

EDUCATION

University of California, San Diego

M.Eng., Specialization in Medical Device Engineering | GPA 3.946

June 2025

B.S. in Bioengineering; Minor in Supply Chain Management | GPA 3.879, *Cum Laude*

June 2024

SKILLS

Prototyping & Fabrication: 3D Printing, Manual Machining, CNC Machining, Laser Cutting, Heat-Set Polymer Forming

CAD: SolidWorks (Parts, Assemblies, Drawings), Fusion 360

Testing & Analysis: FMEA, Root Cause Analysis, Benchtop Characterization, Electromagnetic Motion Tracking, Data Acquisition (DAQ), Statistical Analysis

Programming: MATLAB, Python, Arduino (C/C++), Git

Regulatory (Coursework): FDA Device Classification and 510(k) Pathway, Design Controls (Inputs/Outputs, V&V)

ENGINEERING EXPERIENCE

Master's Capstone Engineer

Jan 2025 – June 2025

UC San Diego – Limb Shield Sensorized Prosthetic Liner

San Diego, CA

- Integrated pressure, temperature, and humidity sensors into standard gel liners compatible with existing prosthetic sockets; responsible for sensor integration on a 6-person team
- Built the Arduino-to-MATLAB data pipeline that renders sensor readings as heat maps on a 3D scan of the residual limb
- Set up bench characterization on a 3D-printed transtibial limb using a heating plate, humidified sealed chamber, and calibrated weights; contributed to team FMEA

B.S. Senior Design Engineer

June 2023 – June 2024

UC San Diego – Transcatheter AFib Drug Delivery Device (Cathiva co-mentored)

San Diego, CA

- Designed and built the deployable-needle and expandable-arm subsystems (2 of 4) for a 4-person team developing a six-arm, multi-needle catheter for intracardiac drug delivery
- Built a needle cutting block and a 30° attachment mold to make needle cutting and positioning repeatable across builds
- Designed a notched sheath with pull-wire actuation to conceal and deploy 3 mm needles; selected tube materials and shaped nitinol arms, working through tube kinking failures
- Conducted FMEA to identify device failure modes and prioritize design mitigations

Undergraduate Researcher

Sept 2021 – June 2024

Morimoto Lab, UC San Diego – Surgical Robotics

San Diego, CA

Compact Actuation System for Concentric Tube Robots

June 2023 – June 2024

- Designed and iterated a compact, three-module actuation system in SolidWorks, fabricating prototypes by 3D printing and manual machining
- Developed a test method using an electromagnetic tracker to measure actual tip translation and rotation against commanded positions
- Traced rotational positioning error to backlash in the gearmotor drive train; characterized stepper force-velocity performance across microstepping configurations
- Documented system requirements, architecture, development process, and test results in a design report

Multiple Constant-Curvature Nylon Concentric Tube Robot

Sept 2021 – Apr 2023

- Developed a repeatable heat-setting process for Nylon 12 tubes (laser-cut acrylic jig, timed heating, water quench), producing the first fully Nylon CTR with dimensions comparable to a standard Nitinol tube set
- Simulated 50,000 robot configurations with a Cosserat rod model to compare workspace, dexterity, orientability, and stability; showed two multi-curvature tubes can match a standard three-tube design
- Validated the kinematic model on hardware with electromagnetic tracking across 13,000 randomly sampled joint configurations

PUBLICATION

A. Lu, F. Ramos, J.-T. Lin, and T. K. Morimoto, "Enabling Higher Performance Concentric Tube Robots via Multiple Constant-Curvature Tubes," *2023 International Symposium on Medical Robotics (ISMR)*, Atlanta, GA, 2023, pp. 1–7, doi: [10.1109/ISMR57123.2023.10130226](https://doi.org/10.1109/ISMR57123.2023.10130226). Oral presentation.

ADDITIONAL EXPERIENCE & LEADERSHIP

Chief Financial Officer (Volunteer, Part-Time)

July 2026 – Present

Global AI Cinema (Nonprofit)

San Francisco, CA

- Built the organization's finance system: a multi-tab ledger of ~110 transactions across 10 categories reconciled for 9 people, with a linked Google Form intake
- Managed the run of show for the July 2026 launch event at the Palace of Fine Arts; produced the launch film compilation and ran live playback

Head of Youth Committee, Leader100 (June 2024 – Aug 2025): Led a team of 12 to plan and run a global youth leadership forum.

Awards: Outstanding Youth Leader 2025 (Leader100); Regents Scholar; Provost Honors, all academic quarters; Summer Triton Research & Experiential Learning Scholar (2023)