

## Resume

### Dhruv Gurjar

• +91 9930182747 • dhruv.2211@bis.edu.in • [dhruvgurjar.com](http://dhruvgurjar.com)

#### **EDUCATION: BOMBAY INTERNATIONAL SCHOOL (BIS): MUMBAI** (2006 – 2021)

##### **International Baccalaureate (IB) Examinations** (May 2021)

- IB Subjects – Mathematics Analysis and Approaches HL, Physics HL, Chemistry HL, Economics SL, English Literature and Performance SL, Spanish ab initio SL.
- Regular Predicted Grade – 44/45

##### **Standardized Testing** (2019 – 2021)

- **SAT With Essay** – 1520
  - Math – 800; Evidence Based Reading and Writing – 720
- **SAT Subject Test (Math II)** – 800/800
- **IELTS** – 8/9 Overall
  - Listening – 9/9
  - Reading – 9/9
  - Writing – 7/9
  - Speaking – 7.5/9

##### **IGCSE Board Examinations June Session** (2019)

- **9 A\*** - Cambridge International Mathematics, Additional Mathematics, Physics, Chemistry, Biology, Literature (English), First Language English, Computer Science, Global Perspective & **1 A** - Hindi

##### **Grade 9 Final Exam** (2018)

- **9 A\*** - Cambridge International Mathematics, Additional Mathematics, Physics, Chemistry, Biology, Literature (English), First Language English, Computer Science, Global Perspective & **1 A** – Hindi

#### **AWARDS AND HONORS** (2017 – 2020)

##### **School Based Awards** (2019 – 2020)

- **Recipient of the Principal Merit Scholarship** – 50% tuition fee waiver for IBDP at BIS (2020)
- **Best All Rounder Award** – for achieving excellence in academics and extracurriculars (2019)
- **IGCSE Grade Topper:** Stood First in Physics, Chemistry, Computer Science, and Global Perspectives (2019)
- **Development Project for the Community** – Received the award for my CAS Project called ENIGMA (2020)
- **Received distinction in Grade 5 ABRSM Music Theory exam** (2018)
- **Received distinction in Grade 6 Trinity Speech and Drama exam** (2018)
- **Certified ABRSM Grade 5 Jazz Pianist (Highest level offered)** (2019)

##### **Math Olympiads** (2019 – 2021)

- **Ranked 3<sup>rd</sup> in India at the South East Asian Math Olympiad (SEAMO)** and qualified for the final round (SEAMOX) scheduled for January 2021 (2020)
- **Received a Silver Medal at the Thailand International Math Olympiad (TIMO)** (2020)
- **Ranked 6<sup>th</sup> in India, received a Silver Medal at the Singapore and Asian Math Olympiad (SASMO), and qualified for the final round (SIMOC)** (2019)
- **Received a Silver Medal and Two Bronze Medals in the team and individual rounds when representing India at the Singapore International Math Olympiad Challenge (SIMOC)** (2019)
- **Ranked 87<sup>th</sup> in India at the American Mathematics Competition (AMC12)** (2020)
- **Received the Runners up award for the Aditya Birla World Academy Math Olympiad INFINITY in the West Zone, and qualified for the Final Round Scheduled for January 2021**

- **Ranked 3<sup>rd</sup> in the inter-school Cathedral Math Olympiad (Calcaholics)** (2019)

## **INTERNSHIPS, RESEARCH, AND EXTERNAL COURSES** (2019 – 2020)

### **Internship at Interplex India and associated supply partners** (2020)

- Interned at a Cellulose Acetate and Polyethylene terephthalate (PET) goods manufacturing plant that uses recycled and plant based raw materials. Studied aspects of mechanical and chemical engineering, production line manufacturing, supply chains and examined costs associated with the production process. (2020)
  - Wrote a technical paper on how the ultimate tensile strength of PET Strap varies with its Intrinsic Viscosity (IV)
  - Wrote another paper drawing on mathematical concepts like optimization and economics like cost/benefit to write a detailed proposal for creating the yearly power output needed by the plant by only using renewable solar power.

