MICRO-553  Haptic human robot interfaces
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Summary
This course teaches basic knowledge on haptic devices, force feedback and mechanical man-machine interfaces. Lectures are about 40 %, the rest is hands-on practical work with the "haptic paddle", a complete mechanical device with full laptop control interface. Realization of project in groups of 2.

Content

Keywords
Haptics - Haptic Interfaces - Human Robot Interfaces - Psychophysics - Impedance control - Admittance control

Learning Prerequisites
Recommended courses
Basics of Robotics

Learning Outcomes
By the end of the course, the student must be able to:
• Design a haptic interface for robot, rehabilitation, prosthesis, exoskeleton
• Realize a haptic interface for robot, rehabilitation, prosthesis, exoskeleton
• Analyze a haptic interface for robot, rehabilitation, prosthesis, exoskeleton
• Assess / Evaluate a haptic interface for robot, rehabilitation, prosthesis, exoskeleton
• Propose a haptic interface for robot, rehabilitation, prosthesis, exoskeleton
• Defend the proposed solution
• Explain the purpose and function of a haptic interface

Transversal skills
• Set objectives and design an action plan to reach those objectives.
• Communicate effectively, being understood, including across different languages and cultures.
• Communicate effectively with professionals from other disciplines.
• Access and evaluate appropriate sources of information.
• Write a scientific or technical report.
• Write a literature review which assesses the state of the art.
• Make an oral presentation.
• Summarize an article or a technical report.

Teaching methods
Lectures
Labs and Hands On, using a Haptic Paddle
Seminars
Lab specialization

Expected student activities
Attendance to lectures from EPFL and guest lecturers
Labs which count in the final grade
Lab specialization which counts in the final grade

Assessment methods
Oral examination

Supervision
Office hours Yes
Assistants Yes
Forum No

Resources
Virtual desktop infrastructure (VDI)
No

Moodle Link
• https://go.epfl.ch/MICRO-553