2026

portfolio

Julie Li

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Linkedin

New York, New York

2026

Hello, I'm Julie

I’ve been designing things for as long as I can remember. As a kid, that meant cutting up old clothes to make outfits for my stuffed animals, building tiny closets for my dolls, and eventually convincing myself I could build real furniture.

Somewhere along the way, that instinct to make and tinker grew into CAD models, prototypes, experiments, and systems that have to work in the real world. I’m drawn to projects where creativity meets engineering, where thoughtful design and functionality coexist.

Today, I approach engineering the same way I always have: with curiosity, hands-on problem solving, and the belief that good design should feel intuitive, intentional, and human.

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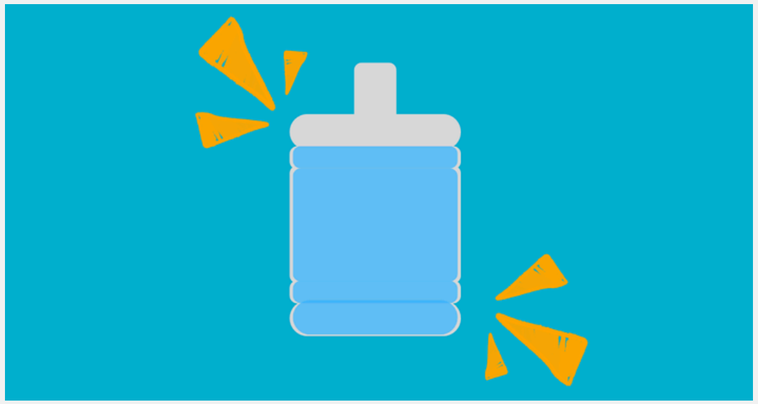
ongoing, 2026

water wheel desalination pump

Conceptualized and engineered a boat-mounted water wheel system to passively power a desalination pump using river or tidal flow. Designed to reduce external energy input while maintaining steady flow and pretreatment compliance.



Technical Highlights

- Designed hydrodynamic paddle geometry for torque generation
- Analyzed flow rate vs rotational speed to size pump coupling
- Considered cavitation, debris loading, and marine corrosion
- Researched U.S. flow & pretreatment regulatory requirements

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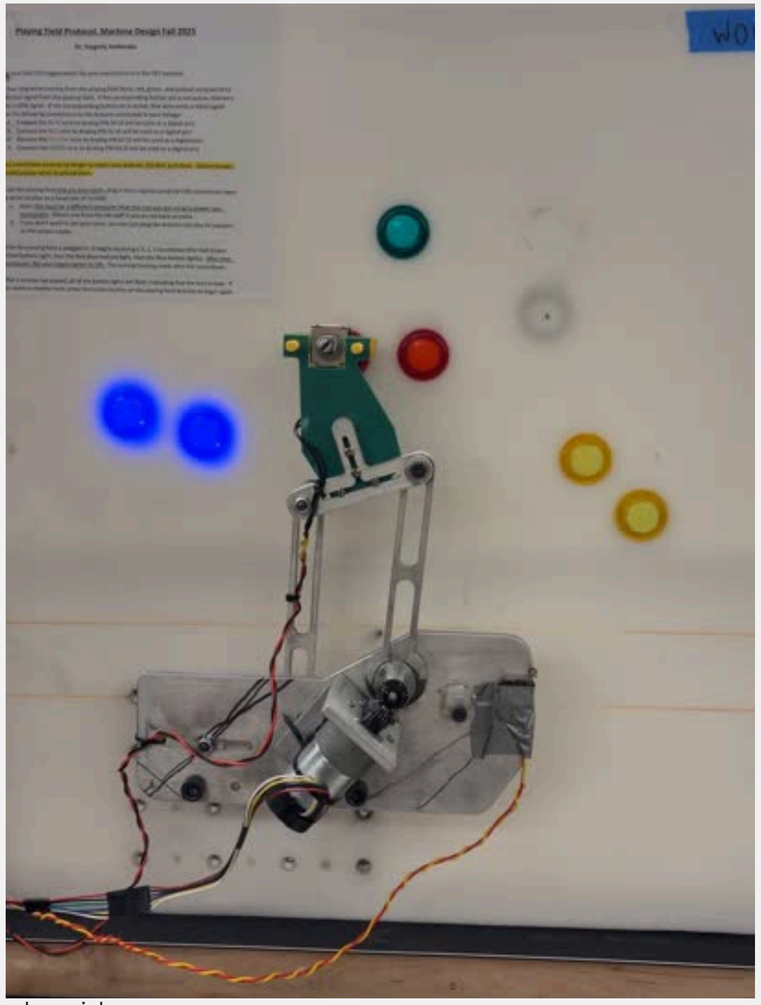
December 2025

