Yahya Mirza

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Education

University of California, San Diego — La Jolla, CA
Bachelor of Science in Mechanical Engineering — *Sep. 2025 – June 2027*

Foothill College — Los Altos Hills, CA
Mechanical Engineering for Transfer (GPA: 4.0) — *Sep. 2024 – Aug 2025*

Experience

Robotics Engineer – Yonder Dynamics — Sep. 2025 – Present
University of California, San Diego — *La Jolla, CA*

- Leading an end-to-end production and design of a chain and sprocket driven linear slider mechanism for UCSD's competition Mars Rover with the goal of precisely translating a 5-axis robotic arm of 30lbs.
- Completed a comprehensive CAD model of the slider in OnShape, implementing DFM procedures to ensure fabrication is possible, cheap, and as easy as possible given 3D Printing, CNC Milling, and metal laser cutting.
- Conducted worst-case statics analyses (with a 25x FOS) verifying that the system driven by a NEO550 brushless motor interfaced with a 50:1 gear reduction Harmonic Drive can reliably move the arm carrying a 5kg payload at an angle of 60 degrees from the horizontal.
- Collaborating with electronics and chassis subteams to ensure easy integration across systems.

Mechanical Design Intern – Nanotechnology Lab — Jun. 2025 – Oct 2025
University of California, Berkeley — *Berkeley, California*

- Designed, modified, and fabricated parts for Dr. Waqas Khalid's AI and EEG controlled exoskeleton in his lab at UC Berkeley. To retrain the neuroplasticity involved in motor movement for those who have left neglect, Dr. Khalid is analyzing EEG signals via AI, then stimulating the corresponding muscles to move.
- Prototyped and fabricated (3D Printing) a proof of concept of a stepper motor driven assist for lateral shoulder movement in SOLIDWORKS. This aims to mitigate fluctuations in stimulation output by providing adequate torque.
- Designed and integrated circuitry for 4 Nema 17 stepper motors onto an Arduino Nano, allowing for precise motor control. Developed Arduino scripts in C++ that allow for independent motor control. Each motor corresponds to a different portion of the exoskeleton.

Project Co-lead – FireFlight RC Plane — Sep. 2024 – Sep. 2025
Foothill College Engineering Club — *Los Altos Hills, CA*

- Co-Led the design and development of an RC plane that utilizes aerial sensing data for machine learning models focused on wildfire prediction and evacuation route optimization.
- Designed and refined the tail assembly and elevon control surfaces in SolidWorks and Onshape; optimized aerodynamic stability through iterative prototyping, 3D printing, and testing.
- Directed a 10+ member team across airframe, electronics, and control systems; organized weekly meetings and fostered a collaborative, hands-on environment.
- Presented the project at the 2025 Bay Area Honors Research Symposium (UC Berkeley) and spoke at Foothill's RSLS Symposium, where the team earned first place among 162 groups.

Projects

Competition Soccer Robot | *Fusion 360, Statics, Machining, Circuitry* — Oct 2025 – Dec 2025

- Successfully built a competition robot alongside a team of 4 members designed to sweep and score 4" dia. soccer balls into opponent's goal. Risk Reduction procedures for a two-stage, belt-driven flywheel kicker mechanism (1:9 gear reduction) were conducted to ensure a 45° launch angle.
- Developed a comprehensive CAD model in Fusion 360 alongside peers, notably designing the robot's swiping arm subassembly. The arm assembly was validated with a 6x FOS via statics analyses and expirimental verification.
- Constructed a technical presentation demonstrating the functions of the robot and detailing risk reduction and analysis procedures, receiving a nomination for best technical presentation out of 34 teams.
- Awarded for "Best Manufacturing"; chosen by top engineering professors and competition judges.

Automatic Plant Watering Machine | *SOLIDWORKS, Arduino, C++* — June – Aug 2025; Nov 2025 – Present

- Building a mechanical system that can tip a watering can into a potted plant when necessary for watering.
- Successfully designed a wheel attached pivot mechanism that can tilt an empty watering can 40 degrees
- Determining an algorithm to pour water on the plant only when it needs to be watered via sensory data such as humidity, temperature, soil moisture, and a water level.
- Implementing a belt drive to provide ample torque when the can is full with water.