

Nikhil Krishna

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EDUCATION

University of Pennsylvania, School of Engineering and Applied Sciences **Aug. 2026 – May 2030**
Candidate for BSE in Mechanical Engineering and Applied Mechanics & Physics

- Penn Electric Racing, Mechanical Team Member

Thomas Jefferson High School for Science & Technology (TJHSST) **Aug. 2022 – Jun. 2026**
GPA: 3.96/4.0 (unweighted), 4.50 (weighted) | SAT: 1540

- Sr. Engineering Research: G.E.A.R. – Go-Kart Efficiency through Aerodynamic Research

Relevant Coursework: Quantum Mechanics & Electrodynamics, Multivariable Calculus, Linear Algebra, Chemistry, Physics C: Mechanics and Electricity & Magnetism, Statistics, Artificial Intelligence, Machine Learning

RESEARCH

Independent Research **Apr. 2024 – May 2025**

 *A Comprehensive Machine Learning Paradigm for Space Debris Surveillance*

- Developed a YOLOv8 CNN trained on 5,000+ images to detect debris and satellites with 97.6% accuracy; built a Physics-Informed Neural Network (LSTM, orbital mechanics constraints) predicting trajectories at 97.9% accuracy, & a Random Forest Regressor assessing collision risk at 99.9% accuracy
- Proposed a space-based laser system to alter debris trajectories and reduce orbital lifespan
- Won 12 awards including 4th (Physics & Astronomy) at International Science and Engineering Fair (ISEF) and Grand Award at Virginia State Science & Engineering Fair; paper has 1,500+ SSRN abstract views

NASA SEES Research Internship **May 2025 – Jul. 2025**

 *Micro-structured Films for Artificial Intelligence Thermal Control on CubeSats*

- Selected for the nationally competitive NASA SEES internship (5% acceptance) at UT Austin, contributing to the Architecting AI for Human Space Travel project, mentored by NASA Ambassador Bridget Kimsey
- Researched how Saharan silver ants use reflective hairs for thermal regulation and proposed a bioinspired PDMS microstructured film that reflects ~95% of solar UV/visible radiation and emits heat via 8–13μm IR, giving CubeSats passive radiation shielding and thermal control for AI chips in space

George Washington Univ. CubeSat Research, Student Researcher **Jul. 2025 – Oct. 2025**

- Supported development of CubeSat digipeater software (AX.25 protocol) and message retransmission logic for amateur radio packet storage and retransmission

EXTRACURRICULAR ACTIVITIES & LEADERSHIP

DMV (DC-Maryland-Virginia) Debate, Co-founder **Feb. 2024 – Jun. 2026**

- Built and scaled a peer-taught debate program to 600+ students across 10 middle schools; held 20+ camps and 8 mock tournaments; developed the full curriculum
- Recruited/trained 8 peer instructors; scaled by establishing Chapters in 5 states/8 state ambassadors

TJ Space Program, Co-President ('25) & Vice President ('24) **Sep. 2022 – Jun. 2026**

- Lead a 25-member student team researching CubeSats, high-altitude balloons, and radio payloads
- Directed the CAD subteam on a high-altitude balloon payload, helped build an amateur radio system, and authored a 6-page club roadmap; began a faculty collaboration for a new CubeSat mission

Other Activities and Awards: Lincoln-Douglas Debate (Varsity Captain, WACFL placements, raised \$2.3k) Emerging Technologies Club (Vice President) | Coding Consulting Club (Webmaster) | National Honor Society (Member) | National Merit Commended Scholar & AP Scholar with Distinction

CERTIFICATIONS, COURSES & TECHNICAL SKILLS

- Machine Learning with Python (IBM, Jan. 2024)
- Mechanical Engineering Design & Manufacturing with Fusion 360 (Autodesk, Jul. 2024)
- Interplanetary Spacecraft and Satellite Engineering (Udemy, Jul. 2025)
- College-level coursework EN.800.109 What is Engineering? (Johns Hopkins)
- Technical Skills: Python, AI/ML Models, Fusion 360, Java, UI Development, HTML, Excel, Data Analysis