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(54) **CONTROLLER FOR AN ASSISTIVE EXOSKELETON BASED ON ACTIVE IMPEDANCE**

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See application file for complete search history.

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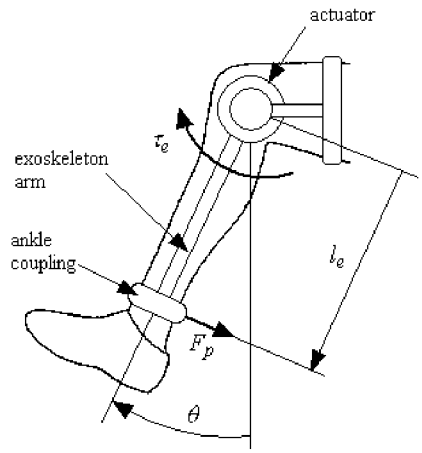
(57) **ABSTRACT**

A system and method are presented to provide assist to a user by means of an exoskeleton with a controller capable of making the exoskeleton display active impedance. The exoskeleton assists the user by reducing the muscle effort required by the user to move his or her extremities. In one embodiment, a single-degree-of-freedom (1-DOF) exoskeleton assists a user with single-joint movement using an active impedance controller. In another embodiment, a multiple-degree-of-freedom (multi-DOF) exoskeleton assists a user with multiple-joint movement using an active impedance controller.

14 Claims, 14 Drawing Sheets