



# DeMaMech 2005

Report  
Joachim Priesnitz



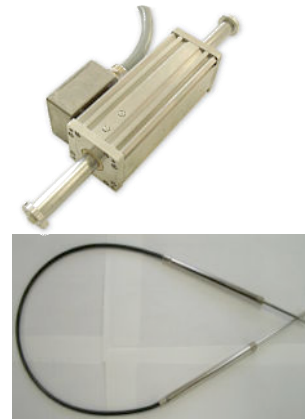
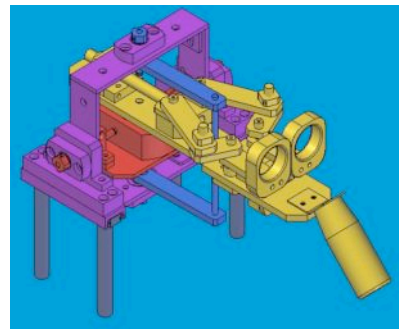
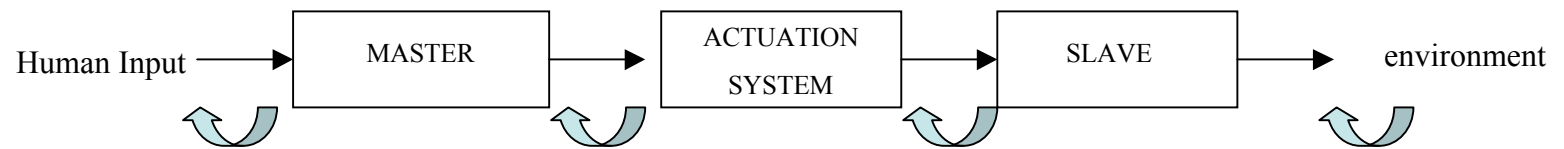
## Personal Data

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Name:	Joachim Priesnitz
Home university:	TU Berlin
Home supervisor:	Prof. Lucienne Blessing
Host university:	Keio University
Host supervisor:	Prof. Kouhei Ohnishi
Research topic:	Bilateral Control / Haptics
Location:	Hiyoshi, Shin-Yokohama

# Research

Teleoperation  $\Rightarrow$  Bilateral Control



# Research

## Control system



$$F_{Motor} = K_f \cdot I_a$$

M - motor mass

$$M \cdot \ddot{x} = F_{Motor} - F_{dis}$$

x - position

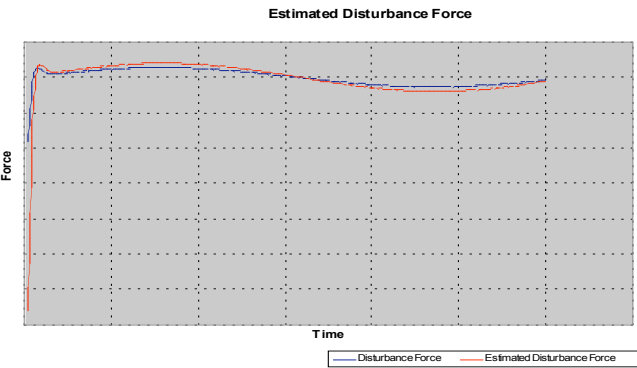
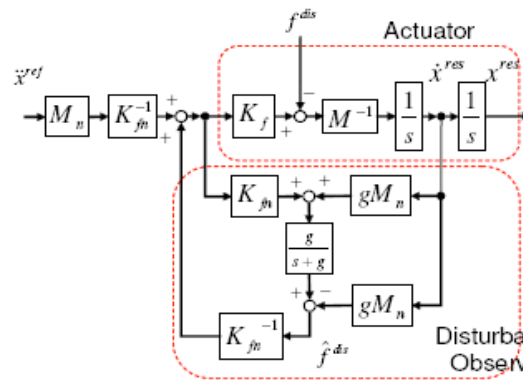
$$F_{dis} = F_{int} + F_{ext}$$

F - force

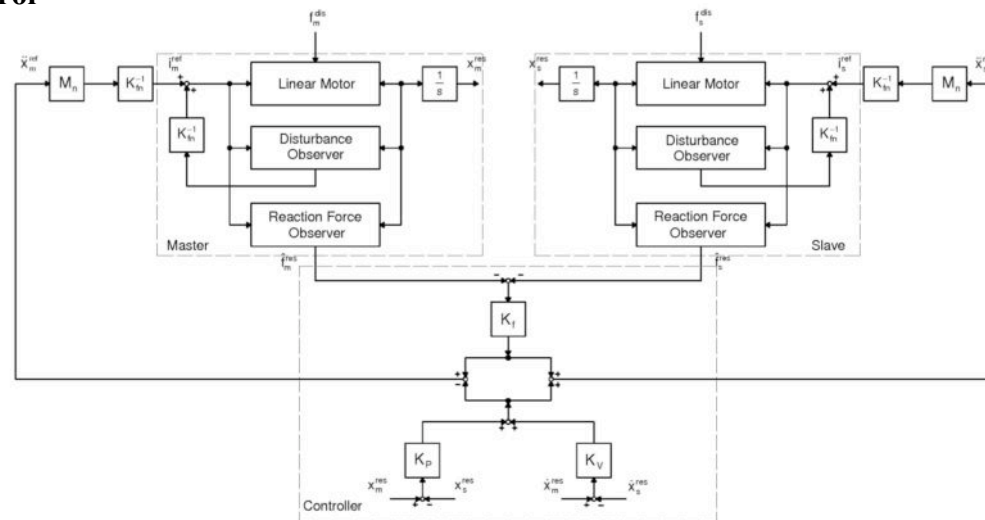
dis - disturbance

## Disturbance observer

- Robust control
- no force sensor necessary



## Bilateral Control



# Exchange Student Life

