

'Dynamic Models of Human Haptic Perception and Action and Their Application in Telepresence'

Date(s) Tuesday 16th October 2012 (16:00-17:00)

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In telepresence systems the human operator interacts with a distal environment by manipulating an haptic interface that controls a robotic effector. The operator perceives the environment through the technical system. Knowing the haptic and sensorimotor capabilities of humans is essential for improving the designing and usability of such systems. This talk will introduce a dynamic modeling framework suitable for developing and formulating mathematical models of perception and behaviour. Models based on this framework can be exploited for the design and control of technical applications. Two sensorimotor models are discussed in detail: a dynamic model for masking effects in the perception of mechanical damping, and a dynamic task performance model. A communication quality control algorithm is developed, considering the task performance model in an optimal way. Finally, experimental data will be presented to show that such human-centered algorithm design has substantial benefit for the human operator.