Raymond Huang

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EDUCATION

University of Illinois at Urbana-Champaign Expected Graduation: May 2023
Bachelor of Science in Mechanical Engineering GPA: 4.00/4.00

- **Relevant Coursework**: Mechanical Design, Design for Manufacturability, Engineering Materials, Finite Element Analysis, Signal Processing & Control Systems, Heat Transfer, Soft System Dynamics & Computational Design.

EXPERIENCE

Metha Research Group | Student Researcher June 2022 – Present

- Implemented Covariance Matrix Adaptation Evolution Strategy (CMA-ES) optimizer in python.
- Coded numerical solvers for soft robotics with implementation of Cosserat Rod Theory.

Gazzola Lab | Student Researcher June 2022 – Present

- Designed PCB for a 256-channel recording system, doubling data resolution, and reducing 95% of part cost.
- Developed robotic stage-arm system for automated MEA testing and maintenance, saving 50+ man-hours weekly.
- Invented multi-purpose gripper to facilitate cultivation, probing signals, and part gripping in humid environments.

Ziguang Unigroup Cloud | Project Manager Intern May 2021 – July 2021

- Inspected assembly lines and drafted technical bidding documents on project implementation, timeline, and costs.
- Managed real-time manufacturing monitoring system projects that constitute $500,000+ of company revenue.

Foshan Robotic Innovation Park | Mechanical Engineering Intern December 2020 – January 2021

- Prototyped one of the first robots with full Independent Intellectual Property rights in China with the R&D team.
- Validated loading scenarios on a six-axis robotic arm with SolidWorks FEA simulation and solved 6-joint coordinate kinematics inverse transform in non-pieper criterion using MATLAB.

PROJECTS

Heatsink Design | Fusion 360, DOE

- Investigated relationships between heat sink efficiency, shape, material, and Reynolds number with DOE.
- Performed FEA for heat transfer and ran flow simulation to enhance convection conditions in Fusion 360.

Rube Goldberg Machine | DFM, DOE, GD&T

- Developed a 15-step chain reaction machine with GD&T and utilized DOE to reduce 20% mechanical vibrations.

Cyclic Gearbox | Creo, Abaqus

- Designed and assembled a mechanical system that converts single directional input to cyclic alternating output.
- Used Abaqus to conduct FEA on metal component part designs and achieved a $>10^6$ fatigue life.

Integrated Toaster | Fusion 360, 3D Printing

- Idealized an integrated bread toaster that transfers dissipated heat to a miniature oven for simultaneous usage.
- Prepared detailed 3D models and engineering drawings with manufacturing processes and tolerance specifications.

Wearable Healthcare Device | PCB design, STM32

- Prototyped an integrated wearable medical device that detects foot related health indicators (e.g. heart rate and gait).
- Improved compatibility with a whole-body medical support system through integrating feedback controls.

SKILLS

Design & Manufacturing: SolidWorks, Fusion 360, Creo, Rhino, NX, 3D Printing, Laser Cutting, Waterjet.
Mechanics Analysis: Abaqus, DOE, GD&T, DFA, Axial Loading Test, Cosserat Rod Theory, CMA-ES optimization.
Programming & Control: C, C++, Java, Python, MATLAB, KiCad, LT Spice, Arduino, STM32, ROS.