

Manan Singh

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EDUCATION

Purdue University

B.S. in Robotics Engineering Technology, Minor in Computer Science — GPA: 3.64

West Lafayette, IN

Aug. 2023 – May 2027

EXPERIENCE

Lead Mechanical Engineer

Railside Robotics

Aug. 2023 – Present

West Lafayette, IN

- Guiding and mentoring a team of 60 club members through an iterative design cycle, teaching top-down CAD modeling, rapid prototyping, and design for manufacturing techniques, culminating in the construction of 20 combat robots that have competed in over 40 matches across two semesters
- Leading the design and construction of a modular and serviceable 128 ft³ steel arena weighing 1000lbs to replace an outdated and unsafe 32 ft³ arena while conducting cost analysis, leading to a budget surplus of \$3,000
- Designed, created CAM, and manufactured 16 steel combat robot safety locks parts on a CNC lathe
- Implemented club-wide Product Data Management (PDM) system (Aras Innovator) and onboarded 60 members in storing CAD files and accessing standard part files through PDM to streamline collaboration and design review
- Represented Purdue University and Railside Robotics as a student delegate at the Aras ACE 2024 Conference and presented the club's PLM process to 100+ corporate attendees, leading to the reception of a \$10,000 grant

Printing & Prototyping Lab Peer Mentor

Bechtel Innovation Design Center

Oct. 2024 – Present

West Lafayette, IN

- Operating metal and nonmetal laser cutters, assisting students in manufacturing 2D parts
- Utilizing FDM, SLA, and SLS 3D printers to support engineering part production
- Following SOPs to provide manufacturing services and complete machine maintenance/upkeep
- Mentored 30+ students in design, prototyping, and manufacturing processes

Electrical and Build Subteam Member

Nasa Ames Robotics, Team 254 FRC

Aug. 2019 – May 2023

San Jose, CA

- Developed exceptional engineering build quality and consistency through rigorous quality control and thorough testing protocols, leading to winning the FIRST World Championship out of 3500+ FRC teams
- Planned out and wired reliable electrical systems demonstrating consistent performance in 70+ 3-minute matches

STEM Camp Instructor

Brains and Motion Education

June 2024 – July 2024

Los Gatos, CA

- Taught foundational engineering principles through interactive lessons, fostering creativity and problem-solving skills among 12 students aged 6 to 11
- Encouraged physical activity and teamwork, creating a balanced camp experience that combined academic enrichment with physical wellness

PROJECTS

Culverizer | *Combat Robot*

April 2022 – Present

- Designed and manufactured an exceptional 3-lb battlebot leveraging manufacturing techniques involving laser cutting, 3D printing, waterjet cutting, and milling that won 15 of 23 battlebot matches
- Optimized weapon blade geometry, strength, and weight with FEA to build a 1,000+ Joule weapon system capable of incapacitating other robots instantaneously while maintaining durability and repairability

AWARDS AND CERTIFICATES

- 2022 FIRST Robotics Competition World Champion (team254.com/first/2022)
- Finite Element Analysis Milestone Certificate (Purdue University, 2023)

SKILLS

Mechanical: Solidworks, Siemens NX, Fusion 360, FEA, PDM, DFM, CAM

Software: C/C++, Java, Python, PLC Programming