Marcus Yoo

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EDUCATION

Rose-Hulman Institute of Technology **May 2028**

Bachelors of Science, Mechanical Engineering *Terre Haute, IN*

Related Coursework: Mechanical Systems, Thermo, Fluids, Statics II, Design for Manufacture

INTERNSHIP EXPERIENCE

Boeing Co. **June 2023 - August 2023**

Flight Performance Engineering Intern *Huntington Beach, CA*

- Conducted simulations for takeoff and landing speeds using advanced proprietary models; results directly contributed to operational manuals, ensuring accurate guidance for flight crew across more than 100 unique customer configurations
- Developed python programs to batch process terabytes of fluid simulation data, boosting operational efficiency, cutting down human time spent processing each simulation by 15%
- Manufactured composite and thermal protection systems test coupons for empirical property verification through X-ray photoelectron spectroscopy, contributing to spacecraft and aircraft coatings development

ADDITIONAL EXPERIENCES

Rose Rocketry **August 2024 - May 2026**

NASA Student Launch Member *Terre Haute, IN*

- Drafted and refined project proposals and technical reports, effectively communicating project objectives and progress
- Developed a mechanical fin attachment system to minimize breakage, increasing ease of rapid design iteration
- Pursuing NAR L2 Certification through design, testing, and flying a fiberglass rocket with an interchangeable payload bay

Sage Hill Robotics (FRC Team 5835) **August 2020 - July 2024**

Team Captain | August 2023 - July 2024 *Newport Coast, CA*

- Collaborated with teammates to rebuild and expand the FIRST robotics team from 4 members to over 40, overcoming the challenges posed by the COVID-19 pandemic, introducing over 60 Sage Hill School students to fields of engineering
- Guided team to 8/48 teams at the Orange County Regional Competition, demonstrating strategic planning and leadership
- Managed a $19,000 budget, overseeing accounting and finance to ensure the team had the necessary resources
- Implemented project management techniques to coordinate group efforts, resulting in a cohesive and efficient team

Design Lead | August 2020 - August 2023

- Mentored group of 2-6 members, developing and enhancing the team's solution seeking workflow
- Applied creative design ethos, keeping in mind manufacturing limitations and identifying possible workarounds

Rose-Hulman Art Curator's Office **September 2025 - June 2026**

Assistant Art Curator *Terre Haute, IN*

- Curated and installed exhibitions across campus spaces, enhancing the daily environment for 2,000+ students and faculty while providing recognition for emerging local artists.
- Coordinated with faculty to align art placement with community needs, cultivating a more vibrant academic culture.

Delta Sigma Phi **February 2025 - February 2026**

Historian *Terre Haute, IN*

- Maintained chapter documentation and recordkeeping, ensuring preservation of chapter history and tradition
- Responsible for photoshoot, production, and maintenance of chapter composites to maintain dossier of membership

CERTIFICATIONS & SKILLS

- **Certifications:** Cisco Level II Network Technician; Audinate Dante Level III Certification; ASA Keelboat Certification
- **Adobe Products:** Illustrator; FrameMaker, Indesign; Premiere; After Effects; Photoshop; Lightroom
- **Design & Simulation**: Solidworks & Catia; Autodesk Fusion 360; Satellite Tool Kit; Ansys Fluent; KiCAD; Blender
- **Programming:** Java; Python; C++; Matlab

INTERESTS & ACTIVITIES

- **Interests:** Aviation; Space; Defense & Security; Rocket Propulsion; Robotics & Automation; Prosthetics & Orthotics
- **Activities:** Rose Climbing Team Manage; Boulder Wall Routesetter; Fabrication; Photography & Darkroom; Ceramics

ROCK CLIMBING

Rose-Hulman Climbing Team **January 2025 - January 2026**

Team Manager and Club Officer *Terre Haute, IN*

- Developed climbing specific training plans and workout curriculum for team members, leading to 2 first place placements and a 3rd overall team ranking at the 2025 Collegiate National Championships in Salt Lake City
- Organized weekly supplemental school-funded trips to Indianapolis climbing gyms for further training and development

