

Mira Chew

mira@thechewfamily.com | mirachew.github.io/mirachew-website | linkedin.com/in/mirachew

Education

Olin College of Engineering — B.S. Mechanical Engineering Needham, MA | Expected Dec 2026
Relevant Coursework: Mechanical Design & Analysis, Design for Manufacturing, Machine Design, Mechanics of Structures, Thermal-Fluid Systems, Kinematics & Dynamics, Integrated Robotics Systems, Vehicle Simulation

Technical Experience

Farm-ng — Hardware & Mechanical Engineering Intern Watsonville, CA | May-Aug 2025
Designed and validated tractor subsystems emphasizing manufacturability and structural performance. *Hydraulically Interconnected Suspension* Jul-Aug 2025

- Developed cross-linked hydraulic suspension enabling 27° wheel articulation and load equalization; validated stiffness and damping through FEA and field testing.
- Reduced assembly time by 35% by simplifying weldments and mounting geometry.

Ballast Mounting System Jun-Jul 2025
• Designed modular ballast mounts optimized for manufacturability and vibration damping.
• Verified load capacity through FEA-test correlation; refined geometry for stiffness, cost, and appearance.

Johnson & Johnson Surgical Robotics — Mechanical Engineering Co-op Santa Clara, CA | May-Dec 2024
Designed and validated precision robotic subsystems emphasizing tolerance control, reliability, and manufacturability.

Custom Gearbox Design Oct-Dec 2024
• Designed helical, bevel, and spur gearboxes; evaluated torque transmission and backlash across six SLS/SLA prototypes.
• Collaborated with injection-mold vendors to improve tolerance stack-up and manufacturability.

Precision Assembly Fixturing Jun-Jul 2024
• Developed GD&T-based fixtures achieving < 0.1 mm repeatability; validated with 10,000+ pneumatic fatigue cycles and standardized setup to reduce time by 30%.

Olin Baja SAE — Senior Engineer, Design & Fabrication Lead Needham, MA | Sep 2022-Dec 2024
• Designed and MIG-welded frame structures and driveline components; performed FEA crash and rollover simulations to validate stiffness and driver safety; increased Factor of Safety from 2.8 to 4.8.
• Designed ABS body panels with 1/4-turn fasteners; adjusted geometry for suspension CAD-to-as-built deviations.
• Fabricated and integrated carbon-fiber seat and aluminum firewall; ensured thermal separation and driver safety.
• Led competition tech inspection and passed all safety checks; mentored 30+ members in design, welding, and integration.

Olin Formula SAE — Suspension & Aerodynamics Team Member Needham, MA | Oct 2025-Present
• Fabricated TIG-welded load-cell pushrods for dynamic suspension characterization; ensured concentricity and thread integrity through controlled welding procedures.
• Modeling and design of rear suspension rocker (in progress) with a focus on manufacturability, stiffness, and load paths.
• Designing aerodynamic side rockers, undertray, diffuser, and venturi tunnel (in progress); optimizing drag/downforce through surfacing and CFD exploration.

Selected Engineering Projects

Viper Model: Modeled Dodge Viper body in SolidWorks; ran exploratory CFD simulations; vacuum-formed full body.

Hidden-Function Stool — Lightweight Structural Optimization: FEA-driven redesign of aluminum structure achieving 63% mass reduction while maintaining > 25x safety factor.

Laser Wizard Tag: Built ESP8266-based laser tag system with IR sensing, Arduino firmware, and impact-resistant enclosures; optimized fit, durability, and assembly.

BMW Z3 — Custom Interior Redesign: Developed TIG-welded center console; refined for comfort and manufacturability.

Leadership & Activities

Student Government Representative & photographer; Senior Engineer and Fabrication Lead for Olin Baja SAE; President/Captain for Olin Soccer, Handball, and Bike Clubs; Member, USA National Indoor & Beach Handball Teams

Skills

Mechanical Design/Fabrication: SolidWorks, Fusion 360, GD&T, CNC machining, TIG/MIG welding, DFM/DFA, machine shop

Systems/Analysis: SolidWorks FEA & CFD, fatigue testing, hydraulics, thermal systems, material-selection

Software & Tools: MATLAB, Python, Arduino, PDM, Git, Github, Microsoft Office Suite