Jacob Aquino

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EDUCATION

University of California, San Diego ***2026 – present***
B.S. Mechanical Engineering | Expected June 2029
Coursework (in progress): Mechanical Design, Materials Science, MATLAB for Engineering Analysis

Santiago Canyon College ***2022 – 2026***
AS-T Mathematics, AS-T Physics, AS Liberal Arts: Math & Sciences, AA Social & Behavioral Sciences
GPA: **4.0/4.0** across 117 graded units | Highest Honors | IGETC/UC Full Certification

Santa Ana College ***2023 – 2025***
Certificate of Achievement, Engineering STEM Core | AutoCAD I & II (GD&T, ASME Y14.5), SolidWorks

SKILLS

- **CAD & Design:** SolidWorks, Onshape, AutoCAD, Fusion 360, Machine Design, Technical Drawings, Engineering Documentation, GD&T (ASME Y14.5), Tolerance Analysis, Bill of Materials, Design for Manufacturing (DFM)
- **Simulation & Testing:** Structural Analysis (FEA), Modeling and Simulation, OpenRocket, Test Rig Design, Strain Gauge Instrumentation, Data Acquisition, Data Analysis, Verification and Validation, Root Cause and Corrective Action
- **Fabrication & Programming:** Rapid Prototyping, 3D Printing, MIG Welding, CNC Machining, Sheet Metal Forming, Precision Measurement, Control Systems, Sensors, Microcontrollers, Soldering, C++, Python, MATLAB, Git

ENGINEERING PROJECTS

Underactuated Robotic Finger | *Urban Workshop* **2026**
- Designed and prototyped a three-joint underactuated finger that curls naturally from one servo, with a routed tendon setting the joint closing order and Arduino control for repeatable grip states
- Released a documentation package of GD&T-dimensioned part and assembly drawings per ASME Y14.5 with a bill of materials, after resolving joint clearances in SolidWorks so the servo never binds

Mechanical Recruitment Project | *Triton Racing (UC San Diego Formula SAE)* **2026**
- Modeled a front anti-roll bar assembly from team drawings and released a 3-sheet drawing package with BOM and balloons; designed a 16.8 lb steel wheel stand weldment sized for 330 lb per stand with simple tube cuts
- Ran static FEA on an AISI 4130 engine mount tab in SolidWorks Simulation at 30 lbf (120 lb engine on 4 tabs), refining the mesh to a 1% stress change: 732 psi peak against a 66,720 psi yield, factor of safety 91

Self-Balancing Autonomous Robot | *UCLA Samueli School of Engineering* **2024**
- Stabilized a statically unstable two-wheeled robot on a single Arduino Nano, fusing gyroscope and accelerometer data through a Kalman filter into a 200 Hz balance loop that ran the 10 m race in 13.62 seconds
- Layered speed and steering control in C++, added ultrasonic wall detection and a gripper, and kept the robot balanced despite the gripper's extra mass and shifted center of gravity

Model Rocket & Compressed-Air Launcher | *UCLA Samueli School of Engineering* **2024**
- Built a strain-gauge thrust rig (8.536 PSI delivered from a 15 PSI input) and analyzed impulse data to validate OpenRocket simulations; in fin experiments, elliptical fins repeated within 2 inches and beat the baseline by 26%
- Troubleshooting in-flight spin on thin fins: traced it to a structural limit and shortened the fuselage to recover range

EXPERIENCE

Infantry Mechanical Engineer | *Triton Robotics (UC San Diego RoboMaster)* **Oct 2026 – present**
- Designed a 400 x 400 mm sheet metal spinning target robot for shooting tests, building the machine design around a 6824 thin-section bearing clamped between plates so hits load the bearing, not the GM6020 motor
- Mounted 4 armor modules on height-adjustable sheet metal brackets in standard and staggered configurations, meeting the competition's armor rules (lower edge under 400 mm, 15-degree tilt, clear zones)
- Handled electronics packaging for 6 modules (PMM, MCM, Nucleo, centerboard, lightbar, battery) with short cable runs, and integrated a swappable motor mount so an M3508 + C620 can replace the GM6020

Makerspace Engineering | *Urban Workshop* **2022 – present**
- Collaborated with licensed engineers on hands-on CNC machining, welding, and fabrication from design review to test
- MIG welded a multi-part sheet metal assembly after measuring, shearing on a Beverly shear, and bending stock to form

COSMOS Mechanical and Aerospace Engineering | *UCLA* **Jun 2024 – Aug 2024**
- Defined requirements and design constraints, ran trade-off analyses, experiments, and failure analysis, and iterated two builds through full life-cycle development under UCLA faculty mentors

Artificial Intelligence Fellow | *CCC AI Program, Cal Poly San Luis Obispo* **Jul 2026 – Sep 2026**
- Selected 1 of 100 from 1,200+ applicants; as frontend lead on a cross-functional team, rapidly prototyped a generative AI course-review dashboard on Amazon Bedrock that cut 5 to 10 hour reviews to 2 to 5 hours, scoped for 30,000+ users
- Owned CVC stakeholder discovery and communicated findings in the final presentation to AWS engineers

Teaching / Student Assistant | *Nuestro Lugar, Santiago Canyon College* **Aug 2025 – present**
- Built an OpenAI API assistant that cut repeat policy questions from 50+ staff by ~30%

LEADERSHIP

Founder & Lead Engineer | *FIRST LEGO League*
- Founded and led the team, growing it from 8 to 20+ members and running an 8-week build off a Gantt chart with daily briefings; placed 2nd in Robot Design (Qualifier) and 3rd in Robot Performance (SoCal Championship)