



# SHINTARO ONO

Pj. Assoc. Professor



## [Sensing and Visualization for ITS]

Advanced Mobility Research Center (ITS Center)

Spatio-Temporal Mobility Informatics  
Mechano-Informatic Mobility Engineering

This work was done in collaboration with ITS Labs.

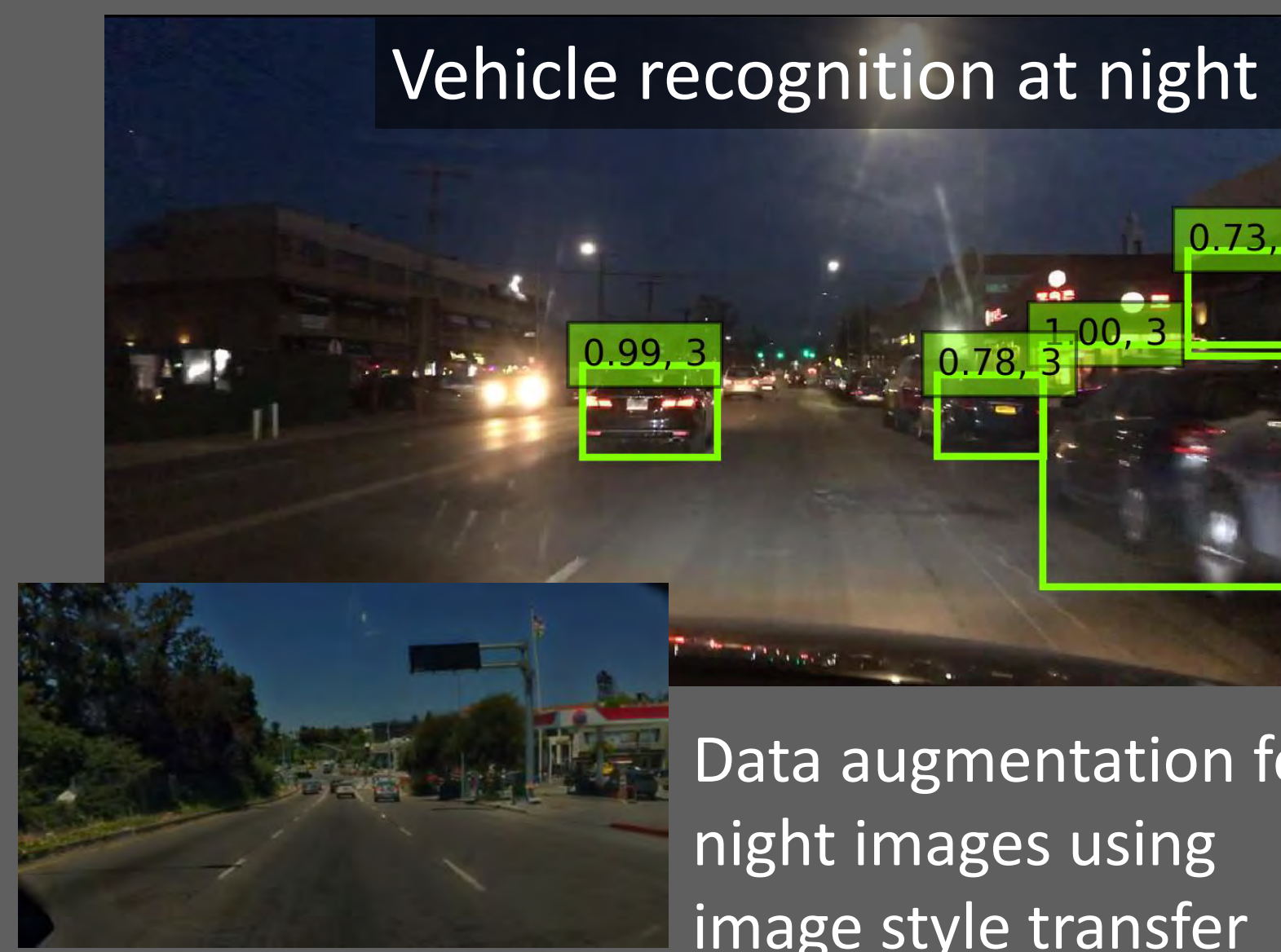
<http://www.its.iis.u-tokyo.ac.jp/~onoshin/>

