JOSHUA HSU

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EDUCATION

University of California, San Diego   **EXPECTED GRADUATION June 2027**
B.S. Aerospace Engineering   **GPA: 3.88/4.00**
Transferred in August 2024 from Mechanical Engineering at University of California, Riverside

RELEVANT COURSEWORK:
- Propulsion
- Signals and Systems
- MATLAB Engineering Analysis
- Fluid Mechanics
- Thermodynamics
- Orbital Mechanics
- Manual & CNC Machining
- Aerospace Materials Science
- Statics and Dynamics
- Aerodynamics
- Engineering Graphics and Design

SKILLS

Experience: • MATLAB • SOLIDWORKS (CSWA Certified) • Autodesk Fusion • Onshape • STK • Microsoft Excel & Office
Techniques: • FEA • CFD • Autodesk Fusion (CAM toolpath programming, CNC setup) • CNC Machining
• Manual Machining (milling, turning, drilling, programming) • Control system design/analysis • Laser Cutting
• 3D Printing • Data/numerical analysis • Structural analysis • Prototyping • Technical sketching
• Dimensioning and tolerancing • Engineering drawings with GD&T • Aerodynamic design/analysis

EXPERIENCE

TritonUAS   *Sept. 2024 - Present*
Wing Control Surfaces Sub-team
- Designed using 3D CAD software (Onshape) major drone control systems (aileron, servo mount, pushrod, torque rods) applying engineering techniques (dimensioning, tolerancing, structural analysis) to prepare for prototyping.
- Enhanced drone design by utilizing laser cutting machines and 3D printers, improving the manufacturing precision, structural integrity, and functionality of ribs, spars, and control elements.
- Collaborated closely with Wing Structures Sub-team to align and integrate components within the wing assembly.

Onboarding Team Project - Airplane Project
- Led the team in aircraft design decisions through facilitating brainstorming sessions and coordinating team input on aircraft configurations for increased performance and manufacturing efficiency.
- Designed using 3D CAD software (Onshape) the V-tail over conventional tail wing for reduced drag, rectangular wings for better stall characteristics and stable flight, and a rectangular/pyramid-shaped fuselage for ease of manufacturing.
- Constructed and assembled plane, integrating key aircraft components (motor, servos, battery) with strategic placement for balanced weight distribution, improving stability in test flight.

FSAE Highlander Racing   *July 2023 - Dec. 2023*
Aerodynamics Sub-team
- Designed the front wing of a formula racing car using NACA airfoils in MATLAB and modeling in SOLIDWORKS.
- Analyzed numerical data (downforce, pressure, drag, etc.) and flow nature (laminar/turbulent flow, vortex) via CFD, achieving 500 Newtons of downforce in simulating 70 mph speed.
- Modeled a V6 engine in SOLIDWORKS as an intern project, simulating key mechanical components and engine dynamics (piston-cylinder system, crankshaft, camshaft, intake/exhaust manifold, etc.)

Ayala High School FIRST Tech Challenge (FTC) Robotics Team   *Aug. 2019 - May 2023*
Club President, Mechanical Leader, CAD member, Treasurer
- Designed using 3D CAD software (Onshape) key components (Capstone, claw, battery holder) for 3D printing, allowing the robot to be lighter, efficient in the building process, and cost-effective.
- Led and managed team design and construction of the robot's mechanical design (chassis, elevator system, arm, etc.), overseeing building process and ensuring cohesiveness for improved learning environment and teamwork, maintaining high performance and reliability of the robot.
- Communicated regularly with the programming sub-team, ensuring compatibility and optimizations between mechanical design and programming structure (mecanum wheels functionality, motor and servo torque capacity, autonomous brainstorming, etc.).
- Competed in FTC competition and won the Motivate Award (outstanding club engagement and mentorship).