Matthew Kwon

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EDUCATION

Olin College of Engineering, Needham, MA
Bachelor of Science in Mechanical Engineering, **GPA**: 4.0 *May 2028*

- **Relative Coursework:** Mechanics of Solids & Structures, Introduction to Thermal-Fluid Systems, Quantitative Engineering Analysis, Mechanical Prototyping, Modeling & Simulation, Design Nature

Palos Verdes Peninsula High School, Palos Verdes, CA *June 2024*
High School Diploma, **GPA:** 4.76 W, 3.9U W

SKILLS

Mechanical: Mill (CNC/Manual), Lathe (CNC/Manual), Laser Cutter, 3D Printer, SolidWorks, OnShape, Fusion 360, TIG Welding, Spot Welding, FEA, Sheet Metal, DFMA

Software: MATLAB, Java, Python, C++

EXPERIENCE

Formula SAE Competition Team, Needham, MA
Accumulator Team Lead [September 2024 – Present]

- Designed, fabricated, and tested the high-voltage battery system, ensuring full compliance with FSAE rules and safety standards
- Led cross-team integration between electrical and mechanical groups, aligning subsystem requirements and resolving design conflicts to ensure seamless implementation
- Performed structural and thermal FEA to assess enclosure integrity and thermal management, optimizing for reliability and safety under high-load conditions
- Personally assembled and tested battery segments, implementing retention, insulation, and containment safety features for consistent and robust in-vehicle operation
- Directed and mentored a team of engineers, coordinating timelines across subteams and delegating design, manufacturing, and testing tasks to ensure on-time vehicle completion and improve overall efficiency

CREST Research Lab Needham, MA
Autonomous Surface Vehicle Designer [September 2025 – Present]

- Received a $3,000 research budget to design and develop an autonomous, modular surface vessel for environmental data collection
- Designed and fabricated a compact and portable floating platform capable of independent freshwater navigation
- Integrating autonomous object detection and real-time obstacle avoidance systems for GPS-guided, vision-assisted navigation and adaptive path planning

Lemelson MIT InvenTeams, Rancho Palos Verdes, CA
Mechanical Team Member [September 2022 – August 2024]

- Received a $7500 grant to develop a technologically advanced wheelchair as part of the Lemelson-MIT InvenTeams project
- Designed and machined wheelchair frame, ensuring structural integrity and functionality through 3D modeling and fabrication
- Collaborated on integrating motorized systems to enhance mobility, focusing on efficient motor, battery, and control systems

Combat Robotics Group, Needham, MA
Robot Designer [September 2025 – Present]

- Utilized SolidWorks to model complex assemblies, performing FEA simulations to optimize the strength-to-weight ratio
- Engineered a 1lb antweight robot, optimizing material selection and component layout to maximize durability within strict weight limits.

PROJECTS

Principles of Integrated Engineering, Needham, MA
Facial Recognition Drone [November 2025 – Present]

- Designed a custom drone frame in SolidWorks, performing FEA and fatigue analysis to optimize structure and materials.
- Calculated thrust-to-weight ratios and center of gravity to ensure flight stability and payload efficiency for integrated hardware.
- Integrated an onboard NVIDIA Jetson Nano to execute real-time computer vision algorithms for autonomous person-tracking.
- Calibrated PID controllers and flight logic to enable precise autonomous following and target acquisition features.