

YUVRAJ RUPAREL

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EDUCATION:

<i>Aditya Birla World Academy (ABWA), Mumbai, India</i>	2013-Present
- International Baccalaureate Diploma Program: 4HL & 2SL Subjects	2023-Present
- Cambridge IGCSE Board Examinations - Grade 10	2013-2023

STANDARDIZED TESTS AND APs:

Scholastic Assessment Test: Total-1520; English-720; Math-800	2024
AP Examinations: Calculus AB-5	2022
Toefl: Total- 111; Listening-30, Reading-29, Writing-27, Speaking-25	2024

ACADEMIC HONORS AND AWARDS:

School Awards:

- Grade 11 IBDP – Topper 2023-2024
- All Rounder Award: For excelling in academics and extracurricular activities in Grade 9 & 11. 2022-2024
- Academic Excellence: For achieving 41/42 IB Points in Grade 11, and only student with 4HL subjects 2023-2024

Subject Highest:

- International Mathematics - Grade 9 2021-2022
- Additional Mathematics - Grade 10 IGCSE Board Exams 2022-2023
- Mathematics AA HL & Spanish B SL – IBDP 2023-2024

General Proficiency:

- Award for achieving 6 A* and 2 A in IGCSE Board Exams 2023
- Award for achieving 7's in 5 subjects out of 6 total subjects 2024
- Stellar Award: For academic prowess outside school - Grade 9, Grade 10, & Grade 11 2022-2023-2024

National And International Awards:

- World Math Invitational WMI: Received Gold Award with World Rank 7 2024
- University Of Waterloo: Distinction in Fryer and Cayley 2024
- Asia International Mathematical Olympiad AIMO: Gold Honors in the National Round 2024
- CREST Gold Award: Received for research work in Green Synthesis of Ag-Ni Hydrogel for Wound Healing 2024
- CREST Gold Award: Received for research work in Synthesis of Ni-BCA/CF Hybrid Composite for high performance Lithium-ion battery anode. 2024
- CREST Gold Award: Received for research work in AI-Powered Smart Dustbin for Efficient Waste Classification. 2024
- Johns Hopkins CTY High Honors: Recognized as one of the Top Talents Globally, selected from a competitive pool of 19,000 students across 84 countries for the CTY 2020-21 Talent Search, in top 20% 2021
- ABWA Infinity: Gold in Individual Round and Bulb your ideas 2024
- Gold in Pass the Baton Round, Math Challenger Gold and Championship Trophy 2023
- IRIS National Fair: Selected for national round as the only Chemistry Research Project across India 2023-2024
- World Math Team Championship WMTC: Gold Medal Individual Round 2023
- AMC12: Distinction and School Rank 1, and Country Rank 5 also Qualified for participating in AIME 2023
- AMC10: Distinction 2023
- AMC 8: School Rank 1 2022

LEADERSHIP:

- Chanakya House Captain, ABWA, Mumbai: 2022-2023
- Leader and Mentor, School Math Club, ABWA, Mumbai: 2023-2024
- Conducted weekly sessions to teach students beyond school math's, competitions and Olympiads. 2021-2023
- Team Leader and Design Engineer, Team Infinity, F1 in Schools 2021-2023

RESEARCH PROJECTS AND INNOVATION: Under Guidance of Dr. Roshan Rane, PhD

- Green Synthesis of Ag-Bimetallic Nanoparticle incorporated with Hydrogel with antimicrobial Properties for Quick Burn Relief, University of Mumbai, Mumbai. 2022-2023

- Developed and co-authored a research paper on a polymer that can absorb water to provide quick burn relief [click here](#)
 - Integrated bimetallic nanoparticles into the polymer to have antimicrobial properties to heal infection
- Biodegradable Aqua balls for Plant Hydration & Nutrition, Mumbai University, Mumbai 2023
- Developed a hydrogel based aqua balls capable of absorbing and giving out water to plants
 - Integrated nanoparticles with bacteriostatic effects and fertilizer and pesticide-like properties
- Synthesis of Ni-BCA/CF Hybrid Composite for high performance Lithium-ion battery Anode 2023
- Co-authored a research paper under the guidance of Dr Roshan Rane, PhD [click here](#)
 - Worked on the development of a hybrid nanocomposite material for lithium-ion battery anodes by integrating carbon nanofibers with a Metal-Organic Framework (MOF)
 - Demonstrated the material's high specific capacitance of 784 mAh g⁻¹ through electrochemical tests on coin cells, showcasing its efficient energy storage capabilities.
- IRIS National Fair, Department of Science and Technology India, Delhi 2024
- Developed a novel technique for recycling lithium-ion batteries, surpassing the capabilities of Fortune 500 companies, achieving profitable and high-performance as well as sustainable battery production.
 - Eliminated harmful waste production in the recycling process, with residue that can be sold for high prices or utilized in the medical industry.
- Patents*
- Patent 1: Applied for patent of the Bi-metallic Hydrogel research project with IP India office under Docket 42148 [click here](#) 2023
 - USPTO: Submitted a Patent application with the United States Patent and Trademark Office under application no 18/606,410. Notice of Publication # 20240269342 A1 2024
 - Patent 2: Applied for patent of the Biodegradable Aqua-Ball project with IP India Office Docket # 73616. [click here](#) 2024

