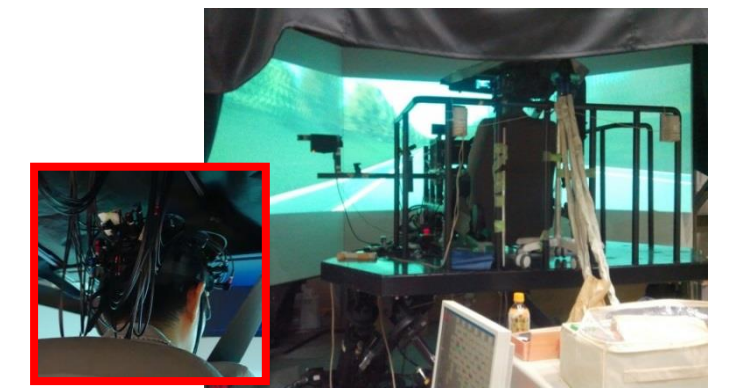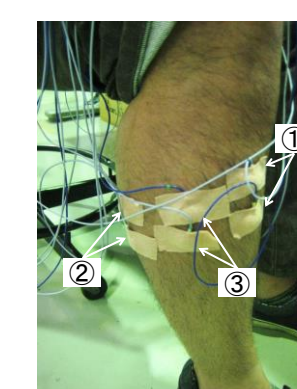
Various Traffic Simulation Models (TS)

- 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.

AVENUE
Street-level traffic simulator (mesoscopic)

SOUND
Network traffic simulator (mesoscopic)

KAKUMO
Microscopic traffic simulator (connecting DS and TS)

Chiba Experiment Station

- The Chiba Experiment Station of IIS are equipped with experiment fields for automobile and train and a driving simulator for large vehicle.

Proving ground with traffic light | Test track | DS for large vehicle

Anechoic Room

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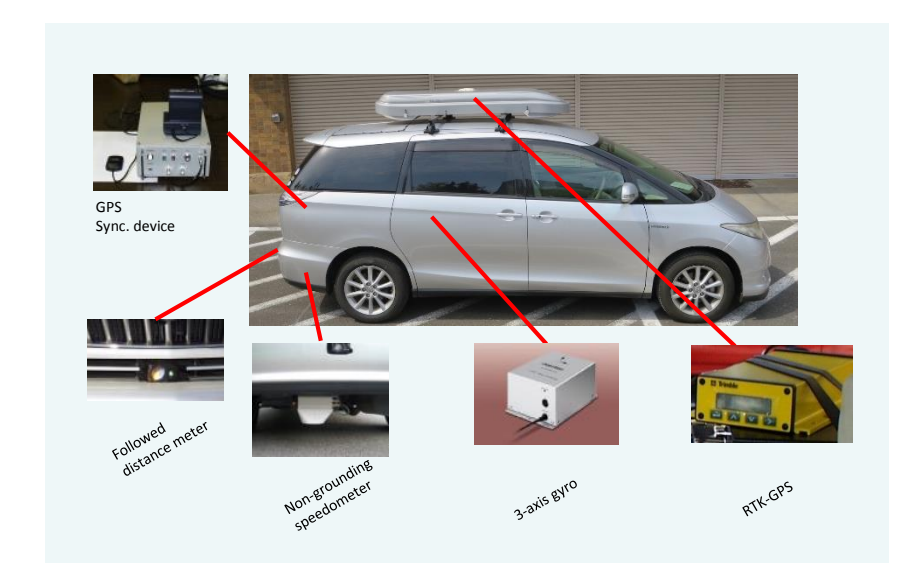
Development of Sensing Vehicles

- ARGUS
- MAESTRO II

MAESTRO II

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

Precise measurement of location, speed, acceleration, and direction of the experimental vehicle itself with relative positioning of the following vehicle

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.