ROGER HO

Ann Arbor, MI 48105 | rogerho@umich.edu | +1 (734) 968-2525
github.com/rogerksho | rogerksho.github.io

EDUCATION

UNIVERSITY OF MICHIGAN **Aug 2019 - May 2023**
BSE Mechanical Engineering; Minor in Computer Science **Ann Arbor, MI**
Overall GPA: 3.92/4.00 | **Major GPA:** 4.00/4.00

RESEARCH EXPERIENCE

PRECISION SYSTEMS DESIGN LABORATORY May 2022 - May 2023

Research Assistant | University of Michigan **Ann Arbor, MI**

- Devised and conducted experiments to characterize a novel flexure mechanism to verify the performance of a theoretical structural augmentation, resulting in a publication in preparation.
- Collaborated with a team to design a flexure-based XY nanopositioning system with a focus on manufacturability, and carried the project through design, manufacturing, assembly, and open-loop testing, resulting in a patent and publication in preparation.
- Carried out thorough static and dynamic finite element analysis (FEA) to optimize flexure parameters for actuation stiffnesses, bearing stiffnesses, and resonant frequencies.
- Developed a framework with a graduate student to simulate and subsequently select the appropriate precision actuators and sensors based on flexure parameters and motion profile.

U-M BATTERY LAB Sep 2021 - Jan 2022

Research Assistant | University of Michigan **Ann Arbor, MI**

- Investigated the effect of fast formation on battery lifetime and electrochemistry by interpreting data from tests such as hybrid pulse power characterization (HPPC) and constant discharge.
- Analyzed diagnostic data from end-of-life lithium-ion pouch cells in Python to elucidate the effects of discharge temperature and presented the results in a digestible format.

MICROFLUIDICS AND SOFT MATTER GROUP May 2018 - Sep 2018

Research Assistant | The University of Hong Kong **Hong Kong**

- Conducted individual investigation on the structural strength of Aqueous Two Phase System (ATPS) capsules created with microfluidics for the application of timed medication release, triggered by capsule rupture from high voltage electric fields and Couette flow.
- Collaborated with graduate students on investigating the application of microfluidics in ATPS.

PUBLICATIONS

1. Radgolchin M., Rath S., **Ho R.**, Awtar, S., 2024, “A Novel Double Parallelogram Flexure Module with Improved Out-of-Plane Stiffness" (in preparation)
2. Radgolchin M., Rath S., **Ho R.**, Awtar, S., 2024, “Fabrication, Assembly, and Open-loop Testing of a Novel Flexure-based XY Nano-positioning Motion System." (in preparation)

PATENTS

1. Rath, S., **Ho, R.**, and Awtar, S., 2023, "Fabrication of Novel XY Flexure Mechanism based Motion System", (in preparation)

WORK EXPERIENCE

SURGICAL ROBOTICS STARTUP (STEALTH MODE) **Jul 2023 - Present**
Mechatronics Lead **Ann Arbor, MI**

- Led the mechatronics division to create a prototype for demonstrating to surgeons, involving responsibilities such as project management, communication with suppliers, and documentation.
- Developed and fabricated a mechatronic system for a robotic surgical device, which implemented closed loop control to allow the surgical device to precisely track surgeon input.
- Designed end effectors for surgical devices, entailing tasks such as geometric dimensioning and tolerancing, communication with external manufacturers, and design for manufacturing.

PHOENIX CAPITAL (INTERNATIONAL) LIMITED **Jun 2021 - Aug 2021**
Quantitative Analyst Intern **Hong Kong**

- Implemented experimental trading algorithms based on survival analysis statistical modeling.
- Devised profitable trading algorithms and technical indicators based on momentum trading.
- Created multiple internal tools and scripts in Excel VBA to optimize office operations.

ONEDEGREE **Jun 2020 - Aug 2020**
Software Developer Intern **Hong Kong**

- Configured business intelligence tools (Apache Superset) to consolidate client data.
- Developed an internal web application tool to streamline workflow of program managers.

HONORS

JAMES B. ANGELL SCHOLAR **Mar 2021 - Mar 2023**
Awarded to students who achieve all A's (A+, A, A-) for two or more consecutive terms.

UNIVERSITY HONORS/DEAN'S LIST **Dec 2019 - Dec 2022**
Awarded to students who earn a GPA of 3.5 or above during a term.

GRADING & TUTORING

GRADER **Aug 2021 - May 2022**
Graded assignments and quizzes for engineering courses such as "Introduction to Dynamics and Vibrations" and "Mechanical Behavior of Materials".

IB MATHEMATICS TUTOR **May 2019 - Aug 2019**
Tutored IB students in mathematics SL on topics such as calculus, trigonometry and statistics.

COMMUNITY INVOLVEMENT

SECOND STRINGS **Aug 2016 - Jun 2019**

Program Coordinator

- Provided free guitar tuition at various local churches for political refugees.
- Oversaw program logistics, involving tasks such as organizing guitar lessons, liaising with local churches, and keeping track of budgeting, purchasing, expenses.

SKILLS

- **Hardware:** Soldering (SMT/SMD), Circuit Design, PCB Design/Layout, Machining (Lathe, Manual Mill), FDM/SLA 3D Printing
- **Software:** SolidWorks (CSWA Certified), ANSYS (Mechanical, Discovery), MATLAB (Simulink, Simscape), Quartus II (ModelSim), KiCAD EDA, MSC Adams, LabView, LTSpice
- **Programming:** Python (NumPy, pandas, matplotlib), C++, C#, C, VHDL, Arduino, Swift, Java, JavaScript, AWS (EC2, S3), SQL