

Aditya Vivek

COMPUTER SCIENCE STUDENT

Doha, Qatar

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Education

Carnegie Mellon University — Qatar

B.S. IN COMPUTER SCIENCE

- Relevant: 15-112 (Fundamentals of Programming), DSA prep for QCPC/ICPC

Doha, Qatar

Class of 2029

Stanford University ULO

IM051: MULTIVARIABLE CALCULUS & LINEAR ALGEBRA (91/100)

- Full-ride scholar; selected as **1 of 15 students worldwide** for this course with an acceptance rate <5%.

Remote

01/2024 – 07/2024

MES Indian School

HIGH SCHOOL DIPLOMA

- Student of the Year (2024, 2025); Academic Achiever (2024, 2025)

Doha, Qatar

Grad. May 2025

Experience

University of Bristol

UNDERGRADUATE RESEARCHER (UNDER 3 PHD SUPERVISORS)

- Authored *Clearing the Cosmos: Space Debris Removal Techniques and the Role of ML*; supervised by **3** Bristol PhD researchers; manuscript reviewed by **IJHSR**.
- Surveyed state-of-the-art **CNN** detection/tracking and **RL** mission planning; contrasted classical CV (Hough/RANSAC) vs. deep learning for small-object SNR in LEO.
- Proposed a **3-module** ADR system (detect-plan-act) integrating ML perception, robotics, and ion propulsion; included Δv budgeting and Hall-effect thruster feasibility for LEO captures.

Remote

2024 – 2025

IASC / NASA

CITIZEN SCIENTIST & RESEARCHER

- Analyzed **2B+** WISE detections and **PAN-STARRS** imagery to flag potential planet-formation zones and irregular bodies; produced structured review notes used in candidate vetting.
- Standardized reviewer hand-offs with concise checklists/visuals, improving clarity and reducing back-and-forth in candidate triage.

Remote

08/2023 – Present

Ministry of Education — Qatar

PHYSICS OLYMPIAD MENTOR (NATIONAL TEAM PIPELINE)

- Mentored prospective national-team cohorts; authored mechanics/E&M problems; led weekly IPhO/INSO-style sessions with marking schemes and debriefs.

Doha, Qatar

2024 – 2025

Caltech

COURSE: EXPLORING THE UNIVERSE

- Worked with a global cohort on cosmology datasets (large-scale structure, stellar evolution); earned **97/100**.
- Produced a concise quantitative analysis summary applying course techniques.

Remote

09/2023 – 11/2023

Skills

Programming	Python; MATLAB
Data/ML	Basic ML workflows; CNN concepts; classical CV (Hough/RANSAC)
Tools	Git; Linux/CLI; Jupyter/Notebooks
Math	Linear Algebra; Multivariable Calculus

Projects

Clearing the Cosmos (Research)

ML-ASSISTED ACTIVE DEBRIS REMOVAL CONCEPT

- Designed a **3-stage** ADR stack: *perception* (YOLO/RetinaNet variants, MOT), *planning* (RL with reward shaping on Δv , time-to-capture), *actuation* (ion propulsion, compliant grasping).
- Mapped ops to **LEO SSO** windows; discussed de-orbit options (drag augmentation vs. low-thrust spirals) with basic Δv and power budgeting.

2024 – 2025

TravelOps (Startup Pitch)

- AI TRAVEL "SUPER-APP" ALIGNED TO SDGs 9, 11, 12, 13
- 2025
- Full-stack itinerary/booking/budgeting; live visa rules; carbon footprinting; transit-first routing; offset integrations; privacy-first on-device profiles.
 - Deliverables: problem statement, user stories, Figma wireframes, lean canvas; scoped MVP endpoints and metrics (budget deviation, CO₂/trip, on-time score).

Honors

2025	Bronze Medal , International Nuclear Science Olympiad (INSO)	Malaysia
2024	Bronze Medal , International Nuclear Science Olympiad (INSO)	Philippines
2024	Diamond & Hon. Mention , International Scientific Physics Olympiad (ISPhO), <i>awarded by MIT</i>	Russia
2023–24	Achiever of the Year , MES Indian School; <i>awarded by the Dean of Weill Cornell—Qatar</i>	Qatar
2020–22	Scholar Badge , DPS Monarch; <i>highest overall scorer (all subjects)</i>	Qatar

Publications

Clearing the Cosmos: Space Debris Removal Techniques and the Role of ML	IJHSR peer review; summary available on request
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