Raymond Huang

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# EDUCATION

**University of Illinois at Urbana-Champaign** Expected Graduation: May 2024

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

* Utilized Python to simulate soft robots using Cosserat Rod Theory and optimized gaits with controlled B-Spline.

**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 optimizednon-closed form 6-joint coordinate kinematics inverse solution set using MATLAB.

# PROJECTS

**Heatsink Design** | Fusion 360, DOE

* Investigated relationships between heatsink 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 >106 fatigue cycle.

**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, Welding.

**Mechanics Analysis:** Abaqus, DOE, GD&T, DFA, Axial Loading Test, Cosserat Rod Theory.

**Programming & Control:** C, C++, Java, Python, MATLAB, KiCad, LT Spice, Arduino, STM32, ROS.