OUTREACH INITIATIVE WITH TECHNOLOGY

- Automated waste segregating dustbin:** 2024
- Created a compact-sized dustbin capable of segregating waste automatically from plastic, glass, paper, metal, and wet waste.
 - Employed electronics and 3D designing to develop the dustbin. Incorporated sensors for material detection.
 - Improved industrial designs made for factories and compressed into table sized dustbin that can be used in public spaces, houses, and societies. Implemented and installed it in buildings within the neighborhood.
 - Enhanced efficiency through automated sorting mechanisms, ensured durability with high-quality materials.

F1 IN SCHOOLS, Aramco: 2021-2023

Is an international STEM competition for High school students where they design and manufacture a miniature F1 car using CAD/CAM and CAE design tools. The cars are powered by CO₂ cartridges and are attached to the track with nylon wires. Cars are raced on a 20m long track with two lanes to allow two cars to race simultaneously.

- Was the team leader and the design engineer, of the first rookie team in Indian history to represent Team India in World Finals in Singapore 2023.
- Won Best Enterprise portfolio, Best rookie team, and the regional champions award out of 400 participants 2021
- Won Best Scrutineering Award, National Collaboration Award, People's Choice Award, and Second Runners Up Award in National finals out of 270 participants. 2022
- Won Chair of Judges Recognition of Achievement Award in the Aramco F1 in Schools World Finals. 2023

WRITING PURSUITS:

- Mumbai On Wheels: 2023
- Wrote a booklet on scenic cycling routes in Mumbai, available on Amazon and proceeds from the sale is being utilised for free food packets distribution to relatives of cancer patients at TATA memorial Hospital
 - Worked with *Dr Neerja Birla* (Chairperson Aditya Birla Education Trust) was kind enough to give a quote for the book and hosted a stall at the 10th MPower Cyclothon event.
- Pune On Wheels: 2024
- Continued the series of Mumbai on Wheels with routes through Pune.
 - Wrote 2 booklets encompassing longer and more scenic routes.

Acing F1 in Schools:

2022

- Wrote 3 booklets to help new F1 in Schools teams, that may or may not have school support, giving my insights and experiences as a World Finalist
- 1st book highlights importance of Sustainability; 2nd book highlights the Aerodynamics; and 3rd book gives basic tips and tutorials to Design a car

FIRST ROBOTICS COMPETITION, FIRST.

2020-Present

- Won the Judges Award in Istanbul 2024
- Won the Sustainability Award and Autonomous Award in New York 2024
- Designed and built a robot from scratch to meet annual challenge requirements.
- Utilized 3D design software to create detailed models of the robot, ensuring precise alignment and functionality of all mechanical parts.
- Employed mechanical tools and engineering principles to assemble the robot, collaborating with the coding team to integrate programming and optimal performance in competitions.

INTERNSHIPS

ThyssenKrupp, Mumbai

2023

ThyssenKrupp Elevator is the third-largest elevator company in the world and has a presence in more than 60 countries at over 800 locations. Capabilities include passenger and freight elevators, escalators and moving walks, stair and platform lifts, passenger boarding bridges as well as high-quality service for the entire product range.

- Observed the manufacturing process for commercial elevators.
- Observed the installation process of passenger elevators at a residential tower in Mumbai.

Research Intern, Mumbai University, *Mumbai*

2022-2023

- Collection and recycling stages of spent lithium-ion batteries, as well as in the subsequent laboratory work that formed the foundation of our manuscript.

SUMMER SCHOOL AT Johns Hopkins CTY:

- Took an advanced course in Arduino Prototyping, learning to create and program circuits using Arduinos. 2021
- Took a course in Investigations in Engineering, learning basics of engineering and creating basic machinery. 2022

SKILLS AND INTERESTS:

- Participated in 8+ marathons and cyclothon, like the Decathlon Cycling Event, Saksham Cyclothon Plankathon.
- Learned guitar for 3 years with The True School of Music, Mumbai
- Sketched anime, superheroes, and famous movie stars, and won several inter house awards for in the earlier grades.

Community Service:

2021- Present

Founder, Parthi, *Mumbai*

- Hosted sanitary pad drives, eye camps, vaccination drives for daily wage workers.
- Host a food donation drive every month.
- Hosted sessions for LGBTQ+ individuals on Health and Wellness, including discussions and awareness about mental health, physical health, and access to LGBTQ+-friendly healthcare services.
- Featured in TOI for the COVID vaccination drive for daily wage workers.

Technical skills: Python, Fusion 360, CAD.