ROGER HO

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EDUCATION

UNIVERSITY OF MICHIGAN **May 2023**
BSE Mechanical Engineering; Minor in Computer Science | GPA: 3.92/4.00 **Ann Arbor, MI**
Honors: James B. Angell Scholar, Dean's List, University Honors, summa cum laude

RESEARCH EXPERIENCE

PRECISION SYSTEMS DESIGN LABORATORY **May 2022 - May 2023**
Research Assistant | University of Michigan **Ann Arbor, MI**

- Designed a flexure-based XY nano-positioning system and carried the project through manufacturing, assembly, and debugging, resulting in patents and publications under preparation.
- Conducted open loop testing of motion system to validate range of motion and bearing stiffnesses.
- Carried out thorough static and dynamic finite element analysis (FEA) for flexure parameter optimization.
- Selected and extensively surveyed existing precision actuators and sensors based on design specifications.
- Developed Python tool to compute actuator performance based on flexure parameters and motion profile.
- Performed experimental characterization of a modular one degree of freedom (DoF) flexure mechanism to verify a theoretical structural augmentation, resulting in a publication under preparation.

UM BATTERY LAB **Aug 2021 - Jan 2022**
Research Assistant | University of Michigan **Ann Arbor, MI**

- Investigated the effect of fast formation on cell performance and electrochemistry by analyzing data from
- Analyzed diagnostic data from end-of-life lithium-ion cells in Python, presenting 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 an Aqueous Two Phase System (ATPS) capsule created with microfluidics and microparticles with the possible application of timed medication release triggered by capsule rupture from high voltage electric fields and Couette flow.
- Assisted and collaborated with graduate students in investigating the application of microfluidics in ATPS.

PROFESSIONAL EXPERIENCE

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

- Led the mechatronics division to develop a robust and reliable prototype for demonstrating to surgeons, involving tasks such as thorough planning, mechatronic design, circuit layout, and programming.
- Designed and fabricated mechatronic systems for a robotic surgical device, which implemented closed loop control to allow the surgical device to precisely track user input.

SKILLS

- **Hardware:** Soldering (SMT/SMD), Circuit Design, Machining (Lathe, Mill, Drill), FDM/SLA 3D Printing
- **Software:** SolidWorks (CSWA Certified), ANSYS, MATLAB (Simulink), Quartus II (ModelSim), KiCAD EDA
- **Programming:** Python (NumPy, pandas, matplotlib), C++, VHDL, Arduino, JavaScript, AWS (EC2, S3)