ADVAIT GOGATE

EDUCATION

Singapore International School, Mumbai, India

International Baccalaureate Diploma Program, Grade 12 Predicted Grade: 41/42 2024-Present

Cambridge IGCSE Board Examination, Grade 10: All A* 2021-2023

STANDARDIZED TESTS

SAT -**1540 /1600** (Mathematics- 800/800; English Reading and Writing- 740/800) 2024

TOEFL iBT- 2025

ACADEMIC HONORS AND AWARDS

Singapore International School, Mumbai, India

Chairman's Excellence Scholarship: academic achievement, leading with integrity, engaging with empathy, and striving for excellence in every endeavour 2024-2025

Singapore International School Honours: Excellence in academics in grades 9, 10 and 11 2022

Cambridge IGCSE School Topper in International Mathematics, English Language and Biology 2023-2024

Times of India NIE Vidyalankar: Student of the Year Award 2022-2023

International

British Science Association Gold Crest Award: Research paper on comparative study of Energy Systems 2024

University of Waterloo Sir Isaac Newton Test: Distinction, 1st in school and top 500 contestants worldwide 2025

University of Waterloo Avogadro Chemistry Quiz: Distinction and 1st in India 2025

CEMC Gauss Competition (Maths): Distinction and Top 25% participants 2022

Cathedral Math Competition: Distinction 2023

SCHOOL LEADERSHIP

Co-founder, Maths Club at Singapore International School, Mumbai 2024-2025

Led bi-weekly sessions focused on deep conceptual understanding and real-world problem solving through activities on infinity, game theory, cryptography and paradoxes.

Co-founder, Chemistry Club at Singapore International School, Mumbai 2024-2025

Led sessions combining hands-on activities with theory. Guided deep dive discussions with chemical kinetics, thermodynamics and material sciences

Administrator and Organizer for Maths Premier League at SIS 2024-2025

Directed an inter school competitive Mathematics event in collaboration with Labs Preparatory School. Led the overall logistics, problem design and evaluation for participants from over 20 schools.

SOLAR ENERGY -TECHNOLOGY, INNOVATION & AI

Founder, Helioscope 2025

An AI platform, developed in collaboration with Professor Ramesh Raskar (MIT Media Lab), that integrates satellite imagery, solar irradiance data, semantic segmentation and edge detection to detect rooftop structures, calculate available area and estimate installation feasibility, costs and long-term savings.

Participated in the AI fellowship for Global Young Leaders. Patent filed in September 2025.

LIVELIHOOD and SOCIAL IMPACT

Volunteer: **Solar Training & Workforce Development Project** 2025

Collaborated with Pragya NGO (working towards sustainable solutions for marginalized communities of Asia and Africa) to integrate *Helioscope* into solar training programs across urban and semi-urban communities. Developed protocols and standard operating practices for educating the youth in Himachal Pradesh and Jammu and Kashmir for solar maintenance and upkeep

RESEARCH PAPERS- CHEMISTRY, ENERGY AND THE BUILT ENVIRONMENT

Author, 'Reimagining Concrete Sustainability: Evaluating GGBS as a Supplementary Cementitious Material in High-Rise Construction' 2024

Under Dr. Prasad Marepalli, Head of Structural Design at Lodha Group, analysed and tested GGBS (Ground Granulated Blast Furnace Slag) concrete mixes under varied conditions to assess strength, durability, and sustainability. Implemented in G+23 storey residential building at Upper Thane, an upcoming township.

Author, 'Comparative Study of Clean Energy Technologies for a Decarbonized Future 2024

Conducted independent comparative study of solar photovoltaic systems, nuclear power, and hydrogen energy under the mentorship of Mr. Aun Abdullah, Head of Sustainability at Lodha Group. Assessed technologies on efficiency, cost, sustainability, and scalability, with projections of their potential role in global energy systems.

Author, 'Reimagining Urban Water Reuse: Evaluating the Performance of an 2024

MBR Sewage Treatment Plant'

Conducted field-based research on a 6 MLD Membrane Bioreactor sewage treatment plant, including SCADA system analysis, chemical dosing, and lab-verified effluent quality). Evaluated operational efficiency and optimization strategies under guidance of the Veolia Operations Team and the PCMA (Palava City Management Association)

INTERNSHIPS

Intern, Rashtriya Chemicals and Fertilizers Ltd. (RCF), Trombay 2025

Shadowed technical teams in operations of 22.5 MLD sewage treatment plant, Ammonia plant, and NPK fertilizer plant. Observed production and process integration for urea, complex fertilizers, bio-fertilizers, micro-nutrients, and industrial chemicals.

Intern, Lodha Group 2024

Learned about conventional building materials and low embodied carbon alternatives. Developed understanding of how engineering, strategy, and sustainability intersect in real-world energy transitions.

ACADEMIC MENTORSHIP AND TECHNICAL LEARNING

Mentoring

AI Fellowship for Global Young Leaders with Prof. Ramesh Raskar, MIT Media Lab 2025

Developed practical AI projects using modern tools and frameworks, and analysed ethical, social and economic implications of AI. Interacted with professionals from META, Google and Amazon.

Deep Learning workshop with Prof. Pavlos Protopapas, Harvard University 2024

Gained foundations in deep learning, including CNNs, model architecture, and feature extraction. Applied concepts to build a facial expression detection model.

Technical Learning 2023

Grappling with Infinity: University of Columbia (Explored infinity, convergence, limits, and set theory)

Microsoft Technology Associate Certificate in Python

Introduction to Renewable energy systems- TU Delft OCW

Applied Sustainability in Urban design MIT OCW

DISCUSSIONS AND DISCOURSES

Engaging with experts to explore recent research and industry developments in world of chemical engineering 2025

- **Using AI to make Lower-Carbon, Faster Curing Concrete**: Discussion with Mr. Sai Sri Harsha Pallerlamudi, Rocky Mountain Institute India, on employing AI as a tool to optimise the process of creating concrete mixes in order to increase curing efficiency and lower the embodied carbon of concrete in large scale construction sites
    - Use of machine learning in predicting performance to reduce trial-based testing
- **$ZnIn_2S_4/TiO_2$ Photocatalyst for CO_2 photoreduction: Advancing sustainable energy conversion to renewable solar fuels:** Discussion with the SIS Chemistry Club Faculty examining photocatalysts for solar driven reduction of CO_2, and the role of these catalysts in large scale carbon mitigation strategies
    - Scalability of photocatalytic systems and their feasibility in industries for CO_2 reduction

SPORTS AND ATHLETICS

School Basketball and Volleyball Team (SIS) 2024

Represented school in inter-house and inter-school matches.

SKILLS & INTERESTS

Skills: AI modelling, Enthusiast in CAD Software and 3D printing, Python

Interests: Photography, Wildlife, Basketball