Rose-Hulman Student Recreation Center **August 2024 - May 2026**

Boulder Wall Routesetter *Terre Haute, IN*

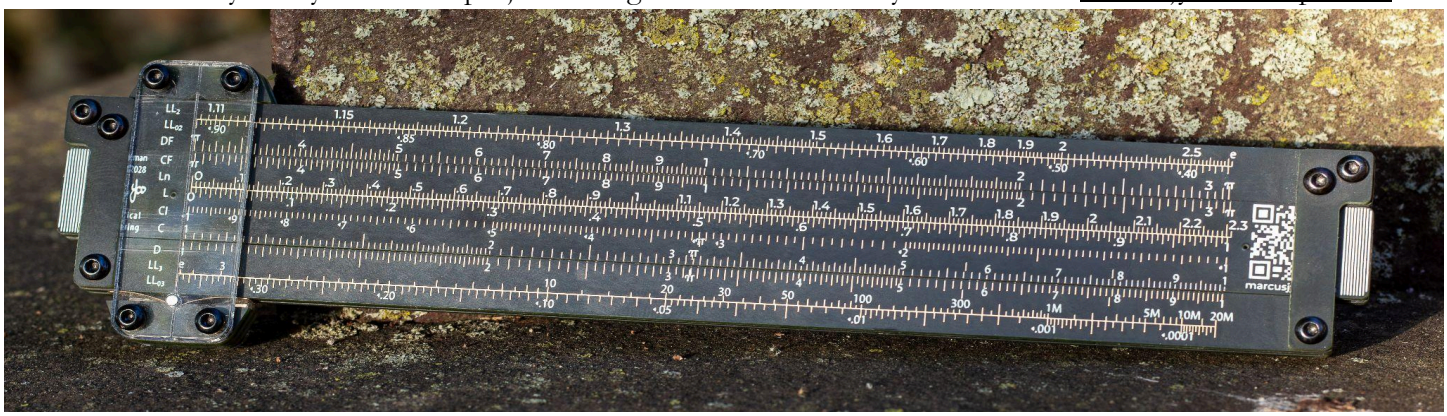
- Uniting the Rose-Hulman climbing community through creative commercial-style routesetting, turning the climbing wall into a space where people can challenge themselves, share their passions and to meet others with shared interests
- Setting consistently fun and engaging boulder problems that are simultaneously challenging and rewarding to climbers

PROJECT SHOWCASE

PCBrule: A PCB-based Analog Pocket Calculator **July 2025 - March 2026**

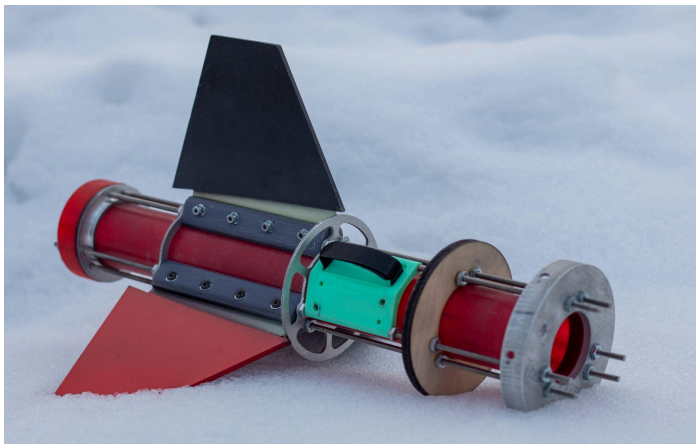
Personal Product Design Project

PCBrule is a working slide rule designed from PCB (FR-4) laminate, and inspired by the Picket N600-ES, the slide rule vetted by NASA and carried by the astronauts aboard the Apollo missions. I have been wanting to make this product ever since I was a freshman in high school, when I first learned what a slide rule was. This product is a labor of love and I'm currently in the process of trying to share it with as many people as I can. There are a few roadblocks to navigate before I can bring this product to market: I have to develop a streamlined process for producing the spacer shims, smooth out the design details related to the cursor and the bow spring, as well as set up an eCommerce site for sales. The prototype (pictured below) validated the PCB design and working principles, so I am confident in my ability to see this project through. Learn more on my website here: marcusjyoo.com/pcbrule



Rose-Rocketry: Mechanical Fin Attachment System **August 2024 - April 2025**

NASA Student Launch: 2024-25 Subscale Vehicle Subassembly



Last University Student Launch Initiative (USLI) season, I was tasked with researching and developing a mechanical fin attachment system for the Project Kline subscale vehicle. In previous seasons, there had been issues with repeated fin damage and breakage after flights. This problem had to be fixed by grinding, filing, and sanding down the epoxy filets before reattaching the replacement fins - a painful, exhausting, and hazardous 24+ hour process. To combat this, the team decided to research a mechanical fin attachment system. The solution I came up with (pictured left), proved to be extremely helpful on the subscale vehicle as the team experimented with different fin shapes, which could be hotswapped within a 30 minute window at launch site. Ultimately, while the system was useful on the subscale vehicle for testing and validating fin designs, the team chose to return to traditional epoxy bonded fins for the full scale rocket in favor of flight vehicle mass savings and decreased complexity, at the cost of increased fin replacement time and labor.