Sanghvi Yash Chetan | **13D170003**
Mechanical Engineering | **Dual Degree (B.Tech+M.Tech.)**
Indian Institute of Technology Bombay | **Male**
Specialization: Computer Aided Design (CAD) & Automation | **DOB: 12/07/1995**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2018	9.24
Intermediate/+2	Maharashtra State Board	Kishinchand Chellaram College	2013	90.33
Matriculation	Maharashtra State Board	Our Lady Of Remedy High School	2011	92.00

Scholastic Achievements

- **Ranked 2nd** in Mechanical Engineering Department (Dual Degree Batch), out of 51 students
- Received two successive **Institute Awards** for **Academic Excellence** for ranking **1st** ('15-'16) and **2nd** ('14-'15) in the Department (Dual Degree Batch)
- Awarded **Institute Technical Colour** for writing the flight code (>10,000 lines) and designing the checkout system for Pratham, IIT Bombay's 1st student satellite, launched in September 2016
- Awarded the highest **AP (Advanced Performer)** grade in the course *Introduction to Numerical Analysis*
- Completed a **Minor** degree in Electrical Engineering (Key courses: Digital Electronics, Signals & Systems)

Professional Experience

Mechanical R&D Intern, Hindustan Unilever Limited, Mumbai *May - Jul '16*

Developed an Environmentally Sustainable Refrigeration System for PureIt Floor Standing RO Water Purifier

- Reduced carbon footprint by **>40 kg CO_2 e/unit** by modifying the system to replace HFC R-134a refrigerant with eco-friendly HC R-600a, satisfying **Unilever Sustainable Living Plan (USLP)**
- Decreased cooling time by **30%** (23 to 16 minutes) by dimensionally optimizing the existing system design
- Consulted industry players like **Western Refrigeration**, **Emerson** etc. to obtain a practical viewpoint in design decisions
- Recommended **qualification tests** for the purifier after an extensive study of relevant **IEC**, **ISO** and **ASHRAE** standards
- Awarded **Pre-Placement Interview** based on output and leadership skills displayed during the internship

Projects

Master's Thesis: Detection of Cracks in Composites *Apr '17 - Present*

Guide: Prof. Surjya K. Maiti, Department of Mechanical Engineering
***Project:** Formulation of a vibration based model for detection of cracks and delaminations in composite Euler Bernoulli beams for predicting the life of composite aerospace and mechanical structures*

Forward Problem	• Predicted the natural frequencies of a delaminated orthotropic symmetric composite cantilever beam with **accuracy >95%**, given the location, size and interface of the delamination • Validated the frequencies using **ANSYS Composite PrepPost (ACP)** • Modified the analytical model to accommodate **unsymmetrical beams** and **angle-plies**
Inverse Problem	• Predicted using a graphical method, the **location** and **size** of a transverse crack in a cantilever beam with **accuracy >90%**, given any three natural frequencies of the beam • Performed **zero-setting** of the elasticity modulus to improve accuracy when using FEM frequencies

Electrical Subsystem, Pratham, 1st Student Satellite, IIT Bombay *Sep '13 - Apr '17*

Developed in collaboration with ISRO, Pratham was launched on-board PSLV C35; appreciated by Prime Minister of India

- Devised and implemented the **testing plan** for monitoring critical parameters during the environmental tests of the **integrated satellite** at ISRO Satellite Center, Bangalore
- Designed a circuit to **detect the detachment** of the satellite from the launch vehicle to prevent battery drainage prior to detachment; battery power is critical to stabilize the satellite post launch
- Developed power distribution and battery charge management algorithm and the corresponding hardware
- Implemented the **AX.25 error detection protocol** for the packeting of the **Downlink** data
- Reviewed **10,000 pages** of documentation; presented before the ISRO Scientists in the **Critical Design Review** and the **Pre-Shipment Review**, to obtain a launch slot for the satellite

Temperature Monitoring of Drilling Tool | Team of 4 *Oct - Nov '15*

Guide: Prof. Ramesh Singh, Department of Mechanical Engineering *Course Project*

- Used **thermal imaging** to monitor the maximum temperature for Aluminium (Al) workpiece - High Speed Steel (HSS) drilling tool combination in a **micro-EDM** machine, to serve as a reference for future drilling operations
- Calibrated the Thermal Camera to compensate for the **reflected radiation** and to account for the **emissivity** of the tool
- Tabulated the maximum temperature as a function of the **spindle speed**, **feed** and **diameter** of the tool

Design of Aircraft Landing Gear | Team of 10 *Nov '16*
Guide: Prof. Tanmay Bhandakkar, Department of Mechanical Engineering *Course Project*

