

Online Resource 7

Title: Simulation framework for dynamic modeling of human-exoskeleton systems for gait rehabilitation.

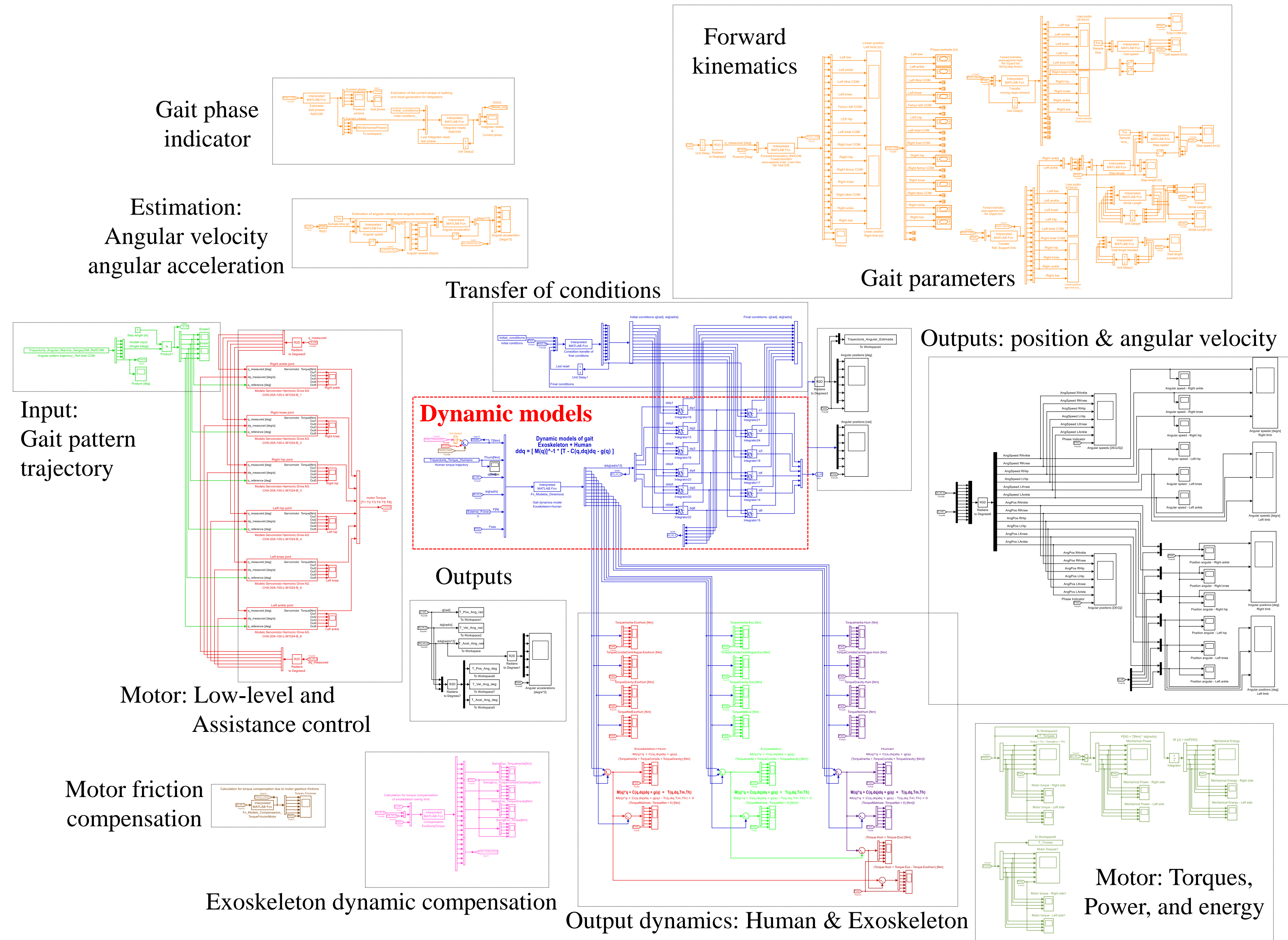
Description: A simulation framework for human gait rehabilitation with lower-limb exoskeletons is developed to analyze Human-Robot Interaction and evaluate control strategies. The complete model is formulated as a hybrid dynamic system composed of four sub-models associated with the gait phases. These sub-models are synchronized according to the detected locomotion phase and include both actuator dynamics and low-level control loops. The framework was assembled in MATLAB/Simulink®.

