Kai Hori

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EDUCATION

University of California, Davis
Bachelor of Science, ***Mechanical Engineering*** GPA: 3.614/4.0
Bachelor of Science, ***Aerospace Science and Engineering***
Relevant Coursework: Mechanics of Materials, Fluid Mechanics, Thermodynamics, Heat Transfer, Automatic Control of Engineering Systems, Aircraft Propulsion, Applied Aerodynamics, Compressible Aerodynamics, Rocket Propulsion, and Space Vehicle Design

TECHNICAL SKILLS

CAD & Engineering Software: Onshape, SOLIDWORKS, Fusion 360, ANSYS Fluent, NASTRAN/PATRAN
Programming & Analysis: MATLAB, Simulink, Python, C#, Fortran, Unity, HLSL
Manufacturing & Prototyping: 3D Printing, Manual Milling, Lathe, CNC Milling, Drilling, Welding
Documentation: Microsoft Excel, Word, PowerPoint, LaTeX, and Google Workspace
Languages: English (Fluent), Japanese (Fluent)

ENGINEERING AND RESEARCH EXPERIENCE

Research Assistant - ***Human/Robotics/Vehicle Integration & Performance Laboratory*** Feb 2026 - Present
- Design, fabricate, assemble, and test hardware – including antenna systems, parabolic-dish feed assemblies, and custom omnidirectional antenna – from initial CAD design through machining and field deployment.
- Conduct iterative field testing and hardware troubleshooting to evaluate mechanical alignment, mounting configuration, antenna positioning, and environmental effects on system performance.

Structure Lead - ***Truss-Based Wing Structural & Aeroelastic Analysis Class Project*** April 2026 -June 2026
- Built finite-element models (NASTRAN/PATRAN) of a truss-based structure; performed static and modal analyses to evaluate structural behavior, natural frequencies, and mode shapes.
- Used MATLAB and flutter-analysis results to assess aeroelastic stability, including flutter and divergence behavior across the operating envelope.

Communications Lead - ***Spacecraft Inspection Mission Design Project, Senior Capstone Class*** April 2026 -June 2026
- Led multidisciplinary engineering analyses and system-level trade studies for a heliocentric spacecraft design, coordinating technical interfaces across communications, power, payload, and spacecraft operations.
- Developed MATLAB-based performance models, system requirements, verification plans, and failure-mode analyses to support system integration and design decisions.

Payload Lead - ***Spacecraft Inspection Mission Redesign Project Senior Capstone Class*** January 2026 - March 2026
- Redesigned NASA's CPOD CubeSat concept for autonomous, non-docking spacecraft inspection, evaluating LiDAR integration, sensor performance, mass, power, and onboard-processing constraints.

Research Intern - ***NeuralX*** July 2025 - September 2025
- Developed Smoothed Particle Hydrodynamics simulations in Unity to model water-like fluid behavior.
- Improved computational performance through GPU parallelization, spatial-neighbor searching, and compute-shader optimization while evaluating numerical stability and simulated fluid behavior.

Research Assistant – ***UC Davis Computational Flow Physics & Aeroacoustics Laboratory*** Dec 2024 – Apr 2025
- Used Fortran and Microsoft Visual Studio to configure computational cases, troubleshoot software implementation, execute simulations, and interpret numerical results.

OTHER WORK EXPERIENCE

Tutor - ***UC Davis Academic Assistance and Tutoring Centers*** April 2025 - April 2026
- Provided one-to-one and group instruction in Fluid Mechanics, Thermodynamics, Linear Algebra, and Calculus.
- Broke down complex technical problems into clear, step-by-step explanations for students at varying skill levels.

Co-Instructor - ***UC Davis International Center*** June 2024 - June 2026
- Co-developed and delivered business curriculum for a non-technical audience, translating finance, operations, and marketing concepts into applications relevant to their agriculture applications – direct experience tailoring technical communication to a target audience.
- Partnered with a lead instructor as a culture intermediary and liaison to build a business course for the Japanese Agricultural Training Program in partnership with the Japanese Agricultural Exchange Council.