Visualization  
Practical Use  
Real Scene Understanding  
Information Extraction  
Real World Sensing  
Modeling

### Basic Technology for Automated Driving



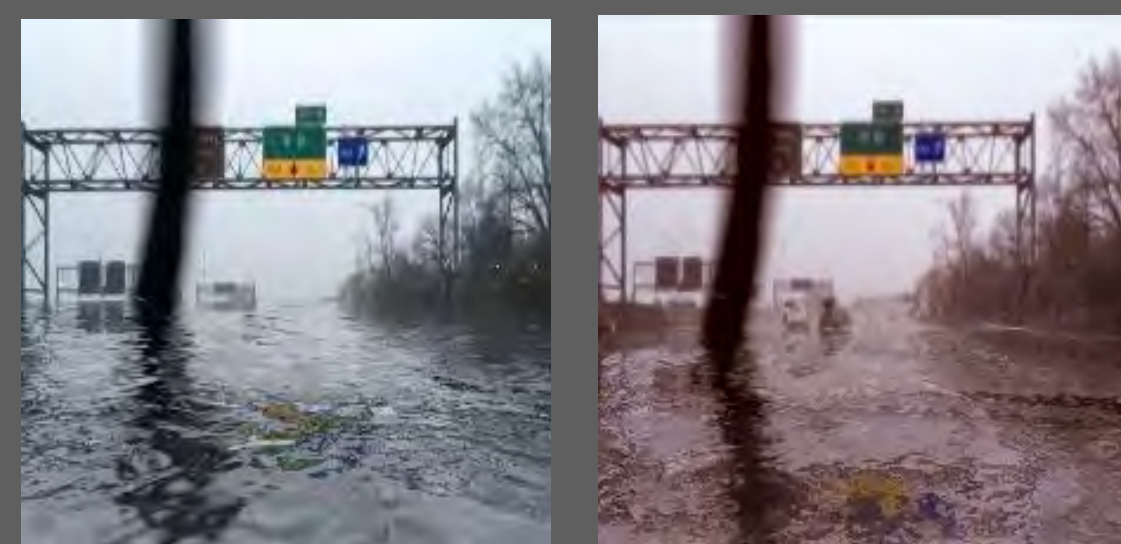
Hand signal recognition



Vehicle recognition at night

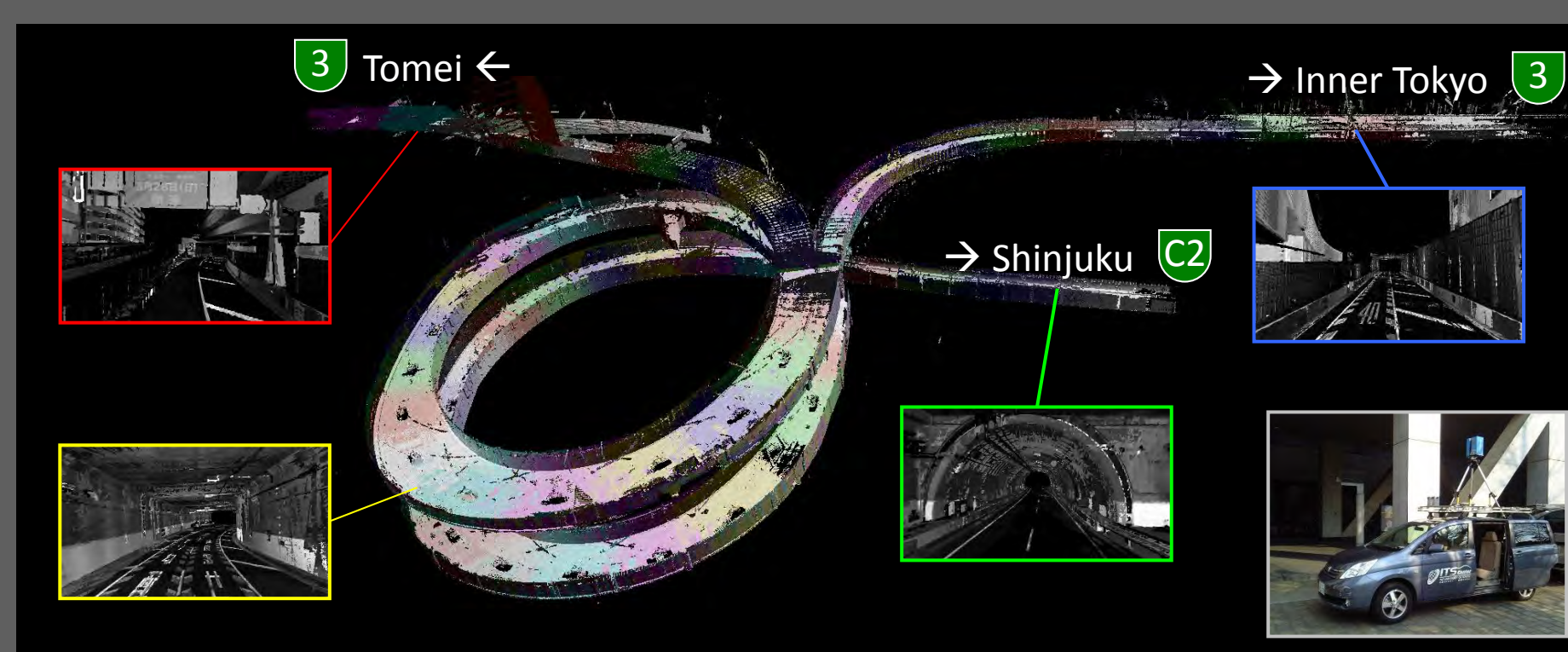
Data augmentation for night images using image style transfer

