

Hao Lam

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Education

California Polytechnic State University

Expected June 2029

B.S Mechanical Engineering

Projects

First Robotics Competition - Endgame Climber System

- Designed climber mechanism and winch gearbox to pull 150 lbs robot off the ground for the 2025 FRC endgame
- Tested intake materials, geometry, and 3 latch mechanisms using prototype components manufactured with a CNC router; integrated optimal design into final climber system
- Reduced climb cycle time by 85%(17 seconds) by optimizing gear ratio and linkage geometry
- Incorporated pockets into final plate designs, reducing weight by 15%(4 lbs) while maintaining structural integrity
- Accounted for 30% of robot's scoring output by achieving 95% climb success rate at competitions, contributing to qualifying rank and playoff advancement

First Robotics Competition - Foam Ring Shooter

- Designed shooter mechanism to launch 14" foam rings into a 42"x19" rectangular goal positioned 7' off the ground
- Improved shot consistency and accuracy by 25% by tuning launch angle and compression through prototype testing
- Collaborated with intake and hand-off subsystem teams to integrate a reliable ring travel path to the shooter
- Increased scoring output by 33%

Extracurriculars

FRC Team968 - Team Captain(2023-2025), Design Team Member(2021 -2023)

June 2022 – Present

- Collaborated with engineer mentors and students to prototype, design, and manufacture a 120lb robot to compete in the First Robotics Competition
- Led design of 2025 climber, 2024 shooter, and 2023 intake subsystem; overseeing the whole prototyping, design, integration, manufacturing, and assembly processes
- Led design reviews to validate various subsystem geometry and integration into the final robot, ensuring ease of manufacturing and adherence to the competition rules.
- Taught new members basic Solidwork skills including: sketching, extruding, cutting, assembly, and drawing

Skills

Mechanical Design: SolidWorks, prototyping, concept validation testing, basic DFM & DFA

Fabrication: CNC router, laser cutter, 3D printing, band saw, drill press, hand tools