Joseph Mei

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EDUCATION

Massachusetts Institute of Technology — Cambridge, MA

- Candidate for B.S.E. in Mechanical Engineering | GPA: 4.0
- Relevant Courses: Mechanical Engineering and Design of Living Systems (G), Design and Manufacturing I*, Thermodynamics and Fluids, Dynamics and Controls, Mechanics and Materials, Electronics for Mechanical Systems, Numerical Computation for Mechanical Engineers, Computational Science & Engineering, Differential Equations, Organic Chemistry, General Biochemistry*

SKILLS

Design/CAD: Siemens NX, SolidWorks, OnShape, Fusion360, CircuitLab
Manufacturing: Waterjet, Lathe, CNC Mill, Manual Mill, 3D Printer, Laser Cutter, Vacuum Compression Molding, Welding, Soldering
Software: MATLAB, Java, Python, Javascript, Arduino IDE, HTML/CSS, Microsoft Office, Google Workspaces

EXPERIENCE

Broad Institute - Laboratory for Translational Engineering — Cambridge, MA

Undergraduate Research Engineer — *Dec. 2024 - Present*

- Researching and fabricating polymer-based microneedle medical devices to advance long-term drug delivery systems
- Conducting 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

Boxen System Lead — *Sep. 2025 - Present*

- Leading team of four engineers in designing and packaging the HV and LV electrical enclosures for MY26 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 - Present*

- Designed and manufactured the power steering system, enabling driverless performance for the autonomous MY25 race car
- Secured $5,000+ in motor and inverter sponsorships through targeted outreach, reducing project costs for the MY25 and MY26 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 MY25 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

Undergraduate Researcher — *Sep. 2024 - Jan. 2025*

- 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

Undergraduate Initiative Lead, Senior Officer — *Sep. 2024 - Present*

- 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