

## RESEARCH FOCUS

- Modifying an existing lower-limb robotic exoskeleton to be suitable for geriatric users
- Developing and evaluating a novel protocol to improve human-exoskeleton interaction

## PUBLICATION

- Lau JCL and Mombaur K (2022) Preliminary Study on a Novel Protocol for Improving Familiarity with a Lower-Limb Robotic Exoskeleton in Able-Bodied, First-Time Users. Front. Robot. AI 8:785251. doi: [10.3389/frobt.2021.785251](https://doi.org/10.3389/frobt.2021.785251)

## EDUCATION

**Candidate for MASc in Systems Design Engineering**  
*University of Waterloo, expected to graduate in Aug. 2022*  
Specialization in Biomedical Engineering

**Waterloo, Canada**

**BASc in Biomedical Engineering**  
*University of Waterloo, 2020*

**Waterloo, Canada**

## RESEARCH EXPERIENCES

**Master of Applied Science Candidate**  
*HCRMI Lab, University of Waterloo: Sep. 2020 to Aug. 2022 (expected date)*

**Waterloo, Canada**

- Designing a new sit-to-stand trajectory and modifying an existing lower-limb exoskeleton for older adults
- Developed a novel protocol for improving exoskeleton usage familiarity in able-bodied, first-time users
- Presented study findings of the novel protocol in International Society of Biomechanics (ISB) 2021 Conference
- Collaborating with psychologists and researchers from Germany on improving geriatric mobility in the interdisciplinary consortium HeiAge
- Conducting a biomechanics study on chopstick usage

**Undergraduate Research Assistantship Student**  
*Engineering Bionics Lab, University of Waterloo: Jan. 2018 to Apr. 2018*

**Waterloo, Canada**

- Calculated identification rate from experimental data to evaluate biometrics algorithm
- Conducted literature research on behavioral biometrics
- Analyzed EMG data from signal processing MATLAB code to identify noise

**Research Assistant**  
*Engineering Bionics Lab, University of Waterloo: Jan. 2017 to Apr. 2017*

**Waterloo, Canada**

- Designed and 3D-printed a modular exoskeleton prototype to help people with Parkinson's Disease initiate gait
- Applied anthropometric data, engineering design methods, and mechanics calculations to exoskeleton design
- Performed Finite Element Analysis on Fusion 360 to determine stress profile

## STARTUP EXPERIENCE / CAPSTONE PROJECT

### Co-Founder

Toronto, Canada

*Cadera Inc.: Sep. 2018 to Jul. 2021*

- Co-developed a physical simulator to train physicians to better detect and diagnose developmental dysplasia of the hip (DDH) in infants
- Awarded CAD60k and completed the Accelerator Centre Jumpstart program in 2021
- Conducted literature research on infant hip anatomy and DDH
- Designed and 3D-printed mechanical components for prototypes
- Developed business plan and managed budget

## WORK EXPERIENCES

### Assistant Pricing Analyst

Stuttgart, Germany

*Global Pricing, Philips Healthcare: Jan. 2019 to Aug. 2019*

- Designed a competition tool for pricing intelligence on Qlik Sense
- Applied mathematical model to observe product sales trend as a foundation for determining price elasticity, customer segment identification, and product sales forecast
- Developed code to optimize product portfolio using the Extract-Transform-Load process

### Marketing Communications Assistant

Hong Kong

*Marketing & Communication Department, IDS Medical Systems (HK) Co. Ltd.: Sep. 2017 to Dec. 2017*

- Supported sales team in crafting medical devices product catalogue for Hong Kong market
- Collaborated with seven Asia offices to launch artefacts and internal programs to promote the company branding
- Trained Hong Kong sales team to operate promotional materials for marketing events

## LEADERSHIP

### Orientation Leader

Waterloo, Canada

*Engineering Orientation Week, University of Waterloo: Sep. 2016 to Sep. 2019*

- Co-managed 8 front-line leaders and over 100 first-year students
- Ensured smooth logistic flow from one event to another
- Prepared engineering activities and team-building events with other student volunteers

### Team Lead

Waterloo, Canada

*Biomechatronics Design Team, University of Waterloo: Jan. 2018 to Dec. 2018*

- Delegated tasks amongst sub-team leaders to ensure sub-teams work towards their goal
- Gained a profit of over CAD550 in six hours through fundraising event
- Organized workshops to teach team members technical skills
- Facilitated a sub-team on deciding project scope with the Priority Criteria Matrix and Best-of-Class Chart

### Chapter Lead

Waterloo, Canada

*eNable Waterloo, University of Waterloo: Sep. 2016 to Aug. 2017*

- 3D-printed prosthetic hands to help children to perform daily tasks as part of the "Enabling The Future" initiative
- Promoted to Chapter Lead within 3 months due to outstanding leadership skills and teamwork
- Delegated tasks amongst team members to obtain optimal work efficiency
- Experimented with Fusion 360 to customize prosthetic hands for children depending on their needs

## INTERESTS

- Martial arts (Karate and Muay Thai)
- Learning German