

Some Views on New Frontiers in Robotics

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Mechanical systems: proper design

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Mechanics

- Physical interactions
- Virtual environments and virtual robotics challenges
- Operations in unstructured environments
- Human-robot interaction
 - safety

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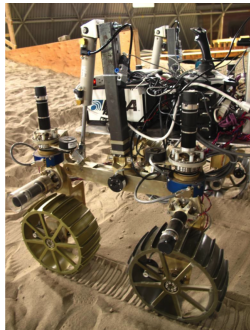
Contact

- Better understanding of complex contact situations
- Verifiable contact modelling and simulation

Robots in Unstructured Environments

Mobile Robots

- Unmanned vehicles and rovers
- Wheel-soil contact

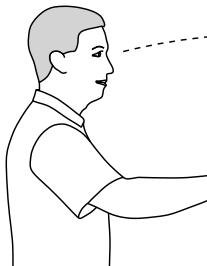


Human-Robot Interactions in Virtual Environments

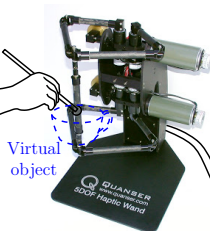
HUMAN OPERATOR

Human motor control

Audio-visual
information



Haptic interaction with
kinesthetic force feedback



Complex robotic mechanism

HAPTIC DEVICE

VIRTUAL ENVIRONMENT SIMULATION

Real-time simulation
and digital control



Sampled, quantized
position & motor current



AMPLIFIERS

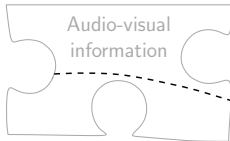
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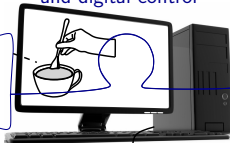


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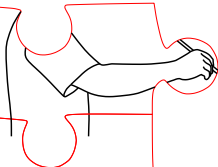


VIRTUAL ENVIRONMENT

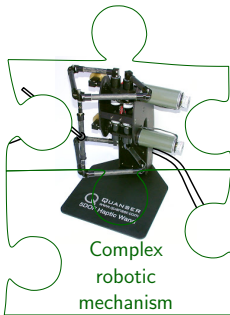
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