

## ANSH SINGH

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### EDUCATION:

<b>Oberoi International School, JVLR, Mumbai, India;</b>	2019 – Present
– <i>International Baccalaureate Program, Grade 12;</i>	2024 – Present
– <i>International Baccalaureate Middle Years Programme, Grade 10</i>	2019 – 2024

### STANDARDISED TESTS:

- <b>SAT Test Score: Total: 1530; Reading and Writing – 740; Math – 790</b>	2025
- <b>IELTS Test Score:</b> Overall: 8.0; Listening 8.5, Reading 9.0, Writing 7.0, Speaking 8.0	2025

### AWARDS AND HONORS:

#### **School:**

• OIS IBDP Scholarship for Academic Excellence in Grade 10	2024
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#### **International:**

- University of Waterloo, Fermat and Hypatia, Merit	2025
- University of Waterloo Sir Isaac Newton Exam, Distinction	2025
- University of Waterloo Avogadro Exam, Distinction	2025
- Hong Kong International Maths Olympiad (HKIMO), Silver	2025
- CREST Gold Award, British Science Association, United Kingdom	2025

### MAKER PORTFOLIO:

1. <b><i>FlexiPipe</i></b> – Maneuverable Robotic System for HVAC Duct Cleaning; compact W-shaped design with omni-wheels, torsional springs, high-torque stepper motors; adaptable to all duct geometries.	2025
2. <b><i>PowerPlay Surge</i></b> – First Tech Challenge, <i>India Nationals Round</i> – mecanum-drive with custom linear slides and cone manipulation mechanisms, executing autonomous path-following.	2023
3. <b><i>PowerPlay Gridlock</i></b> – First Tech Challenge, <i>Australia Pacific Open Invitationals</i> – system with vision-based cone localisation, turret rotation, advanced control algorithms for consistent scoring.	2023
5. <b><i>CrescendoBot</i></b> – First Robotics Competition, <i>Crescendo Season</i> – engineered swerve-drive chassis with intake shooter system for adaptive trajectory generation, path-planning, and scoring.	2024
6. <b><i>AquaDetect</i></b> – Low-Cost, portable heavy metals detection (lead, arsenic, mercury, cadmium, pH) in water samples; multilingual app (API Key Integration), enabling non-specialist users to access results.	2025

### BUILDING LIVES:

***Internship at Skyway Infraprojects*** – Field visits to multiple wastewater treatment plants, understood operations from experts from a mechanical/electrical standpoint. 2025

- Conducted an in-depth study and report for sluice gates and variable frequency drives (VFDs), covering theory, design principles, applications, engineering drawings, and relevant Indian Standard Codes.

***Certification Programme for Upskilling Youth – 4-Week Training Curriculum*** (6 Modules and Test) 2025

- Prepared underprivileged youth for entry-level technical roles such as Sewage Treatment Plant (STP) Operator and Pump Maintenance Technician, enabling long-term employment opportunities.
- Developed accessible training material on pump/motor handling, chemical dosing, sludge management, safety, and quality testing – simplified complex STP processes for non-engineering participants.

- Equipped 25+ workers with practical skills: valve flow regulation, routine servicing (lubrication, unclogging aerators), water quality monitoring (pH, turbidity), and safety for handling disinfectants.

### **ENGINEERING & TECHNOLOGY OBSERVERSHIPS:**

2025

- **CYNLR Robotics** – Advanced Articulate Robots & Vision Manipulation, *Bengaluru*
  - Learnt optical convergence and autofocus-based depth mapping for training-free object recognition and adaptive robotic arms in automated manufacturing processes.
- **PPAP Automotive Ltd** – Plastic/Rubber Extraction & Moulding for automotive components, *Noida*
  - Injection moulding, CAE-based design validation, and Li-ion battery pack product development.
- **TRITHI Robotics** – Multispectral Thermal Drones for Crop Pesticide Spraying, *Bengaluru*
  - Learned about payload integration, field-level deployment, geomapping for precision farming.
- **Prime Packaging and Co.** – Plastics Packaging Firm, *Mumbai*
  - Exposure to blow, compression, and injection moulding & principles of heat-forming plastics.
- **Jay Co. Chemicals** – Active-Pharma Ingredient (API) Synthesis & Purification, *Mumbai*
  - Insights into filtration, hydrogenation, bromination, controlled reactions in industrial reactors.
- **TVS Group** – EV Two-Wheeler Manufacturer, *Bengaluru*
  - Battery pack assembly, BLDC Motor Integration, and testing protocols in assembly lines

### **ROBOTICS PURSUITS:**

1. World Robotics Olympiad (Future Innovators, Junior Category): 2022
  - India Nationals – Gold Medal, Ranked 1st amongst all teams; Qualified for international
  - Germany Internationals – Silver Medal, Ranked 7th globally out of 24 countries
2. First Tech Challenge, India Nationals – *Finalist Alliance Team* 2023
3. First Tech Challenge, Asia Pacific Open Invitational; *Won Runner-Up Captain Alliance (Top 6)* 2023
4. First Robotics Challenge, Turkey Regionals: 2024
  - *Won Industrial Design Award; Ranked Top 25 amongst teams; Qualified for Internationals*
5. VEX IQ Robotics Competition Mentorship 2023 – 2025
  - Founded and recruited OIS Robotics Club, raising over \$8000 to procure kits and game fields.
  - Guided 35+ (Grades 3-10) in programming, mechanical design, documentation and teamwork for VEX IQ India National Rounds.

### **STEM ONLINE COURSES:**

2025

- Inspirit AI Scholars Programme (AI in Astrophysics) – Developed Neural Network models (CNNs) to process NASA's Kepler light-curve data for automated exoplanet detection via transit photometry.
- Data Analytics For Lean Six Sigma, University of Amsterdam – Coursera
- Accenture Courses – Automotive Manufacturing Excellence AI; Fundamentals of AI and Application;

### **STEM SUMMER PROGRAMMES, INTERNSHIPS, AND RESEARCH:**

- Imperial Global Summer School, Engineering 2024
- **aiPlato**, STEM AI Tutor: Assisted in product testing, platform optimisation, and development 2024 of AI-driven interactive lectures for AP Physics AB curriculum alongside experts.
- CREST – Developed a robotic solution for automated HVAC cleaning, integrating adaptive spring-based actuation and finite element simulations to analyse stress, deformation, and traction. 2025

### **SKILLS & INTERESTS:**

Proficient in Coding Languages – Python for Raspberry Pi, Java, C++; Trinity Drums Grade 4; Formula 1