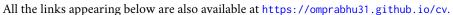
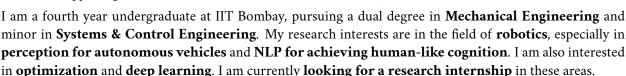
# Om Prabhu











## **Education**

2019 – 2024	Indian Institute of Technology Bombay, India	8.13/10 GPA
2017 – 2019	■ Sathaye College of Science, Commerce and Arts	89.23%
2017	Ajmera Global School	95.38%

## **Work Experience**

## 2022 Research & Development Intern

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

Completed a project involving an extensive literature review of standard manufacturing guidelines & material selection criteria for fastening joints and their behaviour under eccentric loading conditions, and carried out stress analysis of fastening joints in non-standard part geometries.

# **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 analyzed pre-existing models discussed in supporting literature. We initially replicated these models and verified their accuracy before modeling our own version using convolutional layers instead of dense layers.

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

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

Parallelized gaussian elimination, Doolittle algorithm and Crout's method for LU decomposition of a matrix using OpenMP & CUDA, and carried out a timing study by varying the matrix order and number of CPU threads (for the OpenMP implementation).

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

# **Course Projects**

#### 2022 Shoe-stopper: Step Counting using Piezoelectricity

Guide: Prof. Ramesh Singh | ME 423: Machine Design

Carried out material selection & stress analysis for designing a piezoelectric shoe. Apart from mechanical knowledge, the project also involved designing the circuit and programming an Arduino for counting steps based on voltage fluctuations from the piezoelectric sensors.

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

#### Operations Research in Air Traffic Flow Management Systems

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

Carried out a brief literature review on air traffic management systems and analyzed pre-existing models. We then proposed a binary integer program by generating a suitable objective function & formulating the required constraints, and finally implemented the model using AMPL.

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



# **Course Projects (continued)**

2021 Measuring Seismic Movement Using Accelerometers

Guide: Prof. Dipanshu Bansal | ME 226: Mechanical Measurements

Studied the working principles of a seismic accelerometer and used its characteristic equation to derive the system output. We also carried out error analysis for step and sinusoidal inputs, and used the resulting equations to calculate the natural frequency and its associated phase error.

The following link can be used to access the project report.

# **Reading Projects**

A. M. Bloch, P. S. Krishnaprasad, J. E. Marsden, G. Sánchez de Alvarez

Studied rigid bodies with external torques, energy-momentum algorithms such as the energy-Casimir method, correction of phase shifts and spin stabilization of dual spin satellites.

The presentation for the same can be found here.

2021 Intrinsic Extended Kalman Filter on Lie Groups

D. H. S. Maithripala, Ravi N. Banavar

Learnt about discretization of the Kalman Filter on lie groups and its application to rigid body motion. We also implemented the Kalman Filter in Python for estimating the angular velocity of a simple pendulum without explicit differentiation of its angular displacement.

The code for the same can be found here.

## **Relevant Coursework**

**Mechanical** Machine Design, Optimization, Industrial Engineering & Operations Research, Microprocessors & Automatic Controls, High Performance Scientific Computing

**Control Systems** 

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

# **Teaching and Mentorship**

2020-2021

Undergraduate Teaching Assistant

*ME 119: Engineering Graphics & Drawing* | *Prof. Neeraj Kumbhakarna* Mentored a batch of 30 students by solving conceptual doubts and conducting weekly lab sessions on AutoCAD, and evaluated answer scripts.

## **Academic Achievements**

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

Achieved All-India Rank **1670** out of 169,000 students in **JEE (Advanced) 2019**. The JEE is an all India standardized test for admission to various highly coveted technical undergraduate programs.

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

## **Technical Skills**

**Languages** | MT<sub>E</sub>X, Python, R, C#, C++, Sage

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