



K. Nakano Lab.

[Measurement and Control in Mobility]

Advanced Mobility Research Center

<http://www.knakanolab.iis.u-tokyo.ac.jp>

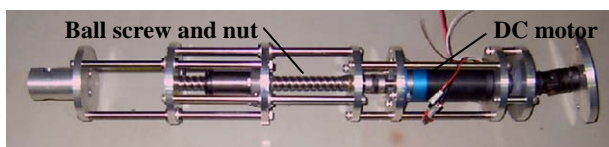
Mechanical and Biological Systems Control

Interdisciplinary Information Studies, Mechanical Engineering

Human-oriented Mobility Engineering

Based on knowledge of signal processing, control and vibration engineering, we are carrying out studies on active vibration control, multi-channel signal processing method such as independent component analysis and parallel factor analysis (PARAFAC) applied for condition monitoring and system identification, and estimation of condition of a driver through measurements of bio-signals. Human-oriented studies on control and signal processing for vehicles and humans are widely being conducted in the lab.

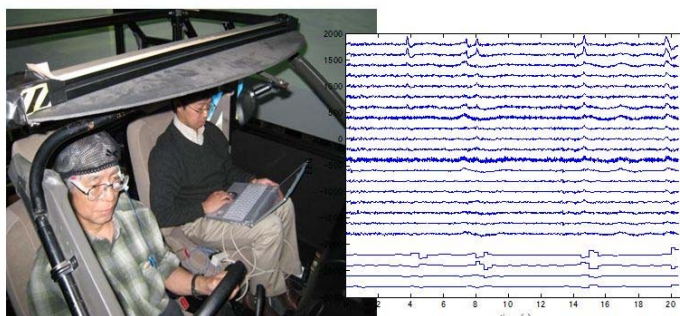
- ◆ Self-powered active vibration control
- ◆ Electromagnetic suspensions
- ◆ Personal mobility vehicle
- ◆ Independent component analysis for analysis on vehicle vibration
- ◆ Denoising of output of fiber-optic brag grating sensor using Parallel Factor Analysis
- ◆ Electroencephalogram (EEG) analysis on a driver manipulating a driving simulator
- ◆ Evaluation of dynamic characteristic of automobiles using electromyogram, EMG
- ◆ Driver's behavior analysis by physiological signals such as perspiration



Electro-magnetic actuator



Vibration analysis on a railway bogie using ICA



EEG analysis on a driver manipulating a driving simulator



Self-powered active vibration control for a beam