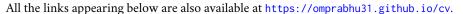
# Om Prabhu



nomprabhu31









### **Education**

2019 – 2024 | Indian Institute of Technology Bombay, India

8.53/10 GPA

BTech in Mechanical Engineering with MTech in Computer Integrated Manufacturing Minor in Systems & Control Engineering

2017 – 2019 **Sathaye College of Science, Commerce and Arts** 

89.23%

Higher Secondary, Maharashtra HSC

2017 Ajmera Global School

95.38%

Junior Secondary, Cambridge IGCSE

## **Work Experience**

### 2022 Research & Development Intern

Supervisor: Prajesh Pandey | R&D Engineer, SEDEMAC Mechatronics Pvt Ltd

Completed a project on stress analysis and selection criteria of rivets and threaded fasteners. The project involved carrying out a preliminary literature review of standard manufacturing guidelines & material selection criteria and behaviour of fastening joints under eccentric loading conditions. These concepts were later put to use to perform stress analysis of rivets in non-standard part geometries, the results of which were finally presented to the manufacturing team.

## **Research Projects**

### 2021 Humor Detection using BERT Sentence Embedding

Guide: Prof. Balamurugan Palaniappan | Industrial Engineering & Operations Research, IIT Bombay Read ColBERT: Using BERT Sentence Embedding for Humor Detection and analyed pre-existing models discussed in supporting literature. We initially replicated these models and verified their accuracy against extensive online datasets. We then modeled own version using convolutional layers instead of dense layers followed by testing & comparison against existing models.

The report for the same can be found here.

#### LU Decomposition: A Timing Study using OpenMP and CUDA

Guide: Prof. Shivasubramanian Gopalakrishnan | Mechanical Engineering, IIT Bombay

In this project, we studied three methods of LU decomposition of matrices - gaussian elimination, Doolittle algorithm and Crout's method. We then parallelized the three algorithms using OpenMP & CUDA and carried out a timing study varying the matrix order and number of CPU threads (for OpenMP implementation only).

The following links can be used to access the project report and presentation.

## **Reading Projects**

### 2021 Extended Kalman Filter on Lie Groups

Guide: Prof. Ravi Banavar | Systems & Control Engineering, IIT Bombay

Read *Intrinsic Extended Kalman Filter on Lie Groups* by *D. H. S. Maithripala, Ravi N. Banavar* and learnt about discretization of the Kalman Filter on lie groups and its application to rigid body motion. We also implemented a basic Kalman Filter algorithm for a toy problem to calculate the angular velocity for a simple pendulum without differentiating its angular displacement.

The code for the same can be found here.

## Cohesive Zone Model for Adhesion of Cylinders

Guide: Prof. Tanmay Bhandakkar | Mechanical Engineering, IIT Bombay

Read A cohesive zone model for the adhesion of cylinders by J. M. Baney, C. -Y. Hui and studied the mechanics of contact between long cylinders. We also studied the Gauss-Chebychev quadrature model for approximating numerical integrals and implemented it in MATLAB to compute the pressure in the contact region due to Dugdale cohesive traction as suggested in the above paper.

## **Course Projects**

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Guide: Prof. Avinash Bhardwaj | ME 308: Industrial Engineering and Operations Research

In this project, we discussed the problem of air traffic flow management on a high level and analyzed some pre-existing AFTM models in supporting literature. We also formulated our own mathematical model, loosely based on the one presented in *Disaggregation Method for an Aggregate Traffic Flow Model*, modifying the constraints as required to obtain an objective function, and finally implementing the model in AMPL.

The following links can be used to access the project report and presentation.

#### 2021 Manufacturing Process of a Clock

Guide: Prof. Deepak Marla | ME 338: Manufacturing Processes II

In this project, we analyzed the general manufacturing pipeline and carried out research regarding the design, materials & components, and cost analysis for a clock. We then studied in much greater detail the processes, machines & equipment involved in the manufacturing of a clock.

The following links can be used to access the project report and presentation.

## Teaching and Mentorship

#### 2020-2021

### Undergraduate Teaching Assistant

Entrusted with the responsibility of being a Teaching Assistant at IIT Bombay for the course ME 119: Engineering Graphics & Drawing under Prof. Neeraj Kumbhakarna. This involved

- conducting weekly live lab sessions for a batch of 30 students, guiding them through the process of CAD modeling in AutoCAD, and helping them clear conceptual doubts through personal interaction,
- collaborating with professors & fellow teaching assistants to ensure proper conduct of the course timely correction of semester examination answer sheets.

2019-2020

Completed 80 hours of community service by teaching underprivileged students in NGOs through personal interaction and creation of educational videos as a volunteer of National Service Scheme, IIT Bombay

### **Relevant Coursework**

Mechanical

Machine Design, Optimization, Industrial Engineering & Operations Research, Microprocessors & Automatic Controls, High Performance Scientific Computing, Manufacturing Processes, Heat Transfer & Applied Thermodynamics, Fluid Dynamics, Structure of Materials

**Control Systems** 

Analytical & Geometric Dynamics, Linear & Nonlinear Systems, Signals & Feedback Systems, Mathematical Structures for Control

Other

Operations Analysis, Introduction to Number Theory & Cryptography, Deep Learning: Theory & Practice, Introduction to Numerical Analysis, Linear Algebra

## **Academic Achievements**

Secured a change of branch (**top 11% students**) to Mechanical Engineering due to exemplary academic performance in freshman year.

Scored **99.63** percentile among 1,000,000 students in **JEE (Mains) 2019**. The JEE is an all India standardized test for admission to various highly coveted technical undergraduate programs.

Achieved All-India Rank1670 out of 169,000 students in JEE (Advanced) 2019.

Awarded the **World Topper** certificate for scoring **100**% in Extended Mathematics in the March 2017 session of Cambridge IGCSE examinations.

Secured a **Top 30** rank in the 2018 Mathematics Olympiad conducted by Mathematics Association, IIT Bombay.

## **Technical Skills**

Languages

Tools MATLAB, ANSYS Flue

MATLAB, ANSYS Fluent, Abaqus, AutoCAD, SOLIDWORKS, GitHub

### **Extracurricular**

### 2021 Junior C# Programmer Intern

Guide: Mohammed Imtiyaz | Workplay Inc.

Worked with a close-knit group of employees at a game development startup geared towards creating interactive experiences for corporate clients. The role involved programming in C#, modifying input systems & UI elements, code profiling, and managing project releases in GitHub.

#### Junior Programmer Pathway, Unity Learn

Specialized set of course modules offered by Unity Technologies

The Unity Junior Programmer Pathway validates skills and competencies to be a proficient programmer writing scripts in C# to create interactive experiences in the Unity editor. This involved

- studying and implementing object oriented programming principles in C# for instantiating game objects and modifying their components,
- utilizing the Unity API to create scene flows, implement data persistence across scenes and user sessions, and profile code to diagnose & debug exceptions.

The badge for the same can be found here.

Volunteered in the Travel & Transport department of the 2019 International Conference on Energy Advances and Research and handled responsibilities involving transport arrangements & formalities for esteemed research delegates from all over the world.