CHRISTINE ZHOU

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EDUCATION

Brown University (GPA: 3.88/4.00) **September 2019 – May 2023**
Sc.B. Mechanical Engineering and Visual Art *Providence, Rhode Island*

- **Relevant Coursework:** Dynamics and Vibrations; Woodworking and Metalworking; Electricity and Magnetism; Fluid Mechanics; Mechanics of Solids/Structures; Structural Analysis; Computer Aided Visualization/Design; Electrical Circuits

WORK EXPERIENCE & RESEARCH

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

- Designed, modeled, and tested barrel modifications through rapid prototyping, enhancing blaster firing accuracy by 12%
- Innovated clipping mechanism to secure motor in flywheel cage, reducing labor and hardware cost by $0.80/blaster
- Angled blaster flywheels using helix calculations to determine target angle, adding spin to stabilize dart trajectory
- Manufactured casting molds for rapid prototyping of repetitive part designs to vary durometers, materials, and textures

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

- Led all phases of product development cycle: part design, parts procurement, in-house production, and assembly
- Wrote, performed, and recorded 15+ tests to confirm IP waterproof ratings, airtight sealings, durometers, and dimensions
- Calculated numerical parameters for pneumatic cylinder force, drivetrain wheel torque, gear ratios, and cycle times
- Designed custom sensor window mount after root cause analysis, reducing sensor system assembly time by 30%

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

- Executed solo repair of bat wing robot by studying component interactions; replaced severed wires of cam system
- Researched optimization of robot to: decrease wing weight, smoothen joint motion, and reduce friction between cams

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

- Worked on a quantized inertia theory-based system that generates propellantless thrust using high-powered lasers
- Maximized thrust by iterating cavity designs while attentive to material thermal limits and CNC manufacturability
- Outsourced manufacturing using technical documentation, obtaining multiple quotes for cost cross-comparison

PROJECTS

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

- Innovated latch and damped spring door mechanisms, modeled in SolidWorks assembly with 10+ dynamic components
- Determined total production cost of new iPod using costs of direct labor, raw materials, and manufacturing overhead
- Simulated applied forces and displacements on latch (FEA) in Fusion 360, interpreting stress and safety factor data

UtiliTool: A Touchless Keychain Tool (christinezhou.info/utilitool) **August 2020**

- Analyzed various flexible materials (TPA, TPE, TPU) and their mechanical properties to determine ideal tool dimensions
- Performed primary market research, financial modeling, competitive landscape research, and market size evaluation
- Utilized FEA to observe stress concentrations under applied loads and iterated designs to ensure tool longevity

Twin-Tee Filter Circuit **March 2021**

- Designed and breadboarded circuit to filter out a band of frequencies, using the notch frequency to target specific range
- Conducted cost analysis on worst-case capacitor tolerances based on LTspice simulations of high-low capacitance cases

SKILLS & INTERESTS

Design/Testing: SolidWorks, Design for Manufacturing, GD&T, Materials Selection, ANSI/ASME Drawing Standards, Fits/Tolerances, Finite Element Analysis, Equipment/Electronics Assembly and Testing, Cycle Time Analysis
Fabrication: 3D Printing, CNC Router, Laser Cutter, Mill, Power and Hand Tools, Welding, Soldering, Woodworking
Software: MATLAB, Arduino, PicoScope, LTspice, Adobe Creative Suite (Photoshop, Illustrator, Premiere), Microsoft Office
Interests: Toy Mechanism Design, Illustration, Animatronics, Photography, Hiking, Gardening, NERF Blasters