

Séminaires ISIR

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Title : Using teleoperation to investigate human-robot interaction

Abstract : Although humanoid robots use advanced technologies and theories, these systems still fail to be as friendly and natural as a ‘real’ human in interaction. The main reason of this failure may be due to the extreme complexity of human communication that they cannot understand and replicate. Instead of building new models from scratch, our *novel* approach turns around the problem: human behavior is accurately replicated in real-time on a humanoid robot to study and to learn new models. Through teleoperation and teleperception, an experimenter is directly linked with a humanoid robot. He can control in real-time and free of attached sensors the gestures performed by the robot with his own movements. The experimenter can perceive the scene as if he was the robot. The humanoid robot is used as a proxy between two humans involved in dyadic interactions. Using online manipulation of one specific behavior (e.g., eye vergence) at a time and preserving the rest of the behaviors intact, we will be able to better understand human-robot interaction and to determine the real perceptual limits of such behavior. Results on effects of damping head movements will be presented.

Short Bio : Guillaume Gibert received a Ph.D. in Signal, Speech and Image Processing in 2006 (Institut National Polytechnique de Grenoble, France) and conducted his doctoral research, entitled “Conception and evaluation of a text-to-Cued Speech 3D system”, at the Institut de la Communication Parlée (Grenoble, France). He developed an avatar able to produce Cued Speech (Cued Speech is a manual technique which complements lip-reading for deaf people) from any text input. He set up and ran perception experiments (speech communication methods including also the eye tracking technique) with hearing and deaf people to evaluate the synthesizer. Then, his research interests focused on real-time EEG signal processing and Brain Computer Interfaces (INSERM U821, Lyon, France). After a postdoc at MARCS Auditory Labs (UWS, Australia) where he was in charge of the evaluation of the Thinking Head project, he is now the team leader of the SWoOZ project funded by the ANR PDOC.