Thomas Zhang

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EDUCATION

Carnegie Mellon University Pittsburgh, PA
Master of Science in Mechanical Engineering (GPA: 4.00/4.00) May 2025

University of California, Irvine Irvine, CA
Bachelor of Science in Mechanical Engineering, Material Science minor (GPA: 3.72/4.00) Jun 2023

ACADEMIC AND RESEARCH PROJECTS

Thermography Inspection - Airlab Nov. 2023 - Jan.2024

- Performed thermal simulations using SolidWorks Thermal simulation and Ansys, incorporating materials of PLA, carbon fiber, glass fiber, and Kevlar for defect representation.
- Designed and assembled geometries with internal defects for thermographic evaluation using SolidWorks and Ansys, adhering to specifications outlined in relevant research papers.
- Adjusted simulation strategies, such as reducing time steps and altering frame rates, to achieve optimal thermal contrast for infrared camera detection.
- Optimized parameters including heat flux, convection rates, and initial temperatures to closely emulate real-world thermal responses for defect detection.

Optimization of NACA Airfoil Design Jun. 2022 - Sep. 2022

- Designed NACA 24112 airfoil and performed flow simulation under subsonic flow condition using Solidworks and conducted respective numerical simulations of lift coefficient
- Obtained optimization of lift to drag ratio of 5.96, lift and drag coefficient of 1.249 and 0.033 and published the results in conference paper

Spacecraft Thermal Management System (STMS) - Senior Design Jan. 2022 - Dec. 2022

- Created and organized 45 Cooling and Vacuum chamber components' drawings usingSolidworks
- Designed and manufactured variable emissivity device holder for thermo experiments of chamber conforming to geometric dimensioning and tolerancing
- Measured temperature and heat flux in vacuum chamber using arduino TC lab and thermocouple for validating the simulated environment

Braking System Design Jan. 2022 - Mar. 2022

- Designed components of braking disc, braking pad and caliper for go-kart model
- Iterated the design of braking system to improve braking efficiency by improving the heat dissipation rate by 35% and structural toughness
- Capable of performing FEA analysis of various types including static loading, frequency analysis, thermal stress analysis, buckling analysis, drop test etc

TEACHING EXPERIENCE

Learning Assistant, Mechanics of Structures Sep. 2022 - Dec. 2022

- Promoted the learning in laboratories by assisting them with hands-on skills e.g. soldering, data acquisition using LabVIEW and Arduino circuitry.
- Help 100 undergraduate students understand and practice concepts of stress and strain transformations, Mohr's circle etc.

SKILLS & ADDITIONAL INFORMATION

Technical Skill: Solidworks, Catia, CNC operation, MasterCam(Toolpaths Design and G-codes generation), Matlab, Python, C++, Labview, ROS, Ansys, Lathe, Mill, 3D printing (slicer program)

Language: English (advanced), Mandarin (native), Spanish (Intermediate), Korean (Intermediate)

Member, Tau Beta Pi of Orange County Chapter **Sep. 2022 - June. 2023**