

RUSHIL KUKREJA

ASTROPHYSICIST-ENVIRONMENTALIST-POET

Researcher @ MIT, NASA, & NRL | Invited to Team USA @ IOAA

Addressed United Nations | Intern @ Lockheed Martin

www.rushilkukreja.com (password: orion)

EDUCATION

GPA: 4.53/4.00

ACT: 36/36

SAT: 1570/1600 (800 Math at age 13)

PSAT: 1520/1520

AMC: 117

Thomas Jefferson High School for Science and Technology | Senior

Aug 2022 – Jun 2026

AP Courses: Physics C: Mechanics (5), Electricity & Magnetism (4), Computer Science A (5), Calculus BC (5), Statistics (5), US History (5), Macroeconomics (5), Microeconomics (5), Psychology (5), Environmental Science, English Literature, US Government & Politics

Post-AP/DE Courses: Research Practicum, Quantum Mechanics & Electrodynamics, Linear Algebra, Multivariable Calculus, Concrete Mathematics, Advanced Math Techniques, Computer Vision, Research Statistics, Mobile App Development, Web Development

University of Pennsylvania Wharton M&TSI (<3% acceptance; full scholarship): Won Most Innovative Award; 4.0 GPA July 2025

WORK EXPERIENCE

Lockheed Martin: Space Division

Jun 2025 – Present

1 of 14 paid HS interns nationwide; Enhancing production efficiency of Terminal High Altitude Area Defense (THAAD) missile defense system's launcher by resolving materials compatibility issues; Developed technical change requests deployed into production

RESEARCH EXPERIENCE

Massachusetts Institute of Technology (MIT) AeroAstro

May 2024 – Present

Created agent-based satellite models under space weather; Modeled space emissions; Built orbital toolbox; Funded by \$85K NSF Grant #2434136; pending 1st author papers w/ Prof. Richard Linares & Ed Oughton in [Nature](#) & [JOSS](#); Presented at MIT URTC & TPRC

Naval Research Laboratory (NRL)

Aug 2025 – Present

Conducting radio & optical data analysis on-site w/ Dr. Jason Kooi on Faraday rotation, CMEs, and solar wind driving space weather

NASA Wallops Flight Facility

Oct 2023 – Aug 2024

Launched experiment to space aboard Sounding Rocket SR-11 to test photovoltaic cell resilience & durability; Researched on-site w/ NASA SMEs on lunar surface activity mapping

University of Virginia (UVA): Visual Intelligence Laboratory

Jun 2023 – Dec 2024

Optimized laser-induced graphene production using physics-informed ML w/ Prof. Stephen Baek; 1st author working paper

University of Liverpool

Feb 2024 – Aug 2025

Forecasted climate-based energy demand using CNN, LSTM, & GRUs w/ Prof. Ron Mahabir; pending [2nd author paper](#) in *Energies*

VOLUNTEER EXPERIENCE

[Princia](#) | Founder, President & Environmental Activist

Apr 2023 – Present

Built largest student-led 501(c)(3) tackling light pollution; 261 members in 6 continents; Working w/ 754 teachers in 327 schools; Educated 13,000+; Drafting laws w/ legislators in 8 states; Obtained proclamations from MA & IL governors; Recognition from 2 US Senators; Shielded 1,000,000+ lumens of light; Received \$15,000 award; Published Op-Ed in [The Virginian-Pilot](#) and [Daily Press](#)

Haycock Elementary School Rocketry | Founder

Aug 2023 – Present

Launched rocketry club at my former ES, mentoring 61 sixth-grade students to provide hands-on aerospace engineering experiences

Civil Air Patrol (US Air Force auxiliary) | Cadet

Sep 2023 – Present

Office of Rep. Don Beyer | Congressional Student Advisory Council

Oct 2025 – Present

PROJECTS

[Caelus Rocketry](#) | Co-President – Led 35 students in world's 1st HS team building liquid-fuel rocket to cross Karman line; Co-

organized GMU Space Day w/ 2,000+ attendees; Supported by NASA, Aerojet, SWE, UMich, et al.; Invited to Embassy of Switzerland

[LumiShield](#) | Inventor – Developed smart window for solar energy harvesting during day & light pollution mitigation at night; Invited to present at 6 international research conferences: IEEE ([PVSC](#), [EPEC](#), & [LS2025](#)) and Springer (ICSDWE, ICES, & ICPEME)

[StarLaunch](#) | Founder – Launched iOS & Android app using PINNs to streamline model rocketry and guide launch day decisions

[Project TITAN](#) | Co-Founder – Used machine learning to develop autonomous laser ablation system to remove space debris;

Presented at AIAA YPSE (2nd Place Award) at Johns Hopkins University & AIAA Aerospace Conference

[WiFind](#) | Co-Founder & CTO – Built search-and-rescue aerial device harnessing Wi-Fi propagation to locate survivors; [1st author paper](#) presented at Springer FTC; Piloted in 4 states; Youngest invited to Consumer Electronics Show (CES) 2026; Raised \$14,000

