John T. Golden

(951) 317-9788 | johng6@illinois.edu | jtgolden.dev

EXPERIENCE

Monolithic Systems Lab | Graduate Research Assistant Oct. 2023 – July. 2025

- Engineered a cooperative soft continuum robotic system in both physical and simulated environments, increasing achievable configurations and enhancing load-bearing capacity by integrating pneumatic prototypes with Cosserat-rod simulations.
- Developed a novel, continuous reconfigurable tendon-driven robotic manipulator capable of on-the-fly deformations beyond traditional designs; validated unique backbone postures via reconstruction and demonstrated configurations not achievable by conventional routing. Currently under peer-review.
- Collaborated with Georgia Tech students under the AFOSR funded SURI ATLAS project to develop an automated testing environment for continuum manipulator robotic control and simulation validation.

Magnetic Microsystems & Microrobotics Lab | Undergraduate Research Assistant May. 2023 – Aug. 2023

- Developed and fabricated a millimeter-scale bellow actuator powered by an electropermanent magnet, achieving 2mm displacement and 200mN force with ultra-low power switching (21 A, 500 µs pulse) through mechanical design, circuit development, and analytical modelling. Currently under peer-review.

Robotics and Automation Lab | Undergraduate Research Assistant Jun. 2022 – Aug. 2023

- Co-authored a peer-reviewed conference CCToMM & journal proceeding to TSCME in collaboration with surgeons from Hoag Orthopedics to deliver a wearable shoulder exoskeleton for range-of-motion assessment; validated its maximum angular error to 7° for flexion and external rotation by design and fabrication of a robust scissor linkage mechanism, integrating absolute encoders, and applying a kinematic mapping pipeline.
- Co-authored an ASME IDETC-CIE 2023 conference proceeding on a wearable hand device leveraging a control-oriented planar kinematic model for natural thumb-finger motion, assisted in the design, fabrication and automation of the linkage design for physical use.

B.i.N.o.M. Lab & Nexus Dx | Undergraduate Research Assistant Jun. 2021 – Oct. 2022

- First-authored on a peer-reviewed conference proceeding to WCMNM demonstrating a novel silicone adhesive label for microfluidics and validated simulation, analytical and experimental results within 10% for fluidic membrane deformation.
- Co-authored a peer-reviewed study published in Sensors & Actuators B demonstrating validation of simulation and experimental alignment within 15% when modulating Lab-on-a-Disc lateral-flow assay dynamics.
- At Nexus Dx, CD microfluidic product reliability was improved by increasing incubation time and fluid distribution consistency, verified through research reports by redesigning geometry, adding ventilation, and assisting in soft mold development.

EDUCATION

M.S. in Mechanical Science and Engineering, **University of Illinois Urbana-Champaign** Aug. 2023 – Jun. 2025
GPA: 3.8

B.S. in Mechanical Engineering, **University of California, Irvine** Sep. 2019 – Jun. 2023
Minor in Biomedical Engineering
GPA: 3.5

AWARDS/FUNDING

- Graduate Research Assistant - Full Stipend
- Graduate College Master's Fellowship
- Summer Undergraduate Research Proposal 2022
- Undergraduate Research Opportunity Proposal 2022, 2021

SKILLS

Design: SolidWorks, SolidCAM, COMSOL, Altium PCB,
Manufacturing: CNC, FDM/SLA 3D-Printing, Lasercutting
Reporting: LaTeX, Microsoft Office, Photoshop, Illustrator
Software: MATLAB, Python, ROS