

CHRISTINE ZHOU

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EDUCATION

Brown University

Sc.B. Mechanical Engineering | A.B. Visual Art

May 2023

GPA: 3.88/4.00

Relevant Coursework: Sculpture: Conceptual Propositions; Dynamics and Vibrations; Electricity and Magnetism; Fluid Mechanics; Mechanics of Solids/Structures; Structural Analysis; Computer Aided Visualization/Design; Electrical Circuits

RESEARCH EXPERIENCE

Temple Allen Industries

Incoming Mechanical Engineer Intern

May 2021 – Present

Rockville, Maryland

Breuer Lab at Brown University

Mechanical Engineer Research Assistant

January 2021 – Present

Providence, Rhode Island

- Oversaw repair of mechanical bat wing robot with 4 degrees of freedom, driven by a motor-powered cam mechanism
- Researched optimization of bat robot to decrease weight of wing, smoothen motion of joints, reduce friction between cams
- Designed and implemented 3D-printed bat wing modeled in SolidWorks, dimensioned according to bat wingspan research data
- Wrote specification and documentation of robot for the lab to access in future experiments involving installation and testing

USC Space Engineering Research Center (SERC)

Manufacturing Research Intern

June 2020 – September 2020

Los Angeles, California

- Iterated 5+ designs of Horizon Drive cavity to optimize generated thrust and make the design manufacturable with CNC
- Manufactured Horizon Drive cavity using SolidWorks CAM and CNC machining, in compliance with safety regulations
- Outsourced electroless silver plating of cavity, contacting 10+ LA-based metal plating companies with technical documentation
- Performed finite element analysis simulations to test material integrity for high temperature experiments involving the cavity

LEADERSHIP EXPERIENCE

Brown Student Agencies (BSA)

Marketing Manager and Graphic Designer

February 2020 – Present

Providence, Rhode Island

- Design and create marketing materials (flyers, posters, banners, signage, brochures) with Photoshop, InDesign, and Lightroom
- Handle interactions between Brown University and local businesses including OCM Linens, Knead Donuts, Kaplan Test Prep
- Manage BSA Instagram (500+ followers), Facebook page, and website while communicating with BSA Marketing Director

Brown Space Engineering (BSE)

Manufacturing Team Member

January 2021 – Present

Providence, Rhode Island

- PVDX satellite utilizes novel solar cells and increases aerospace accessibility by allowing anyone to control PVDX from ground
- Brainstorm PVDX satellite's robotic arm design and mechanism, collaborating with a team of 8 to satisfy NASA requirements

PROJECTS

Ebb: Mechanical Light Oscillation Projector (<https://www.christineezhou.info/engineering/ebb/>)

March 2021

- Innovated interior cam mechanism powered by singular motor, composed of 50+ moving parts (cams, gears, wheels, followers)
- Iterated exterior product casing in sketchbook and SolidWorks, making 20+ prototype designs and modeling 5+ in CAD
- Rendered final assembly (casing and interior mechanism) in Adobe Dimension, retouching 5+ hero shots in Adobe Photoshop

UtiliTool: A Touchless Keychain Tool (<https://www.christineezhou.info/design/utilitool/>)

August 2020

- 3D modeled 10+ prototypes and 5+ design iterations of a multifunctional touchless keychain tool, the UtiliTool, in SolidWorks
- Performed primary market research with 10+ people, financial modeling, competitive landscape research, market size evaluation
- Analyzed various flexible materials (TPA, TPE, TPU) and their mechanical properties to determine ideal tool dimensions

Lunar Impact Mission: MATLAB Simulation

April 2020

- Programmed optimal satellite orbital trajectory functions, using MATLAB Symbolic Toolbox and writing differential equations

Koi: Height-Adjustable Lantern (<https://www.christineezhou.info/design/koi/>)

February 2020

- Utilized a four-bar chain mechanism and moment distribution analysis of beams to allow for lantern height to be adjusted
- Operated laser printer to cut Adobe Illustrator koi fish frame design, woodworked lantern stand using bandsaw and drill press

SKILLS AND INTERESTS

Programs: Adobe Creative Suite: Photoshop, InDesign, Lightroom, Illustrator, Acrobat, After Effects, Premiere Pro, Dimension, Xd. **Microsoft Office:** Word, Excel, PowerPoint, Access. **Technical:** MATLAB, SolidWorks, NX, Fusion 360.

Machining: 3D Printer, Laser cutter, CNC, Mill, Lathe, Drill press, Circular saw, Bandsaw, Spot welding, Plasma welding, Soldering

Interests: Drawing storybook-style illustrations, Badminton, Photography (Nikon D3500), Gardening, Animation, Museums, 1010!