Sidh Gurnani

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EDUCATION

Purdue University *May 2025*
Bachelor of Science in Mechanical Engineering**,** GPA: 3.49/4.00 *West Lafayette, IN*
Passed Fundamentals of Engineering Mechanical (FE) Exam

EXPERIENCE

Purdue Formula SAE — *West Lafayette, IN*
Drivetrain System Owner *Jun 2024 - May 2025*

- Spearheaded the design, manufacturing, and testing of the PF25 car's drivetrain, reducing system mass by 5% under 6% higher loads, enhancing vehicle performance and efficiency.
- Developed parameter-driven CAD models in Siemens NX, streamlining mass optimization workflows and reducing design iteration time by 40%.
- Conducted iterative FEA in ANSYS to reduce component mass by up to 25%, contributing to a lighter and more competitive vehicle that helped secure 6th place at FSAE Michigan.
- Initiated and led a project-focused training and education program for 20+ members, improving technical proficiency and accelerating contributions from new team members.

Drivetrain Subteam Member *Sept 2022 - May 2024*

- Designed and fine-tuned a rear sprocket for the PF24 car using Siemens NX and ANSYS, maintaining performance and safety standards under 25% higher loads than PF23.
- Machined drivetrain components using manual lathe, mill, and CNC mill, ensuring precise tolerances and fit for high-performance assembly.

Atlas Evaluation & Inspection Services — *South Plainfield, NJ* *Jun 2023 - Aug 2023*
Intern

- Collaborated with inspectors to collect and analyze time and motion data across workflows, identifying improvement areas and contributing to faster turnaround times.
- Evaluated market trends and competitor positioning, recommending strategic initiatives that supported sustained growth in market share.
- Refined uncertainty models for micrometers and dial calipers, improving calibration precision and minimizing potential measurement errors.
- Authored a comprehensive research paper on piston failure analysis, providing insights that informed process improvements and reduced failure rates.

RESEARCH & PROJECTS

YOLO-Based Binary Object Sorting System *Jun 2024 - Present*

- Developing a complete system to detect and classify binary object classes using YOLO and Python, focused on automating manual sorting and improving throughput potential.
- Integrating Arduino hardware with vision software to control motors for precise and real-time sorting, implementing efficient system coordination.

The Data Mine, Purdue University — *West Lafayette, IN* *Jan 2025 - May 2025*
Undergraduate Data Science Researcher

- Partnered with Kautex to build a real-time regression model in Python for melt flow index sensing, improving quality control in fuel tank production and reducing defects.
- Built a dimensionless parameter-based validation model to cross-check machine learning predictions, reinforcing scientific consistency and improving model reliability.
- Analyzed datasets and shared insights with engineers to improve manufacturing stability, recommending actionable next steps to enhance operational efficiency.

SKILLS

- **Software & CAD:** Siemens NX, Creo Parametric, ANSYS, Microsoft Office
- **Programming:** Arduino (C/C++), Python, MATLAB, Simulink, Java, HTML
- **Other Technical Skills:** Computer Vision (YOLO), 3D Printing, Manual & CNC Machining