VIR GOGIA

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EDUCATION

The Cathedral and John Connon School, Mumbai, India	2013-Present
●*International Baccalaureate Diploma Program* Grade 12	2024-Present
●*Cambridge IGCSE* Grade 10	2022-2024

STANDARDIZED TESTS

● ACT: 35/36 (M: 36, S: 34, E: 35, R: 33)	2025
● IELTS: 8/9 (L: 8.5, R: 8.5, W: 7.5, S: 7.5)	2025

HONORS AND AWARDS

● Cambridge ICE Award: **Distinction**	2024
● The Cathedral & John Connon School Honors Prize for **academic excellence** in Grade 9, 11	2023-2025
● International Mathematics Olympiad Competition of Southeast Asia: **Gold Award**	2024
● International Science Olympiad Competition of Southeast Asia: **Gold Award**	2024
● American Mathematics Olympiad: **Gold Award**	2024
● SEAMO (Southeast Asia Mathematics Olympiad): **Bronze Award**	2024
● American Association of Physics Teachers Physics Bowl: **Honorable Mention in Asia**	2024
● IRIS Science Fair (Indian Chapter of ISEF): Selected as a **Top 50 Project in India**; 1 of 3 best Material Science Projects	2024
● Microsoft Imagine Cup Jr: **2nd in India**, recognized by Government of India Ministry of IT	2022
● GENIUS Olympiad: **Finalist** in the Science category selected among 1,690+ international submissions	2025

SUSTAINABILITY AND URBAN DEVELOPMENT

Inventor & Lead Researcher, NanoWatch — 2024-Present
- **Designed and built** a Static Light Scattering (SLS) device for real-time nanoparticle monitoring, offering **one of the only** affordable and portable alternatives to lab systems with **98% accuracy**.
- Deployed across **8,000+ m²** of construction sites to record airborne nanoparticle data; compiled **biweekly** datasets over **six months**.
- Authored and **published** "*NanoWatch: A Real-Time IoT-Integrated Nanoparticle Pollution Monitoring System*" in the **Intl. Journal of Science & Research.**
- **Finalist** at the GENIUS Olympiad among 1,690+ international submissions.

Author, Breathe Mumbai (50-page Climate Action Manual) — 2025
- Used NanoWatch data to **author** *Breathe Mumbai*, a 50-page manual **proposing policies** and best practices for nanoparticle and **dust emission mitigation**.
- Further proposed protections for front-line workers, low-income residents, schools, and hospitals from dust and nanoparticle exposure.
- Distributed handbook to construction firms and community groups; policies have since been implemented in **40+ construction sites** across Mumbai, including by Lodha Construction and Peninsula Land.
- Policies and measures can reduce construction-related nanoparticle emissions **by up to 60%,** improving air quality for tens of thousands of residents.

RESEARCH AND INTERNSHIPS

Author, **Research Paper**, **"**Real-Time Characterisation of Silver Nanoparticles." — 2024
- Engineered a **prototype** compact static light scattering device to measure silver nanoparticle size and stability.
- Designed an Arduino-controlled stepper motor for precision and automation to provide novel solutions in food safety, biomedical, and environmental technologies.
- Recognized among the **Top 50 (Top 2%)** at the **IRIS Science Fair** (Indian Chapter of ISEF)

Research Assistant and Co-Author, "MXenes in Gas Sensing." — 2024
- Conducted an extensive review of **MXene-based gas sensors** including **air pollutant detection** with Dr. Tanuj Deswal at Mumbai University.
- Examined synthesis of 2D MXenes via etching methods and evaluated properties such as stability, sensitivity, and selectivity, linking these to their potential for **gas and pollutant monitoring** and environmental safety applications.
- Findings **published** in the *International Journal of Applied Sciences: Current and Future Research Trends*.

Author, IBDP Extended Essay — 2024-Present
- "To what extent can **Convolutional Neural Network** algorithms EfficientNetB0 and ResNet50 accurately detect and **classify images of waste**?"

