

Western University

Scholarship@Western

Inspiring Minds – A Digital Collection of
Western's Graduate Research, Scholarship and
Creative Activity

Inspiring Minds

November 2022

Improving Modelling and Control of Wearable Hand Exoskeleton Devices

Parisa Daemi

The University of Western Ontario, pdaemi@uwo.ca

Follow this and additional works at: <https://ir.lib.uwo.ca/inspiringminds>

Citation of this paper:

Daemi, Parisa, "Improving Modelling and Control of Wearable Hand Exoskeleton Devices" (2022). *Inspiring Minds – A Digital Collection of Western's Graduate Research, Scholarship and Creative Activity*. 258.
<https://ir.lib.uwo.ca/inspiringminds/258>

Improving Modelling and Control of Wearable Hand Exoskeleton Devices

Hand and upper limb impairment resulting from neurological disorders or stroke limits hand dexterity, significantly affecting patients' quality of life. Currently, nearly 100,000 Canadians live with hand disabilities, and this number is expected to increase as the population ages. Recently, breakthroughs in mechatronics and robotics technology have provided an apt ground for designing wearable exoskeleton-type therapy devices, showing their potential as an alternative hand disability management approach. However, the mathematical equations that describe the complex hand motions are not accurate enough when applied to externally worn exoskeletons. To this aim, the focus of my research is to model and control a wearable exoskeleton device to assist people suffering from hand disabilities by developing new kinematic and kinetic equations that more accurately characterize device behaviour. Thus, the result of this study will allow the wearable exoskeleton devices to support hand motion more accurately, leading to better technologies and improved outcomes.

