

Gabriel Zwillinger

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Detail-oriented Mechanical Engineer with a proven track record in innovative design, prototyping, and injection molding, poised to bring a versatile skill set to a dynamic team. Specializing in mechanical design, including developing novel mechanisms and unique solutions.

Experience

Senior Engineer at XDemics Corporation

June 2025 – Present

- Managed, implemented, and enforced safety protocols, equipment trainings, and hazardous waste disposal.
- Analyzed potential risk factors, managed timelines, and delegated responsibilities to ensure a successful and timely product launch.

Engineer at XDemics Corporation

September 2024 – June 2025

- Developed and CNC machined liquid silicone rubber injection molding tools to scale production from 10 parts a day to over 200 parts a day.
- Designed and prototyped parts to be injection molded, CNC machined, and/or 3D printed internally and by external vendors.
- Outfitted and equipped the manufacturing facility with a full machine shop, including 3 CNC mills, a bandsaw, FDM and SLA 3D printers, and a laser cutter, to produce all mold tooling and prototypes in house.
- Manufactured packaging fixtures to increase packaging throughput by over 50x
- Devised a novel LSR injection molding part ejection method to minimize operator touch time and improve cycle time.

Harvey Mudd College Clinic Program at Trilobio

August 2023 – May 2024

- Created and prototyped a cutting-edge 96-channel pipette for robotic arm integration, boosting experimental throughput 960%.
- Devised novel hydraulic sealing technique to eliminate Z-axis force in pipette seal formation.
- Applied polymer science and elastomer technology to engineer airtight pipette seals.
- Maintained detailed documentation of design processes, material tests, and prototype refinements.
- Fostered a collaborative environment that contributed to the successful prototyping of the pipette.

Head Machine Shop Proctor at Harvey Mudd College, Claremont, CA

May 2022 – May 2024

- Managed operations and safety as one of four Head Machine Shop Proctors, training 100+ students per semester in metal and wood shop tool usage
- Managed and mentored a team of 50 student proctors, ensuring effective knowledge transfer and adherence to safety guidelines.
- Improved the introductory engineering course curriculum in partnership with academic staff, contributing to a more comprehensive educational program.
- Championed a series of safety and accessibility improvements that significantly reduced hazards and streamlined shop operations.
- Maintained equipment to minimize downtime and ensure safe machine operation.

Softgoods Product Design Intern at Apple, Cupertino, CA

May 2023 – August 2023

- Pioneered the design and creation of a tool that aided in the transportation and presentation of accessories using Siemens NX.

- Transformed an initial concept into Apple-quality prototypes for internal use, demonstrating a keen ability to bring ideas to fruition.
- Played a key role in the design and prototype development of an accessory for an upcoming product launch.
- Developed a comprehensive series of reliability tests, significantly contributing to the product's quality assurance process.
- Successfully coordinated with vendors to facilitate the production of test fixtures, components, and prototypes.

Harvey Mudd College Clinic Program at Aprovecho Research Center January. 2023 – May 2023

- Engineered and machined prototypes to refine the Jet-Flame stove's manufacturability
- Redesigned the Jet-Flame stove, successfully removing three critical failure modes and significantly improving product reliability.
- Increased stove efficiency by 12%, contributing to more sustainable and cost-effective cooking solutions.
- Achieved an estimated 30% cost reduction in stove production, enhancing the product's market competitiveness.

Mechanical Engineering Intern at Honeybee Robotics, Altadena, CA May 2022 – August 2022

- Innovated methods for improving drill shaving retrieval in small rotary percussive drills optimizing sample collection techniques
- Increased drill shavings collection yield by 450%, significantly enhancing sample retrieval efficiency.
- Analyzed data using Matlab and Excel to assess drill bit wear, ensuring efficient operation and longevity of drilling equipment
- Engineered and constructed test apparatuses for two unique R&D projects, enhancing the development process at Honeybee Robotics.
- Developed and executed four ice tests for melt probes, contributing to the exploration of extraterrestrial environment

Education

Bachelor of Science in Engineering
 Harvey Mudd College, Claremont, CA, May 2024
 GPA - 3.95
 Tau Beta Pi Engineering Honors Society

Professional Courses

Mechanical Design | Materials Engineering | Advanced Structural Mechanics | Heat and Mass Transfer | Chemical and Thermal Processes | Dynamics of Elastic Systems | Advanced Systems Engineering | Engineering Systems | Digital Electronics and Computer Engineering | Introduction to Engineering Design and Manufacturing | Elec & Magnetic Circuits/Devices | Differential Equations | Linear Algebra | Mechanics and Wave Motion

Technical Skills

Areas of Expertise: Mechanical Design, CNC machining, Design for Manufacture, LSR Injection Molding, 3D Printing

Software: Solidworks, Siemens NX, Autodesk Inventor, Autodesk Fusion, Adobe CC, MATLAB, Python, MS Office

Other: Rapid Prototyping, Soldering, Instron, Product Design, Structural Dynamics

Hobbies: Biking, Hiking, Woodworking, Machining, Glass Blowing