Sustainability Analytics Intern, C5i (Mumbai, India) — 2025
- **Led** development of **3 Python-based** sustainability tools that use company datasets to optimize energy use and supply-chain efficiency through the following:
  - Tests renewable energy sources to determine the most cost-effective and low-emission option for manufacturers.
  - Ranks **20%** of suppliers responsible for **80%** of a manufacturer's carbon-footprint to identify and reduce emissions from top polluters.
  - Models scenarios such as transport routes and optimal packaging choices to identify the most cost-effective, low-emission strategies for manufacturers.
- Tools achieve **8–15% emission cuts** and **10–15% energy-cost savings**.

OUTREACH AND THE ENVIRONMENT

Founder, CartonTrack — 2024-Present
- Founded CartonTrack, a socio-environmental initiative addressing urban waste management in partnership with NGO RUR GreenLife, diverting waste from landfills into school furniture.
- Led a community drive collecting **110+ pounds of Tetra Paks** and worked to **upcycle** them into desks and benches **donated** to **municipal schools**.
- Designed and launched an AI-enabled app called **CartonTrack** using image recognition, mapping APIs, and MySQL integration.
  - App connects donors to **41** of RUR Greenlife's Tetra Pak drop-off depots across Mumbai, tracking the impact of their contributions through CO_2 reduction and water savings. **Increased donations** by making recycling more accessible and engaging.

Project Leader, Innovator, and Chief Volunteer, GreyWay: Community Water Reuse Initiative — 2025-Present
- Designed and installed a gravel–sand filtration system for **100+ households**, enabling reuse of **50 L/day of greywater** and reducing water bills by **14%**.
- Led community workshops explaining greywater reuse and demonstrating the system's operation; featured in **regional newspapers for impact**.

Project Leader, Tribal Vikas — 2025-Present
- Built **multilingual/5-language toolkit** translating land rights for indigenous & forest-dwelling tribal families, increasing their land & government welfare access.
- Organized and led **5 registration camps**, helping **30+ families** secure tenure.

Weekly Volunteer, Raksha Children Education Center — 2024-2025
- **Mentored** underserved children and designed engaging lessons across EVS, Computer Science, Mathematics, and English, strengthening their foundational skills.

Founder, Attunement   2024-Present
● Ran **25 dialogue workshops in 10 municipal schools**, fostering discussion and cultural understanding between students from different religious backgrounds, healing fractured classrooms.

Workshop Leader, Health and Hygiene Education   2023
● Partnered with NGO Adarsh Foundation and **co-led workshops** over three months in underserved communities of Kherwadi, teaching children aged 8–16 about sanitation, hygiene, and disease prevention.
● Conducted **collection drives** across schools and neighborhoods, gathering over 300 sanitary items to create and distribute **80+ hygiene kits to 60 families**.

LEADERSHIP

Prefect, Student Body, Cathedral & John Connon School   2025-Present
● Appointed **Prefect**, position given to top decile of Grade 12 students, to lead the **1,200+ student body**.
● Served as liaison between student body and administration, spearheaded planning, coordination and regulation of activities in school.

House Captain, Palmer House, Cathedral & John Connon School   2025-Present
● Appointed **Captain of Palmer House**, entrusted with **leading 150+** students by instilling teamwork, discipline, and leadership values.
● Trained and mentored juniors and **30+ inter-house teams** across sporting and cultural events; guided teams to numerous inter-house victories.

Secretary, Full STEAM Ahead Club, Cathedral & John Connon School   2022-Present
● Appointed secretary of the school's STEMxArt club for **100+ members**
● Organized and co-developed **135 problem sets** for the **Cathedral Math Competition**; scaled the initiative to a record **5,000+ registrations**, making it one of the largest student-run high school math competitions internationally.
● Organized CathCon (Cathedral's Coding Competition) and designed **30** original coding and algorithmic problems for **100+ student participants**.
● Organized **Resonance** (STEMxArt Fair), curating **15 interdisciplinary exhibits** and student installations attended by **130+ visitors**.
● Edited and spearheaded the **publication** of Decrypted, the STEAM Newsletter; **read by 1,000+.**

Symposium (MUN) Club, Cathedral & John Connon School   2021-Present
● **Director,** Cathedral MUN, Grade 12: Directed 'World Trade Organization', leading the largest committee of 50+ delegates from a group of 350+ students.
● **Assistant Director,** Cathedral MUN, Grade 11: Directed the 'Indian Economic Forum', leading the largest committee of 90+ delegates from a group of 400+ students.
● **National & International-award winning delegate**; received Diplomatic Commendation at Harvard MUN, Best Delegate Award at Sanskriti MUN, Delhi.

