Vehicle Dynamic Control Strategy of Automated Driving
Advanced Mobility Research Center (ITS Center)
Mechano-Informatic Mobility Engineering

*Sensing and Visualization for ITS*

**Video-based Driving Simulator**
Enhancing reality using real video for background

**System for Information Collection, Integration, Visualization, and Distribution**
Reducing CO₂ Emission by Raising Awareness of Citizens.
Social experiment in Kashiwa City proved the possibility of 8% reduction by the Regional Transport Information System for promoting eco-friendly travel behavior.

**Video-based Driving Simulator**
- Hand signal recognition
- Detecting road safety mirror
- Event detection inside mirror
- Vehicle recognition at night
- Data augmentation for night images using image style transfer

**Basic Technology for Automated Driving -- Toward wider ODD --**
- Detecting Unusual Events
  - Flood detection for driving video
  - Data augmentation using CG and GAN

**Detecting Unusual Events**
- Separating foreground/background by spacetime filtering

**Sensing by Specialized Vehicle**
- 3D Modeling of Road Structure
- Street Panorama before East Japan Earthquake Reconstructed from Driving Video Recorder

**Sensing by General Vehicles**
- Super Resolution (Refinement) of Super Wide-Angle On-Vehicle Camera

**Real World Sensing**
- 3D Modeling of Road Structure
- Street Panorama before East Japan Earthquake Reconstructed from Driving Video Recorder

**Real Scene Understanding**
- Information Extraction

**Practical Use**
- Hand signal recognition
- Vehicle recognition at night
- Detecting road safety mirror
- Event detection inside mirror
- Data augmentation for night images using image style transfer

**Visualization**
- Enhancing reality using real video for background

**Information Extraction**
- Separating foreground/background by spacetime filtering

**System for Information Collection, Integration, Visualization, and Distribution**
- Distribution
- Integration
- Visualization
- General Citizen
  - More awareness
  - Behavioral change
    - Use public tran.
    - Choose eco-route
    - Do eco-driving

**Video-based Driving Simulator**
- Video-based Driving Simulator
  - Model (CG, base)

**Detecting Unusual Events**
- Flood detection for driving video
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