# MICHAEL ROURKE

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## EDUCATION

**University of Notre Dame, College of Engineering,** South Bend, IN *Expected Graduation: May 2026*

Bachelor of Science in Aerospace Engineering – GPA: 3.76/4.00

- Activities: Rocketry Club, Bengal Bouts (Boxing Club), Rome Study Abroad Program

**St. Francis High School,** Wheaton, IL *Graduated Honors with Distinction: May 2022*

GPA: 5.00/4.00

- Activities: Class President, Varsity Golf Captain, Varsity Lacrosse, Executive Board Officer

## EXPERIENCE

**Notre Dame Rocketry Club,** South Bend, IL

*Design Engineer* *August 2023 – May 2024*

- Designed propulsion integration systems using Fusion 360, contributing to first place competition rocket reaching 4,000ft.
- Analyzed and selected composite materials for critical components, optimizing thrust-to-weight ratio while ensuring structural integrity under high G-forces.
- Conducted simulation testing of aerodynamic stability and flight path using RockSim and Open Rocket, ultimately allowing for logical and predictable flight outcomes and successful launches with minimal deviations from projected trajectories.
- Assembled the final iteration of the rocket components, ensuring precise alignment and secure connections to maintain structural integrity and flight stability during launch and ascent.

**Notre Dame Global Gateway - Thermodynamics Research,** Rome, Italy

*Research Assistant* *August 2024 – December 2024*

- Assisted Professor Pietro Paolo Ciottoli in researching thermodynamic cycle efficiencies for aerospace propulsion applications.
- Developed MATLAB simulations to model heat transfer and combustion dynamics in various engine configurations.
- Conducted parametric studies to assess the impact of compression ratio, turbine inlet temperature, and component efficiencies on overall system performance.
- Created visualization tools to present complex thermodynamic data in accessible formats, enhancing comprehension of cycle behavior and performance trends.

**SAI Advanced Power Solutions,** Franklin Park, IL

*Engineering Intern* *May 2023 – July 2023, May 2024 – July 2024, May 2025 – July 2025*

- Utilized Creo CAD software to design and optimize component layout for the new SAI manufacturing facility, streamlining assembly processes and creating detailed digital models for fabrication teams.
- Conducted electronic testing of low and medium-voltage switchboards using Hypot tests, multimeters, and 480V systems, developing expertise in critical power distribution systems.
- Collaborated across engineering, procurement, and testing departments to coordinate comprehensive system evaluations and streamline material acquisition for high-priority projects.
- Assembled and prepared complex electrical components for final power-up and verification, implementing rigorous quality assurance protocols to ensure zero defects in critical production systems.
- Developed innovative insulation process for bus bar MCCB connectors using heat shrink tubing, reducing material costs by 25% while decreasing installation time

## PROJECTS

**Manufacturing Design** *August 2023 – Present*

**Catapult**

- Designed and fabricated a first place mechanical catapult using 3D printing and water-jet cutting at the Notre Dame Engineering Innovation Hub.
- Implemented iterative design process with simulation testing to optimize structural components to maximize

**RC Car**

- Designed and built an award winning RC car drive system with the power and mobility needed to outrace opponents on a challenging course.
- Used SolidWorks to create comprehensive assembly models and to simulate drivetrain motion and optimize performance while accommodating required defense and projectile launching systems.

**Systems Simulation** *January 2023*

- Designed MATLAB algorithms to model complex vehicle dynamics under variable environmental conditions.
- Created numerical simulation framework calculating real-time response to perturbations across multiple degrees of freedom.

## SKILLS

MATLAB | Python | Linux | Fusion 360 | SolidWorks | Creo CAD | Microsoft Office

## INTERESTS

Marathons (Two-time finisher) | Golf (Handicap: 6) | Community Service | NFL| PGA| NCAAF| National Parks| Mountain Climbing