[The Sky We Forgot](#) | Author – Wrote & published poetry book on Earth Day (also my birthday) to raise awareness on light pollution

SCHOOL EXPERIENCE

[Rocketry](#) | President – Lead largest STEM club at TJ w/ record high of 76 students; Competed in ARC & NASA SL; 300+ launches; 4,750 ft altitude; Presented rocket to NASA & Congressmen at Capitol Hill; Educated 2,100+ students; Received \$8,500 in grants

Computational Physics | President – Spearheaded field trip for 42 students to Micron semiconductor facility in Manassas, VA

Quantum Computing | President – Invited guest speakers and organized hands-on activities & lectures for 28 students

Animal Rights Club | Co-President – Led advocacy campaigns and raised awareness on animal welfare

[Model UN](#) | Director of Technology – Led tech ops for flagship TechMUN conference w/ 1,000+ students; Gaveled in national confs

[HackTJ](#) | Event Organizer – Run overnight hackathon for 500+ HS students; Sponsored by Jane Street & Vercel; \$25K annual budget

BigSibs | Family Captain – Led upperclassmen mentors to support freshmen, both academically and socially

ACADEMIC AWARDS

USA Astronomy & Astrophysics Olympiad (USAAAO): Gold Medal; Training Camper; 1 of 5 students selected for Team USA at IOAA

Animal Welfare Institute (AWI) Christine Stevens Wildlife Award: \$15,000 for research protecting pollinators from light pollution

Non-Trivial Fellowship: 3rd Place Fellow of 20,000+ Applicants (top 0.015%); \$2,500 scholarship

Junior Science and Humanities Symposium (JSHS): National Finalist; 1st Place in Greater DC region; \$1,000 & all-expenses-paid trip

American Rocketry Challenge (ARC): Top 20 in National Finals of 3,000+ students; Qualified school for NASA SL in Alabama for 2 yrs

NASA Student Launch (SL): 1st Place Design; 2nd Place Altitude; 3rd Place STEM Engagement

International Astronomy and Astrophysics Competition: Gold Honor (top 2% of 12,000+)

USA Physics Olympiad (USAPhO): Qualifier (top 8% of 6,000+)

International Environmental Science Olympiad (IESO): 2nd on qualifying exam; Invited to Puerto Rico

Space Station Technology Challenge: 1st Place

American Invitational Math Exam (AIME): Qualifier with Distinction (top 5% of 90,000+ on AMC)

USA Computing Olympiad (USACO): Gold (top 9% of 15,000+ nationally)

Virginia State Science & Engineering Fair (VSSEF): 3rd Place

National Capital Astronomers (NCA): Winner; Invited to present at University of Maryland (UMD) Observatory

LEADERSHIP & ENTREPRENEURIAL AWARDS

Grants: Emergent Ventures (\$13,000), 1517 Fund (\$1,000), Cornell University NCP, Griptape Challenge, Hack Club

Pete Conrad Scholar: 1st place of 4,700+ projects (top 0.1%) worldwide in Conrad Challenge; Presented at Space Center Houston; All-expenses-paid trip to MIT; Awarded \$792,000 in select college scholarships

United Nations: Addressed UN General Assembly in New York City on light pollution

Billy Michal Leadership Award: 1st place in Virginia; Invited for all-expenses-paid trip to American Spirit Awards gala in New Orleans

Founders, Inc: 2nd youngest person selected for startup accelerator in San Francisco (3.8% acceptance rate)

Provisional Utility Patent: Neural Intelligence Application for Precision Rocket Launch Optimization (#63727018)

Blue Ocean Entrepreneur Competition: 2x Top 30 Finalist of 12,700+ students (top 0.25%) internationally

2x US Congressional Special Recognition: Honored by Sen. Tim Kaine and Sen. Mark Warner

President's Volunteer Service Award (PVSA): Gold Award from US President

Congressional Award: Gold Medal from Senate & House Congressional leaders

Paradigm Challenge: 2x Top 100 Finalist of 2,000+ students (top 5%) internationally

Virginia Space Grant Consortium: Awarded full scholarship for Private Pilot ground school training

George H. W. Bush Point of Light Award: Recognized for community service

Virginia Invitational Model UN Conference: Gavel/Best Delegate (1st Place); 3-time awardee

TECHNICAL SKILLS

Programming & Markup Languages: Python, C++, Java, C, R, JavaScript, SQL, Swift, Solidity, HTML, CSS, LaTeX

Engineering & Design Software: MATLAB, Ansys Fluent, Autodesk CFD, SolidWorks, CREO, Fusion 360, Mathematica, KiCad, RockSim

NEWS ARTICLES & PODCASTS

[Associated Press](#) | [WTOP](#) | [Fairfax Times](#) | [Fauquier Now](#) | [Annandale Today](#) | [Falls Church Independent](#) | [Sun Gazette](#) | [Dr. Diane](#)