

SAMRIDHI CHORDIA

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EDUCATION

APL Global School, Chennai, India

2014-2026

--Grade 11 & 12, AS & A-level

Subjects: Chemistry, Physics, Computer Science, Pure Mathematics, Further mathematics, English language

Grade 11: STEM Courses - 5 A (Highest Grade in AS Level Exams is A)

Grade 12: STEM Courses - Predicted Grades: 4 A*, A (Highest Grade in A Level Exams is A*)

--Grade 9 & 10, IGCSE

Subjects: Mathematics (W/out Coursework), Computer Science, Economics, Foreign Language Spanish, Biology, Physics, Chemistry, Additional Mathematics, First Language English

Grade 10: 7 A* (All STEM Courses, English), 2 B (Spanish, Economics)

ACADEMIC AWARDS/HONORS

- Grade 11 - Merit Awards for all sciences and math
- Grade 10 - Merit Awards for all sciences and math
- Grade 10 - ICE Award
- Grade 10 - Bronze Award for Duke of Edinburgh

ADDITIONAL ACADEMICS

Quantum Mechanics for Computation, Harvard University, Boston, MA

June 2024

- Completed Course (college-level semester equivalent) in the span of 2 weeks.
- Syllabus included: Stern Gerlach experiment, Taylor's expansion, Hilbert spaces, Hermitian conjugation, Bloch sphere, Quantum hardware, Quantum entanglement, Quantum circuits, and Quantum teleportation.
- Passed final exam based on advanced college level course and research topics
- Experience with Mathematica - software programming using Wolfram Language, a high-level programming language for Quantum Computing
- Awarded Full Scholarship for this Residential program by Harvard University

Engineering innovation, Johns Hopkins

June 2024

- Participated in a college-level program designed for high school students with strong math and science aptitude.
- Engaged in interdisciplinary collaboration with students from various engineering disciplines, including civil, chemical, electrical/computer, mechanical, and materials science.
- Ended the course by building a spaghetti bridge with specific criteria and testing its durability using loads
- Used a CPX (Circuit Playground Express) to create a fitness and water tracker by coding it to monitor the steps and provide water reminders at regular time intervals.
- Awarded full scholarship for the program from Johns Hopkins University
- Received 4 college level credits for the completion of this course

Girls Who Code: Summer Immersion Program (70 hours)

2024

- Completed an intensive program focused on game design, cybersecurity, data science, web development, and AI through hands-on, real-world projects.
- Built 5 original games from scratch using Python, incorporating inclusive design by enabling users to customize characters.

INTERNSHIPS

Indian Institute of Technology (IIT) Madras, International Center for Clean Water (ICCW), IIT, Chennai

April- May 2024

- Assisted professors in lab experiments focused on testing and calibrating turbidity and pH sensors.
- Conducted 144 hours of research at the sites, analyzing sensor components in the Vayulal device, designed to extract water from the air and produce up to 2200 liters daily.
- Prepared & presented a comprehensive research summary, including recommendations to improve the device's efficiency.
- Collaborated with startups targeting the betterment of the environment to enhance software integration and performance.

Rigpa Technologies, Chennai

March 2024 – present

- Developed and tested Amigo, India's first anonymous counseling app.
- Designed the counselor onboarding system and mood-tracking journal from scratch using javascript and react.
- Incorporated ML for mood pattern analysis to give recommendations to the users.
- Pitched the app to schools and workplaces in my district

RESEARCH IN PHYSICS, COMPUTER SCIENCE, MATERIAL SCIENCE, MATHEMATICS, CHEMISTRY

LEGOLAS, Entropy for energy, Johns Hopkins: <https://entropy4energy.ai/team.html>