Co-Class President, Grade 8 and 10, Cathedral & John Connon School   2021-2024
● Elected from a body of 120 students through a competitive selection process as the **head male representative**; served as liaison between students, teachers, and administration; raised student concerns; facilitated the annual calendar of events and improved administrative policies.

Organizing Committee, Finance Society, Cathedral & John Connon School   2023-Present
● **Facilitated national-level competitions** such as *Cathedral Stock Exchange* and spearheaded educational presentations on financial topics.
● Edited and designed the Finance Society Newsletter with **300+ readers**, aimed at increasing financial literacy.
● Organized a Shark Tank Simulation, attended by 60+ students from Grades 8–12, fostering entrepreneurial thinking.
● Served as **Director** at the school's first finance fair, leading the competition's most selective committee of 20+ participants from a group of 160+ students.

TECHNOLOGY, DATA SCIENCE AND LOGIC

First Runner Up in India, Microsoft Imagine Cup Junior   2022-2023
DoctroBot- TRR22
● Conceptualized an AI-powered robot as part of a duo that enters war zones, offers patients a diagnosis and treatment plans, and connects them with doctors.
● **Programmed software** enabling the robot to detect the severity and degree of burns on patients through RandomForest based image classification.
BharatBot (2023)
● Conceptualized an app as part of a duo to preserve Indian culture and heritage, employing Microsoft's APIs in combination with Machine Learning to teach **27 vernacular languages**, explain ancient texts, and introduce the features of Hindustan Music.

Member and Team Leader, New York Academy of Sciences, Junior Academy (NYAS)   2024
● Conceptualized an AI-powered smart e-waste bin using object recognition (CNN-based approach) to classify electronic devices for repair or safe recycling, aiming to reduce "use-and-dispose" behavior. Designed the system through surveys of 100+ people, integrating incentives to encourage sustainable disposal habits.

Student, **Maps, Mapping and GIS, Cornell School of Continuing Education**   2025
● Focused on the fundamentals of cartography, QGIS, and ArcGIS. Achieved **90%**.
● **Designed an interactive map** using census data, ArcGIS and QGIS to explore urban–rural disparities in Mumbai, focusing on gender ratio and literacy.

Student, **Introduction to Data Science, Stanford University**   2024
● Learned 'R' Programming, plotted data, graphs, and decision trees, and analyzed real-world datasets.
●**Studied** an employee dataset using R Studio and evaluated the role of factors like gender, age, and monthly income in **influencing employee attrition rates**.

Student, **Logic & Paradox, Brown University**   2023
●Explored the intersections of Applied Math and Philosophy and learned about logical operators (conjunction, disjunction, negation), propositions, truth and falsity.
●**Presented** final project on Smullyan's Paradox.

OTHER EXTRACURRICULAR ACTIVITIES

Section Leader, Bass Section, School Choir, Cathedral & John Connon School   2023-Present
● Appointed **Section Leader** for the Bass Section.
● Selected amongst a 60+ member choir for **solo performances**; sang at flagship school events like Speech Day, Founder's Day and Carol Service.

Varsity Tennis Team, Cathedral & John Connon School   2019-Present
● Chosen to compete in district and national tournaments in 2023 and 2024 including DSO and ISSO.

Newsletters, Designer, Editor & Contributing Writer   2021-Present
● Monthly: Cathedral News (student newsletter), Mental Health Newspaper, Finance Society Newsletter, Decrypted Magazine
● Annually: Encore Magazine (Musical Festival Program)

SKILLS

Languages: English (proficient), Hindi (proficient), Spanish (beginner)
Computer: Microsoft Office, Mac OS, Python, Java, R, HTML, QGIS