

Craig Hillyer



Glen Rock, NJ • chillyer@purdue.edu • (551) 221- 4541 • [linkedin.com/in/craig-hillyer](https://www.linkedin.com/in/craig-hillyer) • Portfolio : craighillyer.com

Education

Purdue University – School of Mechanical Engineering - West Lafayette, IN

Expected Graduation: Spring 2029

- GPA: 3.77 | Dean's List: Fall 2025, Spring 2026

Work Experience

Undergraduate Researcher - MARS Research Lab - Purdue University

October 2025 - Present

Underwater Robot (UR) Project - Patent Pending

- Designed and fabricated the internal mechanical components of a 3.5 ft multimodal underwater robot, enabling buoyancy-driven vertical motion, wing-deployed gliding, and thruster-driven straight-line propulsion
- Redesigned a structurally weak legacy internal frame in Fusion 360 into a rail-based modular architecture, allowing components to slide on and off for rapid module swaps, simplified maintenance, and leak inspection
- Conducted pool testing and validation across all three locomotion modes, generating the technical documentation and visuals for the final paper
- Selected to present the paper as second author at ASME IDETC/CIE 2026 conference (August 2026)

6 DOF Underwater Robotic Arm Project – Project Lead

March 2026 - Present

- Lead design and development for a low-cost, predominantly 3D-printed 6-DOF underwater robotic arm rated to 300 m depth, defining project scope and technical direction from the ground up
- Outlined an OptiTrack motion-capture setup with a MATLAB conversion layer to capture millimeter-precision acceleration and deceleration data to quantitatively measure arm performance
- Scoped integration of imitation-learning-based control to enable autonomous manipulation in deep-sea applications
- Lead weekly meetings and gave progress presentations to keep mechanical, electrical, and software subteams aligned

Summer Research & Development Intern - Colex Finishing Solutions - Oakland, NJ

May 2025- August 2026

- Led cost-benefit analysis and negotiated bringing 5-axis CNC lathe machining in-house, projecting ~\$195,000 in annual savings, and spearheaded the proposal to the leadership board
- Designed a compact, multi-station tool-head assembly — featuring an integrated router — for Colex's next-generation flagship CNC machine, achieving a 3x faster Z-axis jump for high-speed cutting, across a ~10,000-unit production run, validating concepts through 3D-printed and machined prototypes
- Conducted market research and cost comparisons against predecessor components to shape the tool head's design
- Introduced new manufacturing strategies and CNC tool-pathing approaches, increasing production output by ~50%
- Manufactured and toleranced parts, authored data sheets, and programmed Haas CNC machines for live production
- Refined designs for manufacturability and sourced materials across suppliers to support the next production run
- Designed the company's first custom circuit board — a higher-power, tightly integrated LED lighting solution for the recognition camera — producing a higher lumen output while being cheaper than the off-the-shelf alternative

Summer Gate Guard - Glen Rock Municipal Pool - Glen Rock, NJ

May 2022 - September 2024

- Balanced daily books, maintained pool filtration systems, and provided customer service to 500+ members daily

Activities

Purdue SEARCH - NASA SUITS Challenge - Hardware Lead - Purdue University

August 2026 - Present

- Leading a 10-person hardware team building chest-mounted and wall-panel control units feeding a live data-stream pipeline for in-house testing of astronaut assistance software at Purdue
- Developing a wrist-mounted display housing and a backpack power/compute enclosure for onboard AI and displays
- Developing a low-light visibility lighting rig for astronauts for nighttime task simulations

Purdue Space Program Member - Active Controls - Purdue University

August 2025 - Present

- Designed and executed 3-axis and 5-axis CNC toolpaths for high-tolerance rocketry components

Bechtel Innovation Design Center Machine Shop Training - Purdue University

December 2025 - May 2026

- Completed the full badge program at the Purdue Bechtel Innovation Design Center machine shop, certifying proficiency across a wide range of manufacturing equipment

Skills

- **Software Skills:** SolidWorks, Siemens NX, Fusion 360, Inventor, Onshape, KiCad, Teamcenter (PDM), MATLAB, Python
- **Fabrication Tools:** CNC Machining, 3D Printing (FDM & LFS), Water Jetting, Laser Cutting, Vinyl Cutting, Soldering