Advaith Renjith

Edison, NJ | (848) 666-7890| adarjkb@gmail.com|Portfolio

A STEM student with a keen interest in artificial intelligence, aerospace, aeronautics, engineering, and robotics.

Education

Edison Academy Magnet School — **Edison, NJ**
Focus: Mechanical Engineering: SAT: 1570 (790 Reading/Writing, 780 Math) — 2022 - 2026

Project Experience

MIT BWSI CubeSat Project
Design lead — 2024– 2025

- Designed a functional CubeSat capable of detecting forest fires from space.
- Developed a machine learning (ML) model that improved fire detection accuracy.
- Reduced structural weight by 15% while maintaining integrity.
- Trained on over 5000 images to discern, with 90 percent accuracy, to determine if a given site was on fire.

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NASA App Development Challenge
Unreal Engine 5 lead - Team Luna Vista — 2024 - 2025

- Led a 7-member team to visualize NASA Artemis II flight path.
- Engineered innovative ML solution for accurate atmospheric drag modeling
- Integrated an algorithm to create the optimal scheduling of antennas to minimize antenna switches resulting in data loss
- Interviewed by a panel of NASA scientists and engineers.
- Spearheaded outreach initiatives, inspiring 200+ students through project presentations on NASA's Artemis II mission.
- Utilized C++ to create a dynamic Earth texture that maintained clarity even under challenging visibility conditions.
- Led a high-profile presentation to NASA engineers and leadership at Johnson Space Center, followed by a public demonstration at Space Center Houston—translating technical concepts into compelling insights for 500+ attendees.

AI-Driven Hybrid Autonomous System for Wildfire Containment
Research Lead (Terra North Jersey STEM Fair) — 2024- present

- Developing a simulation with Fire Sim to evaluate an AI- and drone-based wildfire management system.
- Aiming to improve containment effectiveness and fire detection by 20%
- Utilized Unreal Engine 5's simulation capabilities to create a realistic, yet computationally light model for forest fire propagation with real-world vegetation and terrain data
- Simulated results show an improvement of over 15% in retardant efficiency.

The New York Academy of Sciences Innovation Challenges — 2025- present
Member of The Junior Academy

- Air Quality & Health: Working on a project to design a solution that tackles air pollution and its effects on non-communicable diseases (NCDs).
- Living in the Extremes: Creating a plan to support human life in challenging environments, such as space or deep-sea habitats.

Large Language Model Project — 2025 - present

- Developing a custom multimodal LLM based on open-source models
- Creating both a web portal and a mobile app using Node.js and React

- Trained models on a specialized dataset to help users with complex problems that require reasoning
- Designed an Artificial Intelligence (AI) powered system that selects the most appropriate model to answer a user's query, choosing between reasoning-based models and those with web search capabilities.

Volunteer

STEM Tutor- Blue Owl Tutoring Services — **Remote**
Tutored 30+ students in STEM subjects, achieving 15% average grade improvement and 100% satisfaction rate. — 2024– present

Camp Invention Leadership Intern — **Edison, NJ**
Guided over 50+, K-10 grade students through 20+ hands-on STEM experiments, significantly increasing participation and interest. — 2023

Relevant Coursework

Mechanical Engineering	2022 - present
AP Biology	2022 - 2023
AP Chemistry	2023 - 2024
AP Physics 1 & 2	2024 - 2025
AP Calculus BC (Advanced Mathematics)	2024 - 2025
AP Computer Science Principles using Python	2024 - 2025
AP Statistics	2024 - 2025
Intro to Machine Learning	2024 - 2025
Coursera: Python for Everybody	2024
Coursera: Deep Learning	2025
Coursera: Machine Learning	2025

Extracurricular Activities

FTC Robotics: *Lead Designer* — 2024 – Present
- Spearheaded mechanical design, qualifying for state-level competition.
- Developed a system that incorporates a gyroscope, enabling the robot to drive at high speeds with the arm extended while maintaining stability.
- Programmed in Python to enable the robot to strafe, facilitating quick movement without the need for turns.

Drone Development: *Mechanical Design and Assembly Lead* — 2024– Present
- Designed/built a custom FPV drone with integrated mechanical/electrical. systems for seamless performance.
- Optimized components, boosting flight efficiency by 15%.

Research Project - Science Symposium: *Lead Student Investigator* — 2023
- Coordinated 4-person team analyzing pediatric and geriatric datasets.
- Presented research findings to a panel of 5 expert scientists.

Public Service Project: *STEM Education Outreach Coordinator* — 2023
- Empowered 100+ young learners with STEM knowledge of natural disasters resulting in over 200 pounds of donations

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Awards

Air Force Award — 2025
The project "Development and Simulation-Based Evaluation of an AI-Driven Hybrid Autonomous System for Precision Wildfire Containment" recognized by the Air Force Research Laboratory in the areas of math, science, and engineering for conducting research in areas of interest to the Air Force at Terra North Jersey STEM Fair

USAPhO Qualifier — 2025

NASA App Development Challenge - Finalist 2025

- Earned national recognition as one of the top four teams out of 1,000+ entries, securing an invitation to present the app at NASA Mission Control in Houston in April 2025.

MIT BWSI CubeSat Challenge- Finalist 2025

- Achieved 4th place out of over 100 participating teams.

FTC Robotics State Qualification 2024 - 2025

- Qualified for the state's level of "First Tech Challenge" in NJ

Tech Expo - Best Presentation Award 2025

- Earned 1st place for the Luna Vista NASA Artemis II mission simulation app.
- Recognized for excellence in presentation by industry experts..

Best Original Idea at Engineering Day 2024

- Presented an innovative decentralized EV charging model.
- Interviewed by a panel of subject matter experts.

Skills	Creative Thinking: Public speaking, Problem-solving, Innovative design, Leadership, robotics, research
Computer Skills	CAD Software: SolidWorks, Onshape, Blender, Programming: Python, Unreal Engine 5, Gaea, Houdini Hardware Proficiency: Raspberry Pi, Arduino
Language Skills	Native in English, Fluent in Malayalam, Elementary in Spanish, Hebrew, French and Hindi

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