### **Research Project – Indian Space Research Organization** (2020)

- Visited ISRO Ahmedabad to study the engineering and mathematics behind the geosynchronous satellites under the guidance of Dr Vikram Desai. I wrote a white paper on satellite systems to detect plastic in the ocean. The follow up visit was scheduled for mid 2020, but could not be undertaken due to COVID-19. (2020)

### **External Courses** (2019 – 2021)

- Successfully completed the **Introduction to Engineering Mechanics offered by the Georgia Institute of Technology** (2020)
- Successfully completed the **Welcome to Game Theory by the University of Tokyo** (2020)

## **ACADEMIC PAPERS** (2019 – 2020)

### **Mathematics/Computer Science/Engineering** (2019 – 2020)

- Explored chaos in a double pendulum by deriving the necessary equations, creating an experimental model, and comparing it to my Python Simulation for the same system. I utilized concepts like differential equations, the Lagrangian, and the Rayleigh Dissipation function to explore aspects of chaos like period doubling, determinism, etc. (2020)
- Scribed on the application of Sorting theory in sorting algorithms, and ran trials to identify the most efficient one. I based my analysis on several factors including the Big O Notation (asymptotic notation), time and space complexities, as well as algorithm stability. The algorithms I explored were Permutation Sort, Bubble Sort, Quick Sort, Merge Sort, and Counting Sort. (2020)

### **Physics** (2019 – 2020)

- Investigated the effect of liquid density on the frequency of a singing wine glass. I used the AP French equation as a theoretical model for the impact of density on the frequency and compared it to my experimental readings. Since this research was conducted during the lockdown, I used salt and water to manipulate solution densities. My findings confirmed the inverse relationship between the density of solution and the frequency square. (2020)

### **Chemistry** (2019 – 2020)

- I wrote a secondary research paper that looked at magnetic susceptibility data of several transition metal complexes. I derived the magnetic moment from the magnetic susceptibility values and analyzed how the crystal field splitting energy affected this moment. I also evaluated a model used to predict the deviation from the spin only moment created by the d electrons and the experimental moment  $\mu_{\text{eff}}$ . (2020)

## **LEADERSHIP, INITIATIVES, AND EVENTS** (2016 – 2021)

### **Leadership Positions** (2016 – 2021)

- Student Chairperson of the IBDP Student Council (2020 – 2021)
- Head Boy of the Bombay International School Student Government (2019 – 2020)

- Outreach Prefect of the Bombay International School Student Government (2018 – 2019)
- Class Representative for Grade 7 (2016 – 2017)

---

### Initiatives (2020)

- **Students for Students** ([studentsforstudents2020.com](http://studentsforstudents2020.com)) is an online learning platform that I co-founded to teach students across India various academic and activity-based courses. We involved several classmates and taught over 30 courses. I taught Physics, Precalculus Math, Computer Science, and Drama. (2020)
- I conceptualized and co-founded my school's first ever state-wide math Olympiad called **ENIGMA**. The Olympiad was conducted in three rounds and focused on logical thinking and problem-solving ability rather than mechanical calculations. (2020)

---

### Events (2017 – 2019)

- As part of our School's annual **BIS TechFest**, I built a 14-foot elevator with a group of friends. While the structure eventually failed due to a motor failure, I learnt a great number of practical lessons. (2019)
- Selected to participate in the **Singapore Technologies Endowment Programme (STEP), Sunburst Youth Camp (SYC)** for potential leaders in Asia, at Singapore. Every selected student was completely sponsored by the Temasek Trust. I spoke on Science and Technology in India, as part of a cultural culmination final presentation. (2017)

---

## COMMUNITY OUTREACH (2017 – 2021)

### Fundraisers and Initiatives (2017 – 2021)

- **Raised \$5755** from 66 donors by participating in a **55 Km walk in Goa for Ummeed**: an organization that supports children with developmental disabilities from low/mid income families. (2020)
- **Raised INR 25,701/-** for **Akshaya Patra Foundation** to provide mid-day meals for 20 children for a year. (2020)
- Raised Rs 4,38,350/- for several charities as part of the Student government, through an initiative called **NGO Mela** (NGO Fair) for 2 consecutive years. The funds will be used by under-privileged and special needs children and adults. (2017 – 2019)
- Facilitated an initiative called "**Love in a Shoebox**" to present daily essential items gift wrapped with love and care in a shoe box for differently abled children of the Jai Vakeel NGO during Christmas. (2018 – 2019)
- Created a water filtration system out of layers of different materials in conjunction with solar filtration, for a remote village in Bhillar, India. (2019)

