

Rutej Talati

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EDUCATION

Bachelor of Science, Major in Mechanical Engineering, Minor in Physics Pennsylvania State University, University Park, PA. (Graduation: Dec 2025) Dean's List: Awarded for academic excellence in Fall 2022, Summer 2023, and Summer 2024 Cambridge A-Levels High School Education SVKM International School (India) Winner of Cambridge Science Olympiad: Achieved first place in the 2019 competition.	ME GPA: 3.50 (2018- 2022)
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EXPERIENCE

Engineering Research Intern Polygence, Inc. – Portland, Oregon	(Aug 2021 - March 2022)
<ul style="list-style-type: none">- Authored and published a research paper on Formula 1 aerodynamics on ResearchGate, using CFD simulations to reduce turbulent airflow, enhance downforce, and improve safety in high-speed racing.- Conducted in-depth aerodynamic research for various applications, including optimizing airflow efficiency for airplane wing designs and increasing energy output through improved blade designs in wind turbines.- Utilized MATLAB to model stress on the front wing under turbulent and laminar flow conditions, refining design parameters for durability and stability in extreme conditions.- Awarded the Young Polygence Research Excellence Award for advancements in simulation accuracy and contributions to aerodynamics.	

OTHER EXPERIENCE AND INVOLVEMENT

Teaching Assistant (Mechanical Engineering) Pennsylvania State University, University Park, PA.	(May 2024 - Present)
Teaching Assistant (Physics) Pennsylvania State University, University Park, PA	(January 2024 – Present)

TECHNICAL SKILLS

MATLAB (Simulink)	SOLIDWORKS	AutoCAD
Quantum Mechanics	CATIA	Finite Element Analysis

LEADERSHIP AND INVOLVEMENT

- Autonomous Vehicle Team, Safety Team Lead	(Aug 2023- Present)
- Wind Energy Club, Member	(January 2023 – Present)
- Society of Penn State Mechanical Engineers, Member	(August 2022 - Present)
- Nittany Motorsports Formula SAE Team, Member	(August 2023 - Present)
- Polygence Student Research Program, Senior Mentor	(January 2022 – December 2022)

PROJECTS

- Energy-Efficient Mining Truck Challenge – Wabtec Corporation Selected by Wabtec for a project to design an energy-efficient mining truck with reduced fuel dependency. Developed a piezoelectric system embedded in tires to convert mechanical pressure into electrical energy. Modeled the truck and tires in SolidWorks, with MATLAB simulations to ensure stress durability and optimize energy output. Collaborated with a multidisciplinary team to refine and achieve a design that enhanced sustainability while maintaining operational efficiency.
- Research on the Aerodynamics of Formula 1 Cars Authored a research paper on F1 aerodynamics, using CFD simulations to analyze and reduce turbulent airflow. Conducted in-depth research to optimize drag and downforce, leading to a revised aerodynamic design with improved high-speed stability and safety. Modeled stress on critical components like the front wing in MATLAB, ensuring durability under racing conditions and improving overall vehicle performance.
- Mentorship Program – Polygence Research Initiative Mentored 15+ students on advanced research projects across STEM and humanities. Guided literature reviews using databases like PubMed and IEEE Xplore, refined methodologies, and assisted with data analysis. Helped students publish in the American Journal of Student Research, with one student under my mentorship achieving publication in the prestigious American Association for the Advancement of Science journal.