button pressing linkage

Designed and machined a single-motor linkage system to autonomously press color-coded arcade buttons under strict volume, transmission angle, and control constraints. Achieved a highest performance score of 120 points in 1-minute trials.



play video

Technical Highlights

- Designed a low-inertia four-bar linkage for rapid button travel
- Machined aluminum precision-aligned linkages, spacers, brackets & ground plate
- Implemented closed-loop motor control using Arduino

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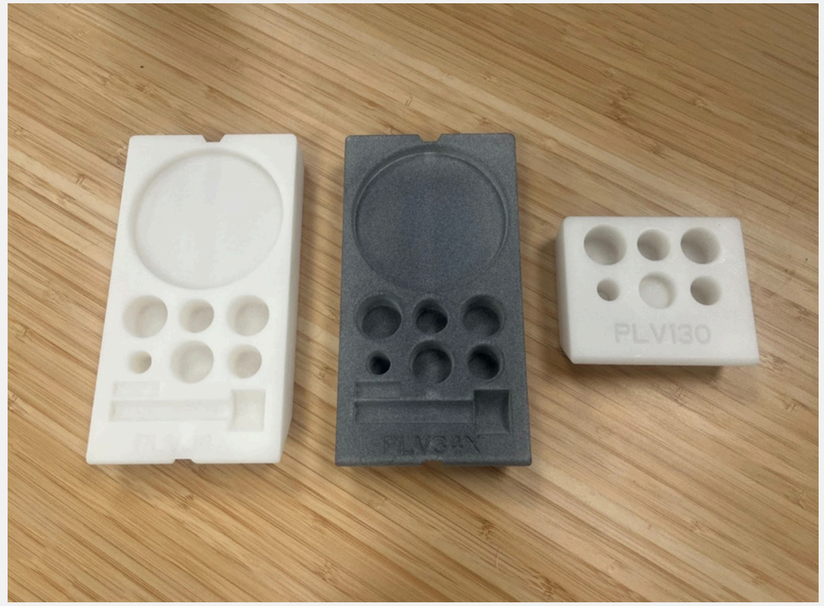
August 2025

FOD free kits

Designed foreign object debris (FOD)-controlled tool kits for aerospace production to prevent contamination and improve assembly reliability.

Technical Highlights

- Modeled shadow inserts in Creo
- Optimized tool layout for visual control & workflow efficiency
- Considered aerospace FOD-standards & environment-compatible materials
- Iterated prototypes for fit tolerance and repeatability



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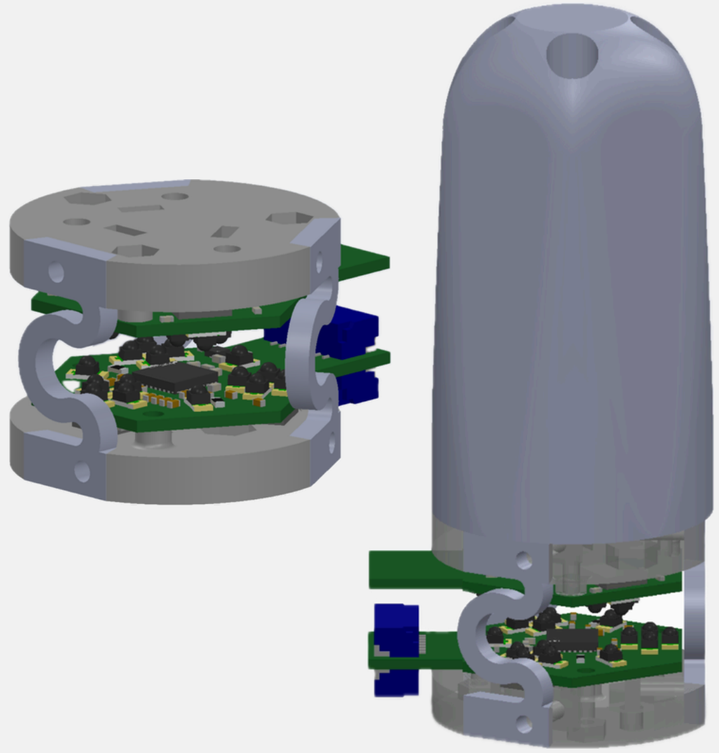
April 2025