- Identified and sized the **design parameters** (piston area, displacement volume etc.) of the **oleo strut** of **Boeing 747**, which acts as a hydraulic shock absorber in the landing gear
- Calculated the required **stroke length** of the strut based on the aircraft weight, tire efficiency, sink speed and wing lift

Positions of Leadership and Responsibility

Project Manager, Advitiy, 2nd Student Satellite, IIT Bombay *May '17 - Present*
Advitiy is the next step after Pratham towards making IIT Bombay a Center of Excellence in Satellite Technology

- Took over leadership to maintain **continuity** and improve **reliability** in the Student Satellite Program of IIT Bombay while ensuring a reduction in the project timeline by >**50%**
- Introduced efficiency improvement **kaizens** like instituting a **QA Subsystem**, setting up a detailed **inventory** etc.
- Conceptualized and structured a wiki, **Satellite 101**, for institutes aiming to venture into satellite technology
- Facilitated the *pro bono* establishment of a **Ham Radio club** in the institute to aid in National Disaster Relief operations through satellite communication, witnessed a participation of over **40 students**

Overall Co-ordinator, National Service Scheme (NSS), IIT Bombay *Apr '16 - Mar '17*
NSS is the largest student volunteer body of IITB, serving >100K people nationwide via public welfare activities

- Led a **3 tier team** of **400+** volunteers solving problems in sectors like education, sustainability, environment, etc.
- Established **National Innovation Club** for improving grass root innovations from engineering, aesthetic, and market perspectives; appreciated by the **President of India** in the Festival of Innovation, 2017 held at Rashtrapati Bhavan
- Increased the online presence of NSS IITB by >**200%** through activities like
  - The Artistic Impact - A nationwide *Socio-Art* competition; participation from **15 cities** of India
  - Letters of Love - Global Outreach program for Syrian kids in UN refugee camps; participation of **300+ campus residents**
  - Prakriti - A discussion forum for nature enthusiasts; **200+ members** comprising of students and faculty members
  - Cashless Transactions Tutorials, post demonetization; viewership >6500

Founder and Manager, Open Learning Initiative (OLI), NSS IIT Bombay *Jan '15 - Jul '17*
A YouTube channel breaking language barriers, OLI hosts 200 educational videos in 8 regional languages

- Videos on the channel used by the district administration of Giridih, a **naxal-affected** district in Jharkhand, to teach students in the absence of permanent teachers, benefiting >**1000 students**
- Amassed >**20,000 subscribers** (highest in IITB) in **2 years** with **4000%** growth in 2016-17
- Videos hosted on the educational portal of **Madhya Pradesh** Government; success story published by **Business Insider**

Department Head, Educational Outreach, NSS IIT Bombay *Apr '15 - Mar '16*

- Consolidated the association of NSS with **11 centers** of **5 NGOs** in the field of education, in and around the campus
- Initiated **Adult Literacy Program** for providing Basic English Training to **50+ mess workers**
- Spearheaded the **Muskaan** and **Prayog** campaigns for training the children in extra-curricular activities like **dance**, **dramatics**, **fine arts** etc. to ensure their all-round development

Teaching Assistant *Summer '15 and '17*
Prof. Sivaji Ganesh and Prof. Sripad Garge

- Entrused with the responsibility of tutoring >**50** students for the course *Introduction to Numerical Analysis*
- Clarified their concepts and **evaluated** their performance

Software Skills

- **Software Packages:** MATLAB, ANSYS, MSC Adams, SOLIDWORKS, AutoCAD, COMSOL Multiphysics, Eagle, Audacity, Adobe Photoshop, LT Spice, MS-Office, Atmel Studio, LaTeX
- **Programming Languages:** C++, Python
- **Web Development:** HTML, CSS
- **Microcontroller Programming:** Embedded C, Arduino

Relevant Courses

- Fatigue, Fracture and Failure Analysis, Micromechanics of Composites, Finite Element and Boundary Element Methods, Computer Aided Simulation of Machines, Textile Machines Design and Automation, Advanced Heat Transfer

Extra-Curricular Activities

- Presented Pratham in VEDH, 2016 before a **3000-strong** audience
- Educated students of standards **six to nine** as a part of **NGOs Vidya** and **Asha** *'13 - '14*
- Represented Our Lady of Remedy High School in 3 **R-ward Science Exhibitions** *'06,'07,'09*
- Successfully cleared the **Elementary** and **Intermediate** Drawing Grade Examinations conducted by the Art Examination Committee, Government of Maharashtra *'07, '08*
- Won prizes in 3 English and 2 Hindi **Elocution** and **Recitation** Competitions in school
- Avid reader and hobby pianist