### Detecting Unusual Events



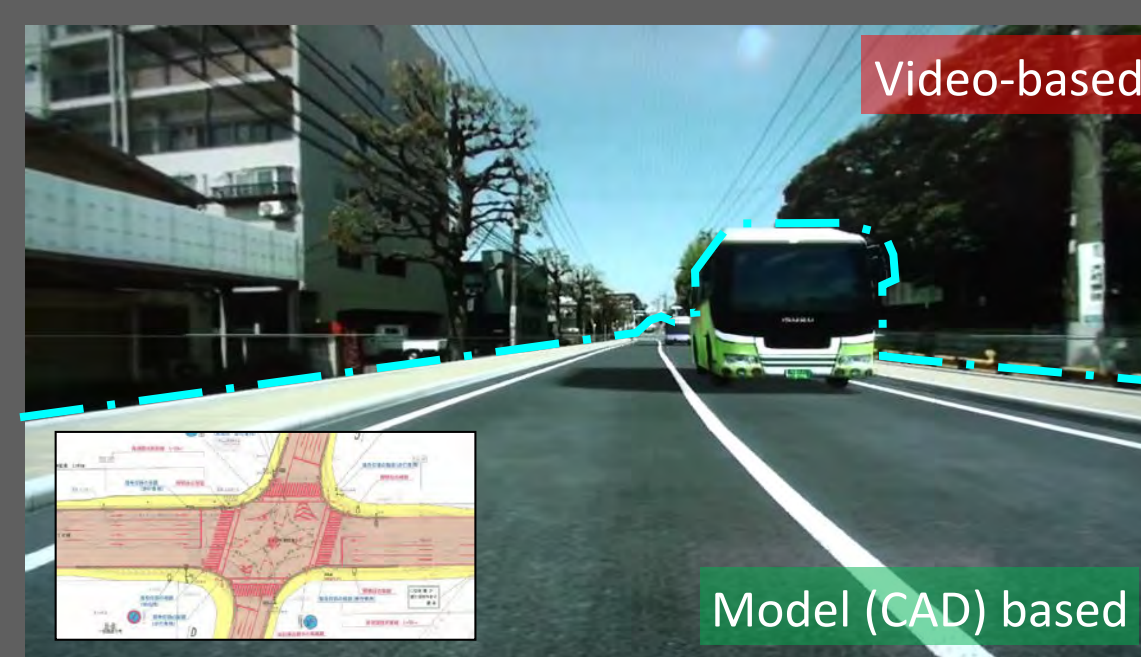
Flood detection  
Data augmentation using CG and GAN

### Sensing by Specialized Vehicle



3D Modeling of Road Structure

### Video-based Driving Simulator



### System for Information Collection, Integration, Visualization, and Distribution

Yes, we can reduce CO2 emission with cooperation!  
Let me try another route  
How congested!

