CHENHAO LI

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OBJECTIVE

Detail-oriented graduate student, major in mechanical engineering, with a strong technical background in product design and analysis.
Seeking a Mechanical Design Engineer intern to utilize my technical knowledge, combined with my excellent problem solving skills.

EDUCATION

Carnegie Mellon University   Dec 2025
Master of Science in Mechanical Engineering Advanced Study - Robotic and Control System   Pittsburgh, PA
Related Courses: Modern Control Theory, Robotic Dynamic and Analysis, Computer Vision

Worcester Polytechnic Institute   Jun 2024
Bachelor in Mechanical Engineering - Design and Manufacturing   Worcester, MA
Related Courses: Control Engineering, Kinematic Analysis, Heat Transfer, Fluid, Mechanical Design

SKILLS

- Technical Skills: SolidWorks Modeling, CERO Modeling, Onshape, CAD, FEA, Prototyping, Simulation, ANSYS, Webots Simulation, Python, MATLAB, Arduino, Computer Vision, 3D Printing, PID Controlling
- Soft Skills: Communication, Microsoft, Research, Problem-Solving, Teamwork, Time Management, Mandarin (Native)

PROJECT EXPERIENCE

MQP - Autonomous Measurement and Straightening of Endoscopes   Aug 2023 - May 2024
Advisor: Dr. Pradeep Radhakrishnan; Sponsored by Henke Sass Wolf of America, WPI   Worcester, MA

- Designed custom components with Solidworks and assembled prototypes with 3D printed parts, which improved the stability of the measurement setup, reduced vibrations, and enhanced overall precision by 30%.
- Designed a specialized light box with SolidWorks that significantly improved image clarity, increasing the detection accuracy of the endoscope's bend from 10% to 60%.
- Developed an algorithm in OpenCV to analyze endoscope images, reducing processing time by 80% (from 49 seconds to under 5 seconds) and increasing bend detection accuracy by 35%.

Elevator Simulation System Design   Jan 2024 - Mar 2024
Advisor: Dr. Pradeep Radhakrishnan; Sponsored by OTIS, WPI   Worcester, MA

- Analyzed the structural system using Finite Element Analysis (FEA) with SolidWorks to identify critical vibration points in the elevator frame. Successfully optimized the design, achieving a 90% reduction in frame vibration, significantly improving system stability and reducing noise levels. Optimized the linkage design by reducing input link vibration and minimizing component weight. Iterative improvements in SolidWorks resulted in a 15% reduction in overall weight.
- Enhanced joint design by incorporating low-friction materials and refining geometries, that resulted in a 20% improvement in accuracy and smoother system performance.
- Integrated IMU sensors to verify the reduction in vibration levels, validating improved operational efficiency and increased load-bearing capacity.

Independent Project: Robotic Arm   Dec 2022 - Present

- Designed and 3D-printed a robotic arm for tasks such as grabbing and opening cans, focusing on functionality and durability. Tested motors and implemented control systems using Python and Arduino, ensuring accurate and precise movement.
- Integrated computer vision-based control for object detection and manipulation, enhancing the arm's ability to autonomously perform tasks like identifying and handling cans.

WORK EXPERIENCE

Cheguangjiao (Shanghai) Information Technology Co., Ltd.   May 2021 - Aug 2021
Engineer Intern   Shenyang, China

- Contributed to the development of a WeChat Mini Program, adding features for selecting store locations and navigating to stores, enhancing user convenience and functionality.
- Designed a Vision-based vehicle plate number detection system with Python that reduced processing time by 30%.
- Participated in corporate marketing strategies, including the creation of short videos and live-stream promotions that garnered an average of 2,000 views per video and 1000 live viewers per session

Research Experience

WPI's Surface Metrology Research Laboratory   Jan 2023 - May 2024
Advisor: Dr. Christopher A Brown   Worcester, MA
Project A: Relationship Between Surface Roughness and Fluid Flow

- Assisted in the research on redoing the Moody chart with modern surface metrology parameters.
- Utilized the Sensofar S neox 090 optical surface microscope to conduct detailed surface topography scans.
- 3D-Printed and assembled adaptor components to ensure the integrity and functionality of setup operations.
- Analyzed surface test data in Mountains Lab software and performed ANOVA test with Sfrax; Verified the data's reliability & accuracy with matlab.

Project B: Comparative Assessment of Metrology Methods on Ski Base Surfaces

- Determined the accuracy, reliability, and application benefits of Gelsight in ski base topography assessment.
- Independently measured ski base regions using Sensofar microscope (in Confocal and Focus Variation modes).
- Performed statistical analyses regarding traditional surface parameters, scale-sensitive analysis, and ANOVA.

LEADERSHIP EXPERIENCE

Worcester Polytechnic Institute   May 2022 - May 2023
Peer Learning Assistant – Fluid   Worcester

- Optimize fluid dynamics experiments and improved lab material procurement efficiency & quality