Jack Macias

jrmacias@wisc.edu | (908)-381-4532

PERSONAL STATEMENT

Mechanical engineering student at UW–Madison who has built a foundation in design, analysis, and practical problem solving, through internships and team-based engineering challenges. Driven to contribute solutions that blend innovation and efficiency, while continuously developing technical expertise and broad professional skills.

EDUCATION

University of Wisconsin-Madison **Expected May 2027**

Bachelor of Science, Mechanical Engineering

WORK EXPERIENCE

Engine Platform Engineering Intern **May 2025 – Aug. 2025**

Caterpillar – Lafayette, IN

- Worked with a cross-functional team to improve mining truck engine oil management system serviceability by increasing the oil filling rate from 5 GPM to 15 GPM and optimizing oil pan drainage design, reducing annual service time by 10 hours per truck
- Developed a strong appreciation for balancing preventive maintenance with equipment productivity, recognizing that short-term downtime can extend machine lifespan and maximize long-term operational efficiency
- Identified and documented system response differences to failures such as engine speed high and coolant pressure high across human-operated and autonomous mining trucks, improving software clarity and usability for customers

Design Engineering Intern **May 2024 – Aug. 2024**

HUSCO International – Waukesha, WI

- Designed and prototyped hydraulic control valves for skid steers and tracked-type tractors that conformed with performance and durability standards set by industry-leading original equipment manufacturers
- Collaborated with customer engineering teams to analyze specifications and integrate feedback into the iterative design process, ensuring alignment with internal manufacturing teams
- Authored technical documentation, design reports, and engineering drawings using Geometric Dimensioning and Tolerancing (GD&T) principles to ensure precise manufacturing and quality control during production

AWARDS

University of Wisconsin-Madison Engineering Diversity Scholarship Recipient
College of Engineering Dean's Honors List
Town Proclamation for Exemplary Leadership and Service to the Community, Hillsborough, NJ
Eagle Scout, Troop 1776

PROJECTS

Bicep Curl Climber Design – Ri3D RustHOUNDS

- Co-Founded the RustHOUNDS "Robot in 3 Days" team, a collegiate engineering challenge to design, build, and test a competition ready First Robotics Competition (FRC) robot within 72 hours of the annual game reveal
- Conceptualized and developed the "Bicep Curl Climb", a compact fulcrum-style climbing mechanism adopted by approximately 35% of the top 100 FRC teams
- Published detailed open-source documentation with over 1.9 million views across platforms, increasing collaboration among nearly 4,000 high school robotics teams worldwide

High Ground Clearance Suspension Arm Development – Baja SAE

- Designed arched lower front suspension arms to improve ground clearance compared to traditional straight tube suspension configurations
- Conducted FEA in SolidWorks to evaluate structural performance across a range of loading conditions, refining the design to achieve the targeted factor of safety
- Fabricated prototype suspension arms for offseason testing to validate performance, and durability during the four-hour endurance race

SKILLS

Creo Parametric | Inventor | Windchill | Teamcenter | SolidWorks | Fusion 360 | VCarve | Revit Architecture | Eiger