June 2024- present

- Assembled an automated system/robots to perform chemical experiments on how pH depends on the mix of a weak acid and its conjugate base without human intervention, and graphed the results, presenting it to a panel of professors.
- Adapted LEGOLAS for a closed-loop variation of a dye-sensitized solar cell (DSSC) experiment. Dye is applied to a semiconducting material; light excites electrons in the dye across the semiconductor's bandgap, producing a current detectable by a multimeter.
- Altered this robot to find the optimum composition of materials that provide the highest Egap values and can be used to conduct experiments for space materials. By programming the robot's movements, adding an embedded system to measure the voltage of solar cells, and coding the algorithm of the Gaussian process (machine learning) into LEGOLAS.
- Led a team of 2 high school interns and mentored them
- Currently working on publishing a research paper alongside Dr. Osés, Assistant Professor, Johns Hopkins University
- Presented my research to a panel of professors at a seminar at IIT ICCW

LEADERSHIP

- Student Council (2020) - RCP (Responsible Citizenship Program)
- Part of the organizing cultural committee in my school - clubs aren't allowed in my school
- Led a team of 2 high school interns and mentored them at LEGOLAS, Entropy for energy, Johns Hopkins University
- School Team Captain - Girls' Badminton, Basketball, Throwball - 2022 - Present

Jal Sarovar - Jul 2024 - Present, Founder, www.jalsarovar.com

- A Dual-Scale Machine Learning Framework for Public and Residential Water Quality Monitoring
- First unified system integrating public infrastructure monitoring with residential IoT sensors
- Integrates IoT sensors with multiple machine learning (ML) algorithms in a unified cloud based web application
- Site Risk Classifier: Random Forest ensemble (87% accuracy) for contamination risk prediction enabling targeted testing
- Contamination Classifier: XGBoost-based multi-class classification (82% F1-score) for root cause identification across five contamination types
- Water Quality Forecaster: Multi-output Gaussian Process for 90-day parameter forecasting with 14-day early warning
- Cost Optimizer: Bayesian Optimization framework reducing testing costs by 62% (10.1 Crore annually) while maintaining 96.5% detection rate
- Real-time WQI Algorithm: Penalty-based composite scoring for instant water safety assessment
- Anomaly Detection: Isolation Forest with CUSUM drift detection (92% accuracy) for residential monitoring
- Hybrid Field Data Validation: 12,543 contaminated samples analyzed from actual sites and simulated data
- Checks the standards of water against WHO and BIS to detect contamination and propose solutions
- To spread awareness of water contamination, collaborated with NGO such as U&I to educate the young ones reaching 50+ schools and more than 2000+ students

COMMUNITY SERVICE

Volunteering Teacher, Vayushastra, Chennai, India

Vaayusastra Aerospace is an Ed-Tech & Educational Research startup in the Aeronautics and Aerospace domain 2021-Current

- Delivered experiential STEM learning modules in aeronautics and aerospace using science model building, mythological sci-fi narratives, and theatrical enactments aligned with NCERT, CBSE, ICSE, and NASA guidelines.
- Led 200+ interactive workshops across government schools, expanding access to quality science education for 1,500+ underprivileged students.

The Student Sea Turtle Conservation Network, Chennai, India

2019-2024

- Worked to conserve and raise awareness about the endangered Olive Ridley sea turtle.
- Joined an annual 7-km coastal walk from Neelangarai to Besant Nagar Beach, facilitating conversations on marine life protection and environmental sustainability

Tutoring Volunteer, Multiple Residential Communities, Chennai, India

2021 - Present

- Offered Periodic Free Math, Sciences, English, Computer Programming tutoring sessions in residential communities for over 4+ years
- Tutored more than 200+ underprivileged children in Grade 1-12 studying in public & private schools with limited resources

INTERESTS

- Acoustic/Bass/Electric Guitar - Currently pursuing Grade 7 in Trinity. Performed in multiple concerts in the School and Private events
- U-17 State Level Badminton Player - Silver Medalist - Active participant for last 6+ years
- Basketball, Throwball

- YouTube channel with hands-on videos related to baking, guitar, STEM and mental math tips
- Conducted art workshops for kids in middle school, teaching simple motor skills
- Actively participated in multiple computer programming competitions & hackathons, including Leetcode