---

### Volunteering (2017 – 2019)

- Introduced and played solo Cello pieces for under privileged children at Seva Sadan School, Mumbai. The same pieces I played at the Hello Cello Festival in Krakow, Poland. (2017)
- Provided technology assistance to teachers at Seva Sadan School for under-privileged children, which facilitated the students to participate in book review competition at a national level competition organized by Young India Books, Mumbai. (2017)
- Participated in the Artificial Reef Building program to conserve marine life at Pondicherry, India (2019)

---

## EXTRACURRICULARS (2012 – 2020)

### Music (2015 – 2019)

- Performed a Solo with the Stuttgart chamber orchestra, as well as other pieces as part of the students of Mehli Mehta Music Foundation, Senior String Ensemble (1<sup>st</sup> Cellist), at the prestigious National Center of Performing Arts, Mumbai (2019)
- Performed with the Australian World Orchestra as part of the students of Mehli Mehta Music Foundation, Senior String Ensemble (1<sup>st</sup> Cellist), at the prestigious National Center of Performing Arts, Mumbai (2019)

- Performed at the KM Music Conservatory founded by Academy Award winner, A. R. Rehman, as part of the students of Mehli Mehta Music Foundation, Senior String Ensemble (2018)
- Performed with Singing Tree Choir as part of the students of Mehli Mehta Music Foundation, Senior String Ensemble at the prestigious National Center of Performing Arts, Mumbai (2018)
- Performed at the renowned Kala Ghoda Arts Festival, Mumbai, with Mehli Mehta Music Foundation Senior String Ensemble (2017)
- Attended master classes and performed at the first “Hello Cello Festival” in Krakow, Poland. The concert of all ‘Cello Ensemble’ was telecast live across the world. Played the opening solo piece, Bach Suite for Cello 5/6, of the festival. (2017)
- Performed with Singing Tree Choir as part of the students of Mehli Mehta Music Foundation, Senior String Ensemble at the prestigious National Center of Performing Arts, Mumbai (2015 - 2018)
- Played the Cello as part of the Mehli Mehta Music Foundation String Ensemble with the Israeli Philharmonic Orchestra for Maestro Zubin Mehta’s 80<sup>th</sup> Birthday at National Center of Performing Arts, Mumbai. Tenor Andrea Bocelli, was also present at the show. (2016)

---

### **Speech and Drama** (2012 – 2020)

- Performed the role of Sam from the play “Master Harold” ... and the boys. (2020)
- Best Speaker award at Senior School Hindi Elocution (2018)
- Acted as “Gandhi” in the musical play, Gandhi, staged on the occasion of the BIS Founder’s Day (2017)
- Acted as ‘Scar’ in the musical play, A Disney Disaster, staged on the occasion of the BIS Founder’s Day (2016)
- Performed contrasting roles of an “Indian Shoe Polish Boy” and a “British Brigadier-General Sir Francis Cromarty”, in the musical, Around the World in 80 Days, on the occasion of 50<sup>th</sup> year of BIS Founder’s Day (2015)
- Role of Genie in the musical, Alladin, on the occasion of the annual Variety Entertainment of BIS primary section (2012)
- First place in BIS Middle School Hindi Debate (2014)
- First place in BIS Middle School English Elocution (2014)
- First place in BIS Middle School English Elocution (2013)

---

### **Model United Nations** (2017 – 2020)

- Received the award for Outstanding Delegate as part of the Joint Crisis Committee at BISMUN. (2018)
- Deputy chair for the BISMUN (2019-2020)

---

### **Sports** (2012 – 2020)

- Rescue Diver Certification (2019)
- PADI Specialty Certifications - Drift, Peak Performance Buoyancy, Deep Dive, Nitrox, Under Water Naturalist (2018 - 2019)
- Individual Championship & Best Athlete Cup at the BIS Sports Day in the Senior Boys and IBDP category (2019)
- 1<sup>st</sup> place in the inter-house BIS Annual Badminton Tournament (2018)
- Goal keeper for Beta House which secured 1<sup>st</sup> place at the BIS inter-house football tournament (2017 - 2019)
- Individual Championship & Best Athlete Cup at the BIS Sports Day for Intermediate Boys category (2017)
- 1<sup>st</sup> place in the inter-house BIS Annual Badminton Tournament (2017)