

# Joseph Mei

jmei0311@mit.edu | www.linkedin.com/in/joseph-mei2/ | Brooklyn, NY | https://jmei-engineeringportfolio.netlify.app/ | (929) 272-4782

## EDUCATION

### Massachusetts Institute of Technology

- Cambridge, MA  
Sep. 2024 - Present
- B.S. in Mechanical Engineering w/ Medical Device Focus | GPA: 5.0 / 5.0
  - Relevant Courses: Mechanical Engineering and Design of Living Systems (Graduate Level), Design and Manufacturing I, Thermodynamics and Fluids II, Mechanics and Materials II, Dynamics and Controls I, Electronics for Mechanical Systems, Numerical Computation for Mechanical Engineers, Computational Science & Engineering, Organic Chemistry
  - Activities: MIT Tech (Production Staff), MIT Undergraduate Association (Associate Advisor), MIT Sports Taekwondo (Member)

## SKILLS

**Design/CAD:** Siemens NX, SolidWorks, Onshape, Fusion360, CircuitLab, GD&T, FEA/FEM, Structural Calculations

**Manufacturing:** CNC Manufacturing, 3D Printing, Injection Molding, Mold Design, Welding, Soldering

**Software:** MATLAB, Java, Python, Javascript, C++, Arduino IDE, HTML/CSS, Microsoft Office, Google Workspaces

## EXPERIENCE

### Broad Institute - Laboratory for Translational Engineering

Cambridge, MA

Dec. 2024 - Present

*Undergraduate Research Engineer*

- Researching and fabricating polymer-based microneedle medical devices to advance long-term drug delivery systems
- Conducted bench and in-vivo studies to evaluate the controlled release, durability, and usability of devices for clinical applications
- Optimized fabrication processes for device development, reducing production time by 30% and increasing component yield by 80%
- Developed lab-wide traveler document detailing material properties of biocompatible polymers for MeltPrep fabrication

### MIT Motorsports - Formula SAE Electric Vehicle Team

Cambridge, MA

Sep. 2025 - Present

*Boxen System Lead*

- Leading team of four engineers in designing and packaging the high and low voltage electrical enclosures for the 2026 race car
- Engineered IP66-rated waterproofing seals and efficient heat sinks for thermal management via gasket and heat dissipation calculations
- Reduced system mass by 20% by optimizing wire harness routings and enclosure geometries

*Power Steering System Lead*

June 2025 - Nov. 2025

- Designed and manufactured the power steering system, enabling driverless performance for the autonomous 2025 race car
- Secured \$5,000+ in motor and inverter sponsorships through targeted outreach, reducing project costs for the 2025 and 2026 seasons
- Performed belt and motor sizing calculations to optimize a belt-driven, steering column-actuated system capable of delivering 10 Nm torque at 52 RPM steering rate for precise, high-speed control
- Machined and assembled steering system using waterjet, CNC lathe, manual mill, and FDM 3D printer

*Pedal Box Subsystem Lead*

Sept. 2024 - June 2025

- Engineered the pedal box system for 2025 race car, optimizing driver ergonomics with 6-inch height adjustment for 95% driver fit
- Optimized component geometry and mass via hand calculations and lug analyses to withstand 2 kN of applied force
- Modeled pedal box assembly in Siemens NX CAD and machined on HAAS VF2 and CNC lathe using Autodesk Fusion CAM
- Led design review and manufacturing presentations to 15+ team members, coordinating with various systems to ensure timeline goals

### MIT Del Vecchio Lab

Cambridge, MA

Sep. 2024 - Jan. 2025

*Undergraduate Researcher*

- Engineered chromatin regulators in genetic circuits to induce long-term, reversible memory in mammalian cells
- Experimented with various methylation mechanisms and genetic circuit configurations to research topological effects of modifying arrangement of transcriptional units

## LEADERSHIP

### Tendon-Driven Continuum Robot - Summer Project

Cambridge, MA

*Project Co-Lead, Student Engineer*

June 2025 - Sep. 2025

- Designed and prototyped a tendon-driven continuum robot with a spring backbone to advance externally-actuated robotics capabilities for precise manipulation in complex environments
- Developed motor hub assembly CAD using OnShape to enable omnidirectional drive for enhanced maneuverability
- Integrated an optical distance sensor with Arduino UNO R3 for enhanced control accuracy

### MIT Biotech Group - Undergraduate Initiative

Cambridge, MA

Sep. 2024 - Present

*Undergraduate Initiative Lead, Senior Officer*

- Facilitated connections between MIT and the Boston-Cambridge biotech community through targeted events and opportunities
- Coordinated faculty-student mixers, guest speaker panels, and educational seminars to foster networking and student engagement
- Spearheaded the 2024 and 2025 Fall Life Sciences UROP Mixer, successfully pairing undergraduates with research opportunities at MIT