



# Vehicle Dynamic Control Strategy of Automated Driving

[For Safer and More Comfortable Automated Driving Technology]

Corporate Sponsored Research Programs

Dynamics and Control of Vehicle  
Human-Machine Systems  
Mechano-Informatic Mobility Engineering

Sponsored by



JTEKT Corporation

## Vehicle Dynamic Control

Robust Control against Disturbance and Modeling Error



Automated driving bus



Active pitch control for prevention of passenger falling over in autonomous shuttle

Prevent Over-Trust on AD/ADAS

Vehicle motion control utilizing the characteristics of Personal Mobility Vehicle

Expand ODD (Operational Design Domain)

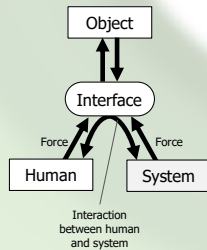
Towards the Evolution of Automated Driving

Centaur  
Unity with a car like extending four limbs  
ADAS  
Rider and Horse  
Driver  
AD Vehicle  
AD

Realization of Unity of Driver-Vehicle (Rider-Horse)



I-HSC  
Indirect Haptic Shared Control  
D-HSC  
Direct Haptic Shared Control



Interaction between human and system

HMI Human-Machine Interface

HMI to Encourage Driver's Spontaneous Behavioral Change

Driving simulator experiment



Vehicle Dynamic Function for Automated Driving (AD) fusing  
• Human-Machine System  
• AI and Other Advanced Technology

Better performance (precision, response) in AD control



More Reliability in AD  
Affluent Society where People Can Move Safely in Peace  
Academic Contribution



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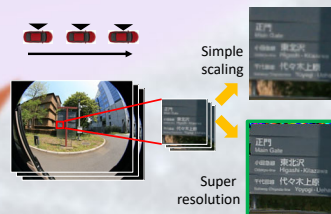
Hand signal recognition



Detecting road safety mirrors and events inside the mirror

Environment and Driver Monitoring using Cameras and Biological Sensors

## Sensing



Super resolution (refinement) of on-vehicle camera images

