

HANZE LIU

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EDUCATION

Carnegie Mellon University Master of Science in Mechanical Engineering - Research	Pittsburgh, PA May 2026 GPA: 4.0/4.0
The Pennsylvania State University Bachelor of Science in Mechanical Engineering Dean's List 6 semesters	University Park, PA May 2024 GPA: 3.65/4.0

RESEARCH EXPERIENCE

Research Assistant, Mobile Manipulator Group <i>Research team member supervised by Prof. Shimada</i>	Pittsburgh, PA September 2024 – Present
<ul style="list-style-type: none">Developed and integrated a real-time vision-based feedback module for mobile manipulators, achieving a mean deviation of 0.75 mm and RMS error of 0.92 mm across 72,934 sampled points.Conducted extensive literature review and analysis on foundational and advanced concepts in point clouds and 3D meshes, developing a solid understanding of computer vision applications in robotics.Designed and integrated a real-time feedback CV sensor that detects and responds to manipulator movement, improving precision in dynamic environments.Utilized Python and CV algorithms to handle and interpret sensor data, enhancing the mobile manipulator's operational flexibility in various conditions.	
Dual Harvesting for Radiative Cooling and Power Generation <i>Research Assistant in Prof. Zhu's Research Group</i>	State College, PA August 2022 – May 2024
<ul style="list-style-type: none">Co-developed an integrated device enabling simultaneous daytime sub-ambient cooling (up to 4.9°C below ambient) and solar energy generation (>8.8 W/m² net output).Built and aligned optical/thermal components with high precision to ensure optimal spectral selectivity, thermal insulation, and photovoltaic efficiency.Conducted full-cycle testing in both daytime and nighttime conditions, utilizing thermocouples and IR cameras to collect data and validate net cooling power (~55 W/m² at night). Conducted comprehensive testing using thermocouples for temperature measurements and MATLAB for data analysis, including daytime and nighttime experiments to validate and optimize system's performance.Co-authored a peer-reviewed publication: "Simultaneous subambient daytime radiative cooling and photovoltaic power generation from same area," Cell Reports Physical Science, Volume 5, Issue 3, 20 March 2024, 101876.	
Bojay Technologies <i>Mechanical Engineering Intern</i>	Fremont, CA May 2025 – August 2025
<ul style="list-style-type: none">Led early-stage fixture design efforts across RF, acoustic, and automation domains for clients including Meta, Apple, Tesla, and NVIDIA.Reduced material cost for custom RF test fixtures by over 66% through evaluating RF-compatible alternatives and proposing a lower-cost material with equivalent performance.Designed initial concept development based on customer requirements; coordinated with mechanical engineers to finalize CAD designs and ensure functional alignment.Verified product- and test-station-level compatibility, and assisted in troubleshooting A2B audio system connections.Acted as primary communication liaison, managing cross-functional feedback loops between clients and internal ME/EE/acoustic teams, and driving iterative design improvements for production testing efficiency.Gained hands-on experience with real-world design constraints such as manufacturability, ergonomics, and cost-performance trade-offs.	
Summer Research Experiences for Undergraduates (REUs) <i>Colored radiative cooling paint</i>	Sate College, PA May 2023 – August 2023
<ul style="list-style-type: none">Initiated project to develop colored radiative cooling paint for sustainable passive cooling applications.Fabricated polymer-based paint samples with controlled pore structures to tune thermal performance.Measured reflectance using a UV-Vis-NIR spectrophotometer and analyzed cooling performance in MATLAB.Analyzed reflectance and thermal performance data operating MATLAB, iteratively refining paint formulationIteratively refined paint formulations based on data insights and presented weekly progress to Prof. Zhu.	

SKILLS

Application Software: SolidWorks, Fritzing, Gazebo, ROS, Webot
Programming & Simulation: Python, MATLAB, C++, FEA, CFD
Fabrication & Prototyping: 3D Printing, Wet Lab Techniques