

# Kai Hori

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## EDUCATION

**University of California, Davis**

*Bachelor of Science, Aerospace Science and Engineering*

GPA: 3.614/4.0

*Bachelor of Science, Mechanical Engineering*

**Relevant Coursework:** Orbital Mechanics, Space Vehicle Design, Stability and Control of Aerospace Vehicles, Automatic Control of Engineering Systems, Mechanics of Materials, Rocket Propulsion, Thermodynamics, Heat Transfer

## TECHNICAL SKILLS

**CAD & Engineering Software:** Onshape, SOLIDWORKS, Fusion 360, ANSYS Fluent, NASTRAN/PATRAN

**Programming & Analysis:** MATLAB, Simulink, FreeFlyer, Python, C#, Fortran, Unity, HLSL

**Manufacturing & Prototyping:** 3D Printing, Manual Milling, Lathe, CNC Milling, Drilling, Welding

**Languages:** English (Fluent), Japanese (Fluent)

## RESEARCH EXPERIENCE AND PROJECTS

**Research Assistant - Human/Robotics/Vehicle Integration & Performance Laboratory**

Feb 2026 - Present

- Design and characterize ground-station RF systems for multi-band weather-satellite reception as part of the Mission Operations and Observation Nexus (MOON) initiative, including a QFH antenna and RF receive chain using LNAs, bandpass filters, and SDRs for 137 MHz Meteor LRPT and 1694 MHz GOES HRIT reception.
- Develop ground-station capabilities for satellite tracking, signal reception, decoding, and image processing to support real-time LEO and GEO satellite operations and mission simulations.

**Communications Lead - Spacecraft Inspection Mission Design Project, Senior Capstone Class**

April 2026 - June 2026

- Led Communications, C&DH, and Ground Control System design for a heliocentric-orbit satellite inspection mission, developing X-band link and data budgets across multiple mission operating cases, antenna/link-budget sizing, and downlink/TT&C trade studies in coordination with power and payload teams.
- Developed MATLAB and FreeFlyer analyses to evaluate communications performance throughout the mission trajectory and performed modulation/coding trade studies, requirements definition, V&V planning, and FMEA in coordination with spacecraft subsystem leads.

**Payload Lead - Spacecraft Inspection Mission Redesign Project, Senior Capstone Class**

January 2026 - March 2026

- Led payload and systems design for the redesign of NASA's CPOD CubeSat proximity-operations concept into an autonomous, non-docking spacecraft inspection mission.
- Evaluated LiDAR integration, sensor performance, duty cycle, onboard processing, and spacecraft resource constraints to develop an inspection architecture supporting autonomous RPO and close-range operations.

**Research Intern - NeuralX**

July 2025 - September 2025

- Designed Smoothed Particle Hydrodynamics simulations to model fluid and water-like behavior; optimized compute shader performance in Unity and integrated numerical methods to support ongoing R&D in physics-based modeling.

**Research Assistant - UC Davis Computational Flow Physics and Aeroacoustics Lab**

December 2024 - April 2025

- Conducted computational aeroacoustics research using NASA's ANNOP2 in a two-person team, working in Fortran on Microsoft VS to interpret and apply the solver's numerical methods.

## RELEVANT EXPERIENCE

**Team Member - UC Davis Aggie Propulsion Rocketry Lab**

September 2023 - September 2024

- Co-founded a new controls subteam for a liquid rocket engine system and researched system dynamics and control strategies for a propulsive landing system, modeling vehicle behavior to inform control-law development.

## OTHER WORK EXPERIENCE

**Tutor - UC Davis Academic Assistance and Tutoring Centers**

April 2025 - April 2026

- Provide academic assistance to undergraduate students in Electromagnetism, Calculus, Dynamics, and Linear Algebra through both drop-in and individual tutoring sessions.

**Co-Instructor - UC Davis International Center**

June 2024 - June 2026

- Co-taught business fundamentals for agriculture students, translating finance, operations, and marketing concepts into industry-specific applications while serving as a bilingual cultural liaison for the Japanese Agricultural Training Program in partnership with the Japanese Agricultural Exchange Council.