popcorn sensor

Designed and optimized a flexure-based 6-axis force/torque sensor for robotic manipulation. Focused on stiffness tuning, hysteresis reduction, and fatigue validation.

Technical Highlights

- Improved directional stiffness & production repeatability
- Iterated flexure geometry (thickness, arc angle, curvature) to reduce dead zones & hysteresis
- Conducted multi-angle indentation tests (0°, 45°, 90°)
- Measured fatigue & failure limits (tension, torsion, shear)



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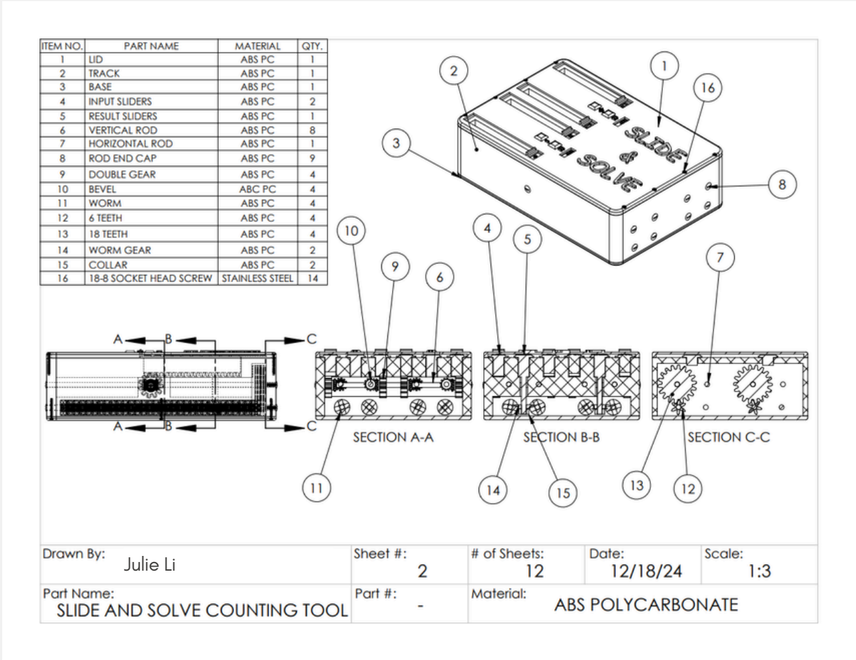
December 2024

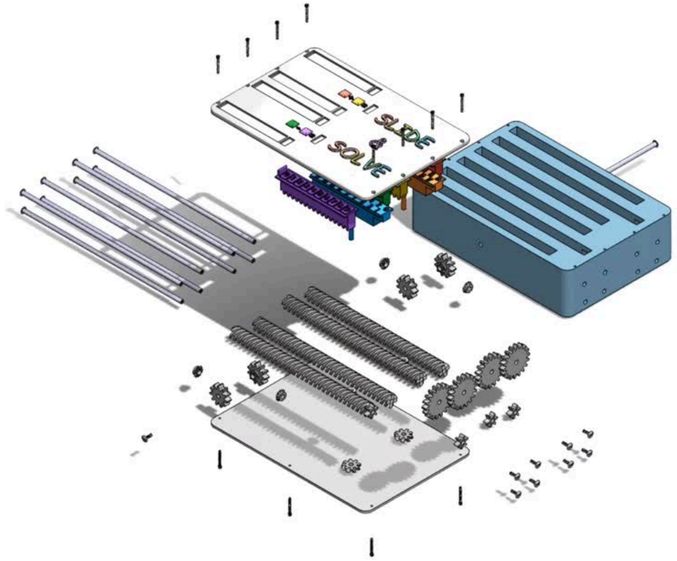
slide & solve

Fully mechanical addition/subtraction toy that displays results without electronics. Designed complete gear-driven slider-to-display system.



