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(54) **SIMULATION SYSTEM, METHOD AND COMPUTER-READABLE MEDIUM FOR HUMAN AUGMENTATION DEVICES**

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(57) **ABSTRACT**

A system, a method and a computer readable medium are provided for simulating a combined musculoskeletal and augmentation device system. The dynamics model of the combined musculoskeletal and augmentation device system receives computed torques at the joints as inputs and delivers simulated kinematic data of the segments as outputs. The augmentation device controller for control of the augmentation device, receives the simulated kinematic data as inputs and delivers assist torques as outputs. The inverse dynamics model for the musculoskeletal and augmentation device system, receives the simulated kinematic data, desired kinematic data of the segments and the assist torques as inputs and delivers the computed net joint torque and muscle torque. The muscle force and muscle capacity module for checking and adjusting the computed torques, receives the computed torques as inputs and delivers computed torques as outputs after the checking and adjustment.

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