

# Oliver Htway

Mechanical Engineering M.S. Student | Researcher | Instrumentation and Systems Design

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## Profile

Mechanical engineering graduate student and researcher building compact scientific instrumentation, sensing workflows, and hardware/software systems. Experience spans CFD modeling, environmental sensing, CAD, prototyping, data processing, service design, and interactive web tools, with a focus on making technical systems more reliable, usable, and field deployable.

## Education

### University of California, Merced

M.S., Mechanical Engineering

Expected May 2028

Merced, CA

Graduate study focused on sensing systems, design, research, and applied engineering analysis.

### University of California, Merced

B.S., Mechanical Engineering; Minor, Material Science

Dec 2025

GPA: 3.2

## Computer Skills

### CAD and prototyping

SolidWorks, Fusion 360, G-code, mechanical packaging, prototype fabrication, additive manufacturing design

### Analysis and modeling

MATLAB, Simulink, Simscape, Python, Wolfram Mathematica, CFD workflows, Deep Network Designer

### Software and web Design tools

Java, JavaScript, HTML, CSS, Overleaf/LaTeX, Docker Compose, Microsoft 365  
Adobe Creative Cloud, Photoshop, ArcGIS, documentation, technical presentation design

## Honors, Awards, and Credentials

- UC Merced Dean's Honor List
- F3 Innovate Engineering Award, Capstone Project
- Special Merit, CAMP Symposium - NSF and University of California system
- Adobe Certified Associate in Visual Design Using Adobe Photoshop
- Communication Skills for Modern Management, LinkedIn Learning
- Design Foundations: Physical Materials, LinkedIn Learning
- Design Foundations: Prototyping and Manufacturing, LinkedIn Learning
- Industrial Design Foundations, LinkedIn Learning

## Graduate Coursework and Focus Areas

- Computational fluid dynamics modeling and simulation
- Scientific instrumentation and environmental sensing systems
- Applied engineering analysis and experimental validation
- System identification and controls-oriented modeling
- Data processing workflows for measurement and calibration
- Hardware/software integration for field-deployable platforms

## Work Experience

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### ACP Student Researcher

May 2026 - Present

*Lawrence Livermore National Laboratory*

Livermore, CA

- Design and develop software for CFD modeling, simulation, and analysis in support of Environment, Health and Safety initiatives.
- Build computational tools that help analyze fluid behavior, improve simulation workflows, and support safety-driven engineering decisions.

### Graduate Student Researcher

Jan 2026 - Present

*University of California, Merced*

Merced, CA

- Conduct graduate research on compact scientific instrumentation for environmental sensing applications.
- Design and evaluate hardware architectures that integrate optical, thermal, electronic, and fluidic subsystems for trace-level measurement workflows.
- Build and test laboratory prototypes to study sensing performance, signal behavior, and subsystem interactions under controlled experimental conditions.
- Develop data processing and system characterization workflows for measurement validation and instrument refinement.
- Collaborate with faculty and research staff to translate laboratory concepts into field-deployable sensing platforms.

### Design and Systems Optimization Intern, Sensor Development

Sep 2025 - Jan 2026

*University of California, Merced*

Merced, CA

- Worked on the design and optimization of a portable mercury sensing system for deployment on drones, rovers, and weather stations.
- Supported embedded systems, hardware prototyping, and system architecture decisions for improved portability, reliability, and sensing performance.
- Helped define requirements for inverse source location workflows used to trace and localize mercury emissions.

### Design Engineering Intern, Project Lead

Aug 2024 - Dec 2025

*Kagome USA, Inc.*

Los Banos, CA

- Led end-to-end design of an automated industrial washing system for food-processing applications.
- Translated client, advisor, and regulatory constraints into design requirements for stainless steel construction, plant-floor compatibility, safety, sanitation, and operator workflow.
- Built and tested early spray bar prototypes to study nozzle coverage, paste removal behavior, and bin orientation effects.
- Modeled a bin support chassis in SolidWorks and prepared fabrication drawings for stakeholder review and manufacturability planning.

### Manager, Student Support Team

Oct 2024 - Dec 2025

*University of California, Merced Dining Services*

Merced, CA

- Managed dining hall operations by optimizing workflows, coordinating staff, and enhancing the guest experience.
- Applied data organization, project management, and service design methods to improve accessibility, service flow, and satisfaction.
- Collaborated with cross-functional teams to prototype user-centered dining solutions for the campus community.

## **Undergraduate Research Assistant, Environmental Sensing and Drones**

Jun 2025 - Sep 2025

*University of California, Merced*

Merced, CA

- Contributed to drone systems for advanced environmental monitoring applications.
- Integrated sensors, optimized drone components, and supported design iterations to improve field performance.
- Supported federally funded climate and resource-management research.

## **Aircraft Restoration Technician**

Oct 2023 - Jul 2024

*Castle Air Museum*

Atwater, CA

- Contributed to preservation work on historic aircraft ranging from World War II-era planes to aircraft from the 1990s.
- Supported construction, renovation, deconstruction, component assembly, and display preparation.

## **Projects and Research**

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### **Miniaturized Mercury Emissions Detector**

- Contributed to a compact UV-C LED-based cold vapor mercury fluorescence detector inspired by the Brooks Rand MERX system for environmental mercury monitoring.
- Coordinated with lab staff to understand MERX operating procedures, detector behavior, calibration workflows, and data export options.
- Defined a data pipeline that transfers detector output into CSV format for organized analysis in MATLAB and Python.
- Outlined a single-input single-output system identification workflow to capture detector dynamics, including rise time, steady-state response, and clipping behavior.
- Helped translate project goals into requirements for footprint, optical path, electronics, and early experiments that reduce risk in future designs.

### **Automated Tomato Paste Bin Washing System for Kagome USA**

- Designed a semi-automated bin washing system intended to improve liner cleaning consistency, reduce tomato paste loss, and reduce manual hose-spraying work in a food-processing environment.
- Observed existing wash workflows, documented operator tasks and cycle times, and identified pain points in the manual cleaning process.
- Developed and compared multiple wash concepts for spray bar layouts, bin positioning, drainage, cleanability, operator effort, safety, and cost.
- Focused current implementation on chassis fabrication and testing while outlining next steps toward full automation.

### **Menu Card Maker Application**

- Developed a cross-platform web application to streamline allergen-transparent menu card creation for UC Merced Dining Services.
- Designed a responsive interface with custom fonts, allergen/attribute icons, dynamic layout scaling, and a Java-based export server for high-quality PDF generation.
- Added drag-and-drop file support, dynamic content rendering, and standalone installer packaging for staff deployment with minimal setup.
- Reduced a manual process that took about 0.5 hours into a faster workflow that produces professional menu cards in minutes.

### **Raspberry Pi Network Attached Storage System**

- Designed and assembled a Raspberry Pi 5-based NAS platform with 16 TB HDD storage and active cooling for reliable local media and data services.
- Developed a custom enclosure and internal mounting architecture for component layout, airflow routing, and structural stability under continuous operation.
- Implemented a Docker Compose software stack for automated media services, library indexing, and remote media access from Apple TV clients through Jellyfin or Plex-class workflows.
- Structured external storage directories to separate operating system files, downloads, and media libraries for maintainability and scalability.

### **Accessible Food Delivery Robot Design Concept**

Designed an accessibility-focused food delivery robot concept with larger storage and a lifting mechanism to reduce bending and lifting demands for users with physical limitations.