Shivam Gaind

630-488-6598 | shivam.gaind@gmail.com | https://www.linkedin.com/in/shivam-gaind/ | U.S Citizen

EDUCATION

B.S. in Mechanical Engineering — Aug 2022 – May 2026
The Pennsylvania State University, State College, PA — Major GPA: 3.92

M.S. in Electrical Engineering Robotics & AI Engineering — Sept 2026 – Mar 2028
Columbia University, New York, NY

PROFESSIONAL EXPERIENCE

Manufacturing Intern | Northrop Grumman — May - Jul 2025 / May- Jul 2026

- Tested AR headset use cases **(HoloLens 2, Apple Vision Pro, Meta Quest)** for defense manufacturing and helped implement **hands-free digital work instructions** to improve efficiency and reduce assembly errors
- Designed a radio antenna stand supporting 80 lbs with 45° rotation for improved stability and access; design was adopted across the shop floor for antenna assemblies

Research Assistant | CEARL Research Laboratory — Jan 2026 – May 2026

- Built a web-based topology optimization tool using **Ole Sigmund's SIMP method** to generate the stiffest possible metal base plate design under specified loading conditions.
- Studied how **mechanical optimization** and **electromagnetic gain optimization** can be applied to **GRIN lenses**.
- Created and published **PlateOptimize**, a downloadable **iOS mobile app** for designing optimized metal base plates.

Mechanical Engineering Intern | Wabtec (GE Transportation) — May 2024 – Aug 2024

- Selected as **1 of 200 interns from a pool of 6,000+ applicants**; conducted research on how additive manufacturing parameters affect tolerances and designed a cost-effective PLA connector that was implemented factory-wide to reduce production costs.

Research Assistant | Penn State Applied Research Laboratory — Aug 2023 – May 2024

- Assisted Penn State Professor with research on **algorithms** designed to **identify** both the **quantity** and **size** of **defects** that arise in **metal-based additive manufacturing**
- Through random sampling and mathematical techniques, we analyzed the distribution with the intent of establishing a new probability model

Intern & Research Assistant | U.S. Dept. of Energy (Fermilab) — June 2021 – June 2022

- Spent one year working with a team of physicists developing a satellite to detect X-rays released by dark matter
- Analyzed three main heat-generating circuits in the satellite and designed system to transfer heat to radiator

PROJECTS (Portfolio at shivamgaind.com)

Capstone Project | AI- Based Insect Detection System — Jan 2026 – May 2026

- Built an insect detection device inspired by a Malaise trap using LED panels controlled by an **ESP32** and an **NVIDIA Jetson Nano** for on-device processing
- Developed two **YOLOv8** machine learning models to classify insects by 4 orders and 10 families from captured images
- Currently working with faculty to turn the project results into a research publication.

International Engineering Project | Penn State — Sept 2024 – May 2025

- Selected as a grant recipient of the **100K Strong in the Americas Program**; received **$3,000** in funding for a Penn State and Universidad del Norte engineering exchange
- Designed and presented a proposal for an off-grid energy and water system for rural communities in Colombia

Engineering Mentor | St. Charles, IL — Sept 2024 – May 2025

- Provided guidance and feedback to a student team developing solutions for gutter downspout repair through design reviews and monthly meetings

SKILLS

Manufacturing Techniques: 3 Axis Milling Machine, Laser Engraving, Power Tools, CNC machining, 3D Printing
Modeling Tools: SolidWorks, AutoCAD, Fusion 360, NX, Inventor, HOMER Pro, Simulink
Software: MATLAB, Python, Java, C++, Arduino IDE, Excel VBA, SAP (Manufacturing routings, BOMs)