Soham Shirish Phanse
Aerospace Engineering
Indian Institute of Technology Bombay

19D170030
UG Second Year
Male
DOB: 26/11/2000

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	8.72

- Pursuing **Minor** in **Systems and Control Engineering, IIT Bombay**
  (Relevant Courses: Mathematical Structures of Control)

Scholastic Achievements

- Secured a merit-based **Branch Change** to Department of **Aerospace Engineering** *(2020)*
- Ranked 85^{th} in **MHT-CET** 2018 among 1,30,000+ candidates *(2018)*

Publications

- Katla V., **Phanse S.** et al, "*An Approach to Star Tracker Design for Nano-Satellite Applications*" extended abstract presented in **National Conference on Small Satellite Technology and Applications**, Trivandrum, India, 2020

Technical Projects

IIT Bombay Student Satellite Program *(Jan 2020 - Present)*

A 70-member student team dedicated to the vision of making IITB a center of excellence in space technology

- ***Star Tracker based Attitude Determination System | PS4-OP***
  The mission aims to design a space-based experiment to be flown on ISRO's PSLV Stage-4 Orbital Platform
  - Worked on the **structural design** for the system and prepared **CAD** Models on **SolidWorks**
  - Performed **static structural**, **modal**, **harmonic response** and **random vibration** analysis in **ANSYS** (FEM) to simulate launch loads from PSLV and check for structural integrity of the system
  - Conceptualized and designed two different configurations for the system and finalized **one** after comparing perspectives of modelling, simulations, manufacturing methods, and integration practices
  - Worked on **ICD** (Interface Control Document) aiming to document list of components, **Interface Matrix**, details of interfaces, and **Integration Sequence** for better traceability of each interface

Scramjet Engine Analysis | Course Project *(Jul 2020 - Nov 2020)*

Guide: Prof. Krishnendu Sinha, Department of Aerospace Engineering

- Studied about compressible fluids, total enthalpy, normal and oblique shocks, **ram effect**, choked flows etc.
- Analysed and plotted relations between parameters like Thrust, Mach number, Ramp Angle of Nozzle, Area Ratio, Base Expansion Factor in Python considering Quasi 1D flow and adiabatic nozzle walls
- Analysed effect of Nozzle Geometry on thrust and **Single Ramp Expansion Nozzle** with different values of the **Base Expansion factor** to calculate maximum value of thrust

Energy Balance of Indian Industry | Research Project *(Jul 2020 - Present)*

Guide: Prof. Rangan Banerjee, Department of Energy Science and Engineering

- Analyzed the energy usage and process flows across various Industrial sectors
- Designed and implemented an algorithm on **Python** to filter out circular flows from Energy Usage data
- Implemented an interface matrix to create an Energy Balance of an **Integrated Steel Plant** (ISP), **Primary Aluminium Plant** (Bayer-Hall Process) and **Pulp & Paper Plant**

Technical Skills

Programming Languages	C++, Python, MATLAB, HTML
Simulation and CAD Softwares	SolidWorks, ANSYS and AutoCAD
Libraries	Numpy, Scipy, Matplotlib

Relevant Courses Undertaken

Aerospace Engineering	Mathematics	Inter-Disciplinary
Aircraft Propulsion*	Multivariate Calculus	Computer Programming in C++
Compressible Fluid Mechanics*	Differential Equations	Python Data Structures†
Aerospace Structural Mechanics*	Mathematical Structures for Control	Introduction to Electrical Engineering
Spaceflight Mechanics*	Introduction to Numerical Analysis*	Economics

** to be completed by Spring 2021 †completed from University of Michigan, Coursera*

Extra-Curricular Activities

- Volunteered for management of **International Conference on Advances on Energy Research 2019 (ICAER)** consisting of delegates from India & Abroad and wrote an article which was published in department newsletter *(2019)*
- Volunteered for **Student Solar Workshop - 2019**, a one-day training program for school students to learn the assembly of their own solar study lamps under **Solar Urja Lamp (SoULS)** project *(2019)*
- Devoted **80** hrs of social service as a part of **National Service Scheme** (NSS), IIT Bombay *(2019)*
- Worked as **Student Representative** of school and worked in a team of **8** to represent interests of **200+** students *(2013)*