

Aaron Lening Aviles

aaron.l.aviles.07@gmail.com | www.aaronlaviles.com | linkedin.com/in/aaronlaviles

EDUCATION

University of California San Diego – Jacobs School of Engineering

Aug 2023 – Jun 2027

B.S. Mechanical Engineering, Specialization in Controls and Robotics

Relevant Coursework: Dynamics & Vibrations, Solid Mechanics, Linear Circuits, Statics, Fluid Mechanics, Thermodynamics, Autonomous Vehicles, Robotic Planning & Estimation, Mechanical Design, Design of Everyday Things, Experimental Techniques, MATLAB Programming

Internships

Robotics Engineer – Safe Sentinels (Stealth Startup)

May 2026 – Present

San Francisco, Bay Area

- Designed a custom 3-DOF wrist/forearm assembly integrated with a Wuji hand for a full-scale humanoid robot.
- Designed structural components for a 7-DOF robotic arm, sourcing fabrication of structural components through overseas vendors/suppliers in China while rapid-prototyping parts in-house using machine shop equipment.
- Led end-to-end structural design of the humanoid robot body and generated URDF models of the robot to support software development, kinematics, and motion planning.
- Performed FEA and ANSYS dynamic simulations on the robot frame to validate structural performance under arm-loading conditions.

Manufacturing Engineer – Nalu Medical, Inc. (acquired by Boston Scientific)

Jul 2025 – May 2026

Carlsbad, San Diego

- Redesigned and validated medical-device packaging using SolidWorks, vendor prototyping, risk-based FMEA, and accelerated aging; qualified the process through internal validation protocols, increasing pallet density 80%, reducing packaging material 70%, and saving about \$150K annually.
- Built a Python-based supplier yield analytics system aggregating data across 6 parts and multiple vendors; automated first-pass, second-pass, throughput, and final-yield reporting by lot, month, and quarter, with Pareto analyses highlighting highest-failure process stages.
- Authored ISO 10993 Biological Evaluation Reports using supplier data, toxicology literature, and RPN-based risk analysis, qualifying surgical tools through internal review and eliminating \$50K in redundant in-vivo testing.
- Validated an automated assembly-line robot by assembling and fabricating custom automated test equipment, executing Gage R&R studies and statistical analysis on PQ lots, and authoring the qualification report through the internal quality system.
- Performed FAI and root-cause analysis on ultrasonically welded devices by measuring dimensional tolerances, calculating sample sizes, and conducting Gage R&R studies; identified weld concentricity and supplier adhesive defects, improving yield from 70% to 90% and recovering \$20K in components.
- Revised and released supplier assembly drawings with ASME GD&T, updated BOMs, and controlled documentation to support compliant vendor manufacturing.

PROJECTS & AWARDS

Lead Mechanical Engineer – Yonder Dynamics

Oct 2024 – Present

- Led design of a 1.1 m modular 6-axis robotic arm with 10 kg payload, performing static and dynamic joint torque/power sizing plus cyclic FEA to optimize structural components and define joint requirements up to 180 N·m.
- Engineered modular robotic actuators integrating BLDC motors, ODrive controllers, and 100:1 harmonic reducers into custom CNC-machined aluminum housings; validated structural and drivetrain performance to 200 N·m using a torque test rig and released supplier manufacturing drawings with GD&T.
- Designed and fabricated an ultra-lightweight 5 lb three-stage cascade lift from tube stock and sheet metal, achieving 0.75 m travel and 170 N pushing force for drilling and soil-sample analysis; validated the structure with hand calculations and FEA.
- Developed a 30 N·m differential wrist and robotic hand with an integrated slip ring for infinite roll; verified a 3D-printed hypoid bevel gearset through MATLAB AGMA analysis and validated performance with a custom fixture measuring torsional twist and axial deflection.

Robotics Competitor / Mentor / Non-Profit CEO – PerryBotics

Oct 2019 – Present

- Founded a robotics education 501(c)(3) non-profit to provide robotics competition resources to students in SoCal.
- Expanded collegiate outreach by establishing and funding a joint robotics program with UC San Diego, managing \$15K in funding, sponsors, travel logistics, and competition operations for multiple teams.

Undergrad Research – MURO (Multi-Agent Robotics) Lab

Oct 2024 – Apr 2025

- Conducted literature reviews on multi-agent robotics, human-robot interaction, visual odometry, SLAM, and behavioral risk models; created ROS 2/Gazebo/PyBullet setup SOPs for TurtleBots and improved a vision model to distinguish humans from robots.

SkillsUSA National Champion – Mobile Robotics Technology

Jan 2023 – Aug 2023

- Won 1st place at regional, state, and national levels; designed, manufactured, assembled, and programmed a custom competition robot with 100+ metal components in Onshape, including custom gearboxes, pneumatic systems, localization sensors, motion profiles, path planning, and C++ teleoperation.

TECHNICAL SKILLS

Mechanical Design: SolidWorks, Onshape, PTC Creo, ANSYS, Autodesk Fusion 360/Inventor/Revit, Mastercam

Software/Analysis: Python, C++, ROS 2, MATLAB, Minitab, Microsoft Excel, Power BI (DAX)

Manufacturing/Quality: ASME GD&T, FMEA, FAI, Gage R&R, IQ/OQ/PQ, DFM/DFA, Root Cause Analysis, Document Control, SPC

Fabrication: CNC Mill/Lathe, FDM/SLA 3D Printing, Water Jet Cutting, Sheet Metal, Plastic IM, Powder Coating