

**EDUCATION**

**University of Waterloo, B.A.Sc. in Mechatronics Engineering, GPA 3.86/4.0. Sept 2019-May 2024**

Graduated with Honors

**PUBLICATIONS IN PEER-REVIEWED JOURNALS**

1. Lee, P.S., **Sjaarda, C**, Gao, R.Z., Dupuis, J., Rukavina-Nolsoe, M., and Ren, C.L. (2024) Soft-Rigid Hybrid Revolute and Prismatic Joints using Multilayered Bellow Soft Pneumatic Actuators: Design, Characterization, and its Applications as Soft-Rigid Hybrid Gripper. *Soft Robotics* (in press), 17pp. doi: 10.1089/soro.2022.0214

**CONFERENCE PRESENTATIONS AND POSTERS**

1. Lee, P.S., **Sjaarda, C.**, Cornelious, Rhys, Gao, R.Z., Lu, K., and Ren., C.L. (2023) Naturally Compliant Dexterous Anthropomorphic Hand via Novel Modular Soft-Rigid Hybrid Robotics Approach: Design Rationale, Assembly Methods, and Evaluation. *32<sup>nd</sup> IEEE International Conference on Robot and Human Interactive Communication*. Accepted (International). 7pp. Oral Presentation. ROMAN23\_0398\_MS, Aug 28-31, 2023, Busan, Korea
2. L Sumanan, **C Sjaarda**, J Kowalski, J Michaud and CL Ren, “Wearable Capacitive Pressure Sensor Design”, 2026 48th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), July 26-30, 2026, Toronto, ON, Canada.
3. Attended and gave a talk at the 2025 SES Annual Technical Meeting in Atlanta Georgia

**AWARDS AND HONORS**

2025/05-2028/05    **NSERC Postgraduate Scholarship - Doctoral**

2024/09-2025/08    **NSERC Canadian Graduate Scholarship - Masters**

2024/09-2025/08    **Presidents Graduate Scholarship**

2024/1 – 2024/4    **Dean’s Honors List**

2024/04    **Mechatronics Design Symposium Future Impact Award**

2019- 2023    **Sandford Fleming Foundation Senior Design Competition Award x3**

2023/1-2023/8    **Presidents Research Award x2**

2023/1 – 2023/8    **NSERC Undergraduate Student Research Award x2**

2022/1 – 2022/4    **Dean’s Honors List**

2020/9    **University of Waterloo President’s Scholarship of Distinction**

**SUPERVISION AND MENTORSHIP**

| <b>Coops</b>       | <b>Volunteers</b> | <b>Capstone Teams</b> |
|--------------------|-------------------|-----------------------|
| Maggie Crawford    | Rahul Ramkumar    | PneuBra               |
| Sebastian Assucano | Lavan Sumanan     | PRISM                 |
| Richard Ding       | Maggie Wang       | Kneematic             |
| Meeji Koo          | Erica Liu         |                       |
|                    | Jonathon Michaud  |                       |

**CURRENT RESEARCH FOCUS**

Development of soft-rigid robotic hands with integrated capacitive tactile sensing, embedded electronics, and intelligent control for dexterous manipulation and assistive robotics.

**TEACHING & RESEARCH EXPERIENCE**

- 2025/08- Present      **WML Soft Robotics Lab Manager** | Under Professor Carolyn Ren
- Recruited, trained, and mentored new graduate students, co-op students, volunteers, and capstone design teams.
  - Managed daily laboratory operations, organization, and equipment to support research activities.
  - Maintained laboratory safety procedures and ensured compliance with safety protocols.
  - Coordinated procurement, inventory, and disposal of laboratory chemicals and supplies.
  - Served as the primary contact between lab members and the principal investigator regarding operational needs and laboratory activities.
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- 2025/8-2025/12      **MTE 352 Fluids 1 Full TA** | University of Waterloo under Professor Carolyn Ren
- Delivered weekly tutorials and held regular office hours for undergraduate students.
  - Graded assignments, projects, midterms, and final examinations fairly while providing constructive feedback
  - Assisted students with course concepts in fluid mechanics through one-on-one and group support.
  - Identified and corrected errors in course solutions and instructional materials.
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- 2023/1 – 2023/8      **Soft Robotics Research Assistant** | University of Waterloo, Ontario, Canada
- Supervised by Professor Carolyn L. Ren.
  - Designed and developed soft robotic systems for medical and robot-human interaction applications.
  - Created and executed experiments to determine the properties of soft pneumatic actuators.
  - Design researcher for the development of a soft rigid robotic hand and McKibben Muscles.
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- 2022/5 – 2022/8      **Aeroacoustics Engineer** | Bombardier, Ontario, Canada
- Designed and executed aeroacoustics tests on airframes of aircraft.
  - Developed tools to accurately predict airframe cavity resonance at take-off and landing speeds.
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- 2021/1 – 2021/4      **Teaching Assistant** | Sheridan College, Ontario, Canada
- Organized and conducted tutorials, providing guidance to students.
  - Conducted private lessons to assist students in understanding course material

**ACADEMIC AND PROFESSIONAL ACTIVITIES****Leadership Roles**

- Executive of the Waterloo Judo Club (2023/05 –2025/01)
- Designed and led outreach activities such as open house (~50 student visitors) held by Waterloo Microfluidics Laboratory (2023)
- Designed coop jobs, conducted interviews and made decisions for hiring coops for Waterloo Microfluidics Laboratory (2024)
- Project lead for the capstone design project (2023-2024)
- Assist Dr. Ren (PI) in her application for a large Ontario Research Fund Grant