CHRISTINE ZHOU

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EDUCATION

Brown University **May 2023**
Sc.B. Mechanical Engineering | A.B. Visual Art **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

WORK EXPERIENCE & RESEARCH

Hasbro, Inc. (NERF Department) **July 2021 – Present**
Design Engineer Co-Op *Pawtucket, Rhode Island*

- Designed, modeled, and tested 10+ barrel modifications in rapid prototyping, enhancing Rival Charger firing accuracy by 12%
- Innovated clipping mechanism to secure motor in Ultra Amp flywheel cage, reducing labor and hardware cost by $0.80/blaster
- Optimized Ultra Amp flywheel cage to be canted using helix angle calculations, adding spin to stabilize dart trajectory

Temple Allen Industries **May 2021 – July 2021**
Mechanical Engineer Intern *Rockville, Maryland*

- Spearheaded all phases of product development cycle: designing custom parts, procuring parts, supporting production/assembly
- Collaborated with a team of 10 engineers to write, perform, and document 15+ testing procedures for smart automation system
- Calculated numerical parameters for pneumatic cylinder force and drivetrain wheel torque using moment analysis and part specs
- Designed custom sensor window mount after performing root cause analysis, slashing sensor system assembly time by 30%

Breuer Lab at Brown University **January 2021 – Present**
Mechanical Engineer Research Assistant *Providence, Rhode Island*

- Oversaw repair of mechanical bat wing robot with 4 degrees of freedom, 10+ moving parts, and a motor-powered cam system
- Wrote specification and documentation of robot for the lab to access in future experiments involving installation and testing

USC Space Engineering Research Center (SERC) **June 2020 – September 2020**
Manufacturing Research Intern *Los Angeles, California*

- Manufactured Horizon Drive cavity using SolidWorks CAM and CNC machining, in compliance with OSHA safety regulations
- Outsourced production to manufacturers using technical documentation, obtaining multiple quotes for cost cross-comparison

LEADERSHIP EXPERIENCE

Brown Space Engineering (BSE) **January 2021 – Present**
Manufacturing Team Member *Providence, Rhode Island*

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

PROJECTS

Apple Design Test: iPod Battery Door Mechanism (https://www.christinezhou.info/engineering/apple/) **April 2021**

- Innovated latch and spring door mechanisms, modeled in SolidWorks assembly with 10+ dynamic components and 5+ springs
- Composed a bill of materials, performing cost analysis with cost of direct labor, direct materials, and manufacturing overhead
- Simulated applied forces and displacements for finite element analysis in Fusion 360, analyzing stresses and safety factors

UtiliTool: A Touchless Keychain Tool (https://www.christinezhou.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

SKILLS AND INTERESTS

Design: SolidWorks, Fusion 360, Siemens NX, Design for Manufacturing, Materials Selection, Engineering Calculations
Drafting: ANSI Drawing Standards, Fits/Tolerances, Technical Hand Drawings, Pneumatic Circuit Diagrams, Bill of Materials
Engineering Analysis: Finite Element Analysis, Equipment/Electronics Testing, Cycle Time Analysis, Cost Analysis
Fabrication: Mill, 3D Printing, CNC Router, Laser Cutter, Power and Hand Tools, Welding, Soldering, Woodworking
Software: MATLAB, Arduino, PicoScope, LTspice, Adobe Creative Suite (Photoshop, Illustrator, Premiere), Microsoft Office Suite
Interests: Illustration, Photography (Nikon D3500), Hiking, Gardening, Stand-up Comedy, NERF Blasters, Toy Design