

ELECTIVE IN ROBOTICS 2014/15

Short project in Module “Locomotion and Haptic Interfaces”

The MPI motion emulators

Replicate by simulation the results obtained in the reference material with one of the proposed kinematic control schemes of the KUKA KR500 robot (with or without extra prismatic joint at the base) used to provide motion cueing that emulates physical accelerations applied to a human user carried on the robot end-effector.

Reference material:

[1] P. Robuffo Giordano, C. Masone, J. Tesch, M. Breidt, L. Pollini, and H.H. Bühlhoff, “A novel framework for closed-loop robotic motion simulation - Part I: Inverse kinematics,” *Proc. IEEE Int. Conf. on Robotics and Automation*, pp. 3876-3883, 2010.

[2] P. Robuffo Giordano, C. Masone, J. Tesch, M. Breidt, L. Pollini, and H.H. Bühlhoff, “A novel framework for closed-loop robotic motion simulation - Part II: Motion cueing design and experimental evaluation,” *Proc. IEEE Int. Conf. on Robotics and Automation*, pp. 3896-3903, 2010.

[3] C. Masone, P. Robuffo Giordano, and H.H. Bühlhoff, “Mechanical design and control of the new 7-DOF CyberMotion simulator,” *Proc. IEEE Int. Conf. on Robotics and Automation*, pp. 4935-4942, 2011.