**Distribution**

- Use public transport
- Choose eco-route
- Do eco-driving

**Collection** → **Integration** → **Visualization**

Traffic Observation → S/T Database → Interpolation Simulation CO<sub>2</sub> Emission Estimation

CO<sub>2</sub> Scope (Mesh Emission) → Road Emission → Emission History → Low-Emission Route

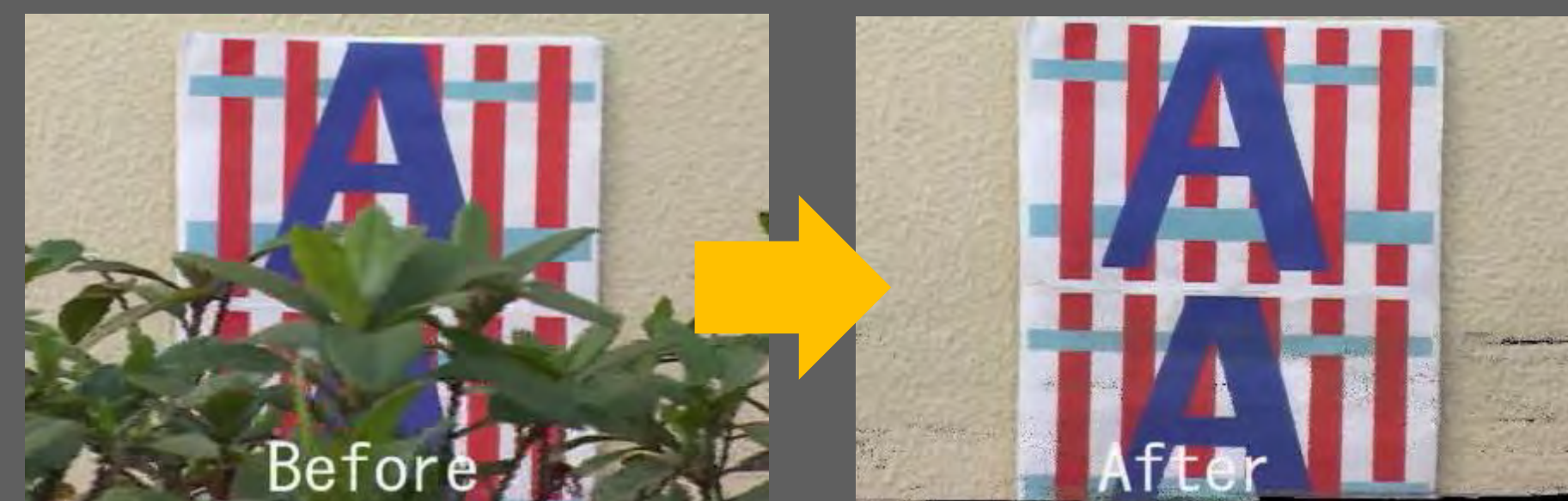
Virtual Image → Education → Personal Result → Ranking

**Social Experiment in Kashiwa City, Chiba**

- Emission Reduction Effect
- Cost Performance

8% Reduction of CO<sub>2</sub> Emission by Raising Awareness of Citizens:  
Regional Transport Information System for Promoting Eco-Friendly Travel Behavior

### Space-time Video Processing



Separating foreground/background by spacetime filtering

### Sensing by General Vehicles



Super Resolution (Refinement) of Super Wide-Angle On-Vehicle Camera

Street Panorama before East Japan Earthquake Reconstructed from Driving Video Recorder

