



COMBINING PREDICTIVE AND TRACKING SIMULATIONS FOR ROBOTIC NEUROREHABILITATION PURPOSES

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Abstract

In this work we combined the predictive and tracking simulations to simulate a knee flexion-extension movement with a human-exoskeleton interaction model. With the predictive simulation we determined the optimal trajectory as well as the muscle activations and actuator torque to produce it. With the tracking simulation we simulated an interaction control composed by a robot and a human control loop, with the trajectory obtained with the predictive simulation serving as a reference to be tracked by the model. Despite the simulation algorithm work without any error, the results obtained were not consistent, being necessary to make adjustments in the model, with regard to the types of muscles used. Such adjustments as well as new tests with the adjusted model are the purpose of future work.

Keywords: *OpenSim. Predictive Simulation. Tracking Simulation. Biomechanical model.*