ITEM NO.	PART NAME	MATERIAL	QTY.
1	LID	ABS PC	1
2	TRACK	ABS PC	1
3	BASE	ABS PC	1
4	INPUT SLIDERS	ABS PC	2
5	RESULT SLIDERS	ABS PC	1
6	VERTICAL ROD	ABS PC	8
7	HORIZONTAL ROD	ABS PC	1
8	ROD END CAP	ABS PC	9
9	DOUBLE GEAR	ABS PC	4
10	BEVEL	ABC PC	4
11	WORM	ABS PC	4
12	6 TEETH	ABS PC	4
13	18 TEETH	ABS PC	4
14	WORM GEAR	ABS PC	2
15	COLLAR	ABS PC	2
16	18-8 SOCKET HEAD SCREW	STAINLESS STEEL	14

Drawn By: Julie Li	Sheet #: 2	# of Sheets: 12	Date: 12/18/24	Scale: 1:3
Part Name: SLIDE AND SOLVE COUNTING TOOL	Part #: -	Material: ABS POLYCARBONATE		



play video

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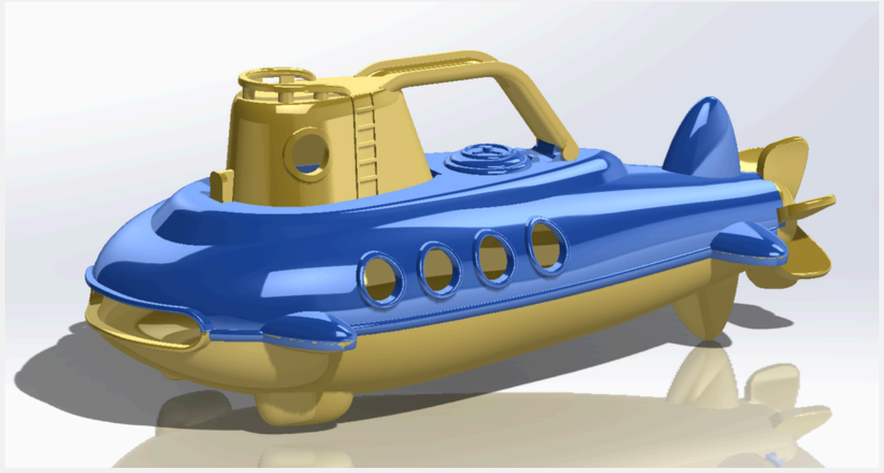
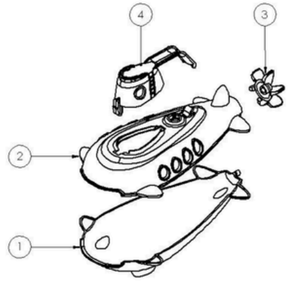
November 2024

toy submarine model

Modeled a toy submarine in SolidWorks to practice dimensional accuracy and assembly alignment. Recreated each individual component based on physical measurements and visual inspection.



ITEM NO.	PART NAME	MATERIAL	QTY.
1	Body Bottom	POLYETHYLENE (HDPE)	1
2	Body Top	POLYETHYLENE (HDPE)	1
3	Propeller	POLYETHYLENE (HDPE)	1
4	Deck	POLYETHYLENE (HDPE)	1



Drawn By: Julie Li	Sheet #: 1	# of Sheets: 1	Date: 11/30/2024	Scale: 1:3
Part Name: Toy Submarine	Part #:	Material: POLYETHYLENE (HDPE)		

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