

Candidate for Master of Applied Science Specialization in Biomedical Engineering jan.lau@uwaterloo.ca

<u>LinkedIn</u> | <u>UWaterloo Scholar</u> | <u>Website</u>

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. Al 8:785251. doi: 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

BASc in Biomedical Engineering

University of Waterloo, 2020

Waterloo, Canada

Waterloo, Canada

RESEARCH EXPERIENCE

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

Waterloo, Canada

Engineering Bionics Lab, University of Waterloo: Jan. 2018 to Apr. 2018

- 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 Waterloo, Canada

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

- 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