

Akshay Samir Undevia

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY
Bachelor of Science, Mechanical Engineering | Minor: Computer Science
GPA: 3.91 | Dean's List (All Semesters)

Expected May 2025

Relevant Courses: Statics, Mechanics & Dynamics; Fluid Mechanics; Dynamics of Flight Vehicles; Data Structures and Functional Programming; Mechatronics; Discrete Mathematics; System Dynamics; Teaching Physics (Grad Level)

Awards: National 1st Place "Photography: Portfolio of Work" [2020] ~ CSPA Gold Circle; 3-time AIME Qualifier

RESEARCH AND WORK EXPERIENCE

Baja SAE Racing Team, Cornell University, *Drivetrain Subteam* **Sep. 2022 – Present**

- Build an [off-road vehicle](#) each year with a team of 50 peers to withstand a 4-hour endurance race and dynamic events
- Design, manufacture, and assemble the vehicle's [front gearbox internals](#), featuring a *novel* spiral bevel gear system
- Perform tests and calculations using modular calculation and drivetrain simulation software to achieve FoS > 1.4
- Utilized ANSYS for structural, thermal, and modal analysis to maintain safety and secure driveline attachment
- Improved design of [CVT transmission guard](#) using carbon fiber and fabric mesh to withstand contamination & >200°F

Rapid Prototyping Lab, Cornell University, *Lab Technician* **Dec. 2022 – Present**

- Operate a variety of 3D printers and laser cutters to advance heterointegration and nanofabrication research with CNF
- Provide a low-resistance solution to rapid, specialized manufacture and guidance to effective design practices

Prisoner Express: CS Initiative, Durland Alternatives Library, Ithaca, NY, *Co-founder* **Aug. 2022 – Present**

- Develop [bi-monthly newsletters](#) for 4,028 prisoners in 49 states focused on computer logic and digital infrastructure
- Target curriculum for new tablet mail system (ViaPath Tech) to promote sustainable distribution engineering

Jiang Nanoparticle Lab, University of Illinois Chicago, *Associate Research Intern* **June 2020 – Aug. 2022**

- Imaged molecular assembly in 1-10nm range using STM and vibrational Raman spectroscopic analysis
- **Chemical Synthesis** **June – Aug 2020**
 - Spearheaded creation of Ag/W alloy scanning tips and fabricated nanoparticles using microemulsion
- **Structural Design & Analysis** **June – Aug. 2021 | May – Aug. 2022**
 - Manufactured modular attachments in aluminum, leading to a result CNC milled from titanium alloy (*Ti 3 Al 2.5*)
 - Simulated model behavior using FEA for: < -196°C & < 10 nPa
- **Primary Author of Research Paper**
 - [Self-Assembly and Surface Interactions of Rubrene Molecules Observed by Scanning Tunneling Microscopy and Tip-Enhanced Raman Spectroscopy](#), *Science Inquiry and Research*

SPECIALIZED SKILLS

Programming: MATLAB, Python, Flask, Java, C++, OCaml, Web Dev (JS, HTML, CSS)

Design, CAD/M, FEA: SolidWorks, HSMWorks, ANSYS, KISSsoft, Siemens NX, Fusion 360, Blender, Photoshop

Fabrication Skills: CNC machining (DN Solutions, Haas, Trak, Tormach), 3D printing (SLA, SLS, FDM), Laser Cutting, TIG Welding, Manual Machining (150+ hours), Automotive Work, Carbon fiber/Kevlar lay-up

PROJECTS & ACHIEVEMENTS

150-ft Suspension Bridge Construction, *Cornell University Botanical Gardens* **Mar. 2022 – Present**

- Rebuild a stressed ribbon bridge with a team of 20 engineers from weather-resistant, composite materials

Pneumatic 9 Cylinder Radial Engine, *Honors Design Project* **Dec. 2022 – April 2023**

- Designed a dynamic 9-cylinder radial engine using SolidWorks (457 components) & Blender

Elea: Control Your Carbon, *Cornell BigRedHacks Hackathon* **Oct. 2022**

- 2nd place / 76 teams for coding a Chrome extension that reports the CO₂ impact of recipes using NLP & Rest http calls

ATrack: Direct to Caller Ambulance Tracking, *Engage 2 Empower Hackathon* **Sept. 2022**

- Finalist and recipient of \$10k prize for building a website with an integrated Flask backend using Google Maps API

LEADERSHIP & TEACHING EXPERIENCE

Physics Teaching Assistant, Cornell University, *Undergraduate TA* **Jan. 2022 – Dec. 2022**

- Taught recitations sections 2x a week for classes: "Mechanics and Heat" & "Electromagnetism"

Code Ninjas, Westmont, IL, *Lead Instructor* **Oct. 2019 – Aug. 2021**

- Taught 100+ kids ages 6-16 the fundamentals of CS (JavaScript), ECE (Arduino), and game dev. (Unity 3D, C#)