Article: Dynamic modeling of human-exoskeleton interaction: A simulation framework for gait rehabilitation.

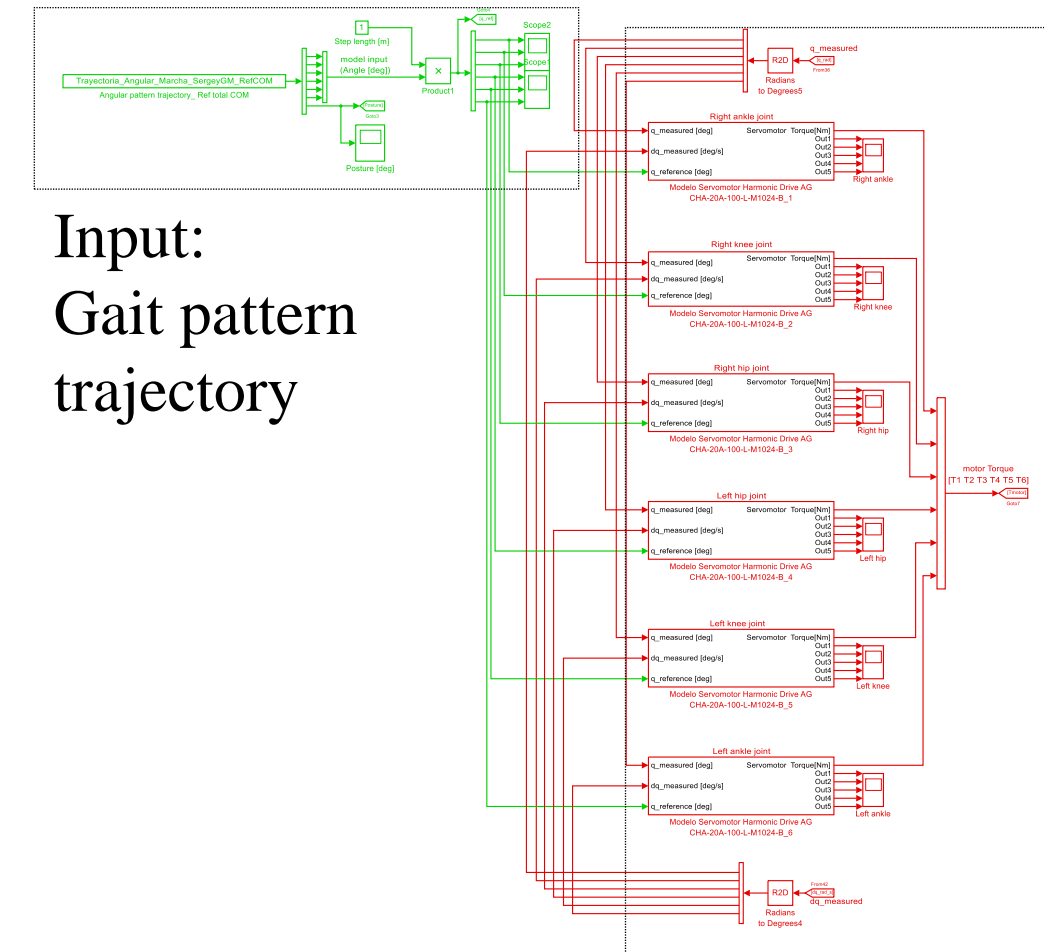
Journal: Multibody System Dynamics

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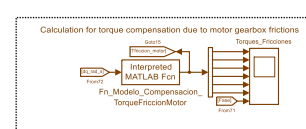


Input:
Gait pattern trajectory

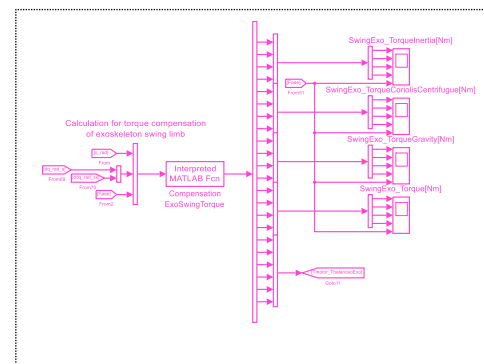


Motor: Low-level and Assistance control

Motor friction compensation



Exoskeleton dynamic compensation



Output dynamics: Human & Exoskeleton

