Akshay Bajarang Jawale | **193100024**
Mechanical Engineering | **M.Tech.**
Indian Institute of Technology, Bombay | **Gender: Male**
Specialization: Design Engineering | **DOB: 13-05-1995**

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2021	9.76
Graduation	Shivaji University	Walchand College of Engineering, Sangli	2017	9.45
Graduation Specialization: Mechanical				
Intermediate	Pune Divisional Board	Shri Sant Damaji Mahavidhyalaya, Mangalwedha	2013	88.33%
Matriculation	Pune Divisional Board	English School, Mangalwedha	2011	95.82%

SCHOLASTIC ACHIEVEMENTS

- Recipient of **SIEMENS** scholarship (Among Top 20 students among Maharashtra from all Government Engineering Colleges)
- **Silver medallis**t of B. Tech 2017 Batch
- Maharashtra talent search **(MTS) scholarship** in three consecutive year**(8th,9th,10th)**
- Secured **AIR 185** among **194496** in GATE 2018 (**99.91 Percentile**)
- Secured **Rank 292** in **MT-CET**
- Secured **Rank 2** in Departmental of Mechanical Engineering PG.

WORK EXPERIENCE

Hindustan Petroleum Corporation Limited (HPCL) | Operations Officer Grade 'A' (*Oct'18 -July'19)*

***Posting**: Mangalore LPG Import Facility, Mangalore.(Major **Marketing** Location)*

Roles and Responsibilities:

- Looking after supply chain of Bulk LPG receipt (Nondomestic i.e. international (Ship receipt) and Domestic (MRPL receipt) and dispatch operations handling **10,000 MT/day**.
- Looking after Tank Wagon Operations with Control room Team, **18%** (Over and above ILP planning) surplus **materialization of LPG distribution** through wagon per month. Hence reducing cost of transportation.
- Contribution in **reducing back pressure** in receipt vessels and **improving the mass flow** rate as a **part of Control Room Team**
- **Automation** of Ethyl Mercaptan Dosing into LPG with close collaboration of Maintenance Team

Eaton India Innovation Centre | Associate Engineer Electrical Sector *(Aug'17 -July'18)*

***Team:** Electrical Systems and Services Group, Power Distribution Division Team (Medium Voltage Switchgear)*

Key Projects: Design, Development and Testing of XIRIA 1250A- A Medium Voltage Switchgear

- Concept Generation, Selection, and validation through Simulation.
- Designing current path with **optimum copper cross section** with limiting electromagnetic forces in case of short circuit fault to keep a compact and **competitive footprint** in market against gas insulated switch gears
- In house capability building for prototype ordering, prototype assembling and making set up ready for testing.
- Performing **Temperature Rise test** on Medium Voltage switchgear according to **IEC standard 62271**
- Design and development of **2 position off load disconnect switch for 24 kV** medium voltage air insulated switchgear with **limiting torque** for manual operation and optimum contact force for less heat generation.

REASEACH PROJECTS

- **Phase Field Method for Simulation of Fracture using Variational Formulation (FEM) in FEniCS solver and Python (Scripting Language-open source)**

*M.Tech thesis | **Guide:** Prof.Tanmay.K.Bhandakkar, Prof.Salil Kulkarni, IIT Bombay* *(Aug'20- Present)*

Motivation	To **Reduce the Computational load** required for **Finite Element Simulation of Fracture/Crack**
Objective	To use Novel **Phase Field Method** for accurate Prediction of Crack propagation, Complete FEA solution
Work	1. Implementation of Variational formulation of **Phase field Method (PFM)** for fracture using **FEniCS** solver (Open source) and **python** as scripting language. 2. Working on **Finite element formulation** of **PFM** for Heterogenous domain and Benchmarking results of standard problems available in Literature. 3. Extension of phase-field method for crack propagation to **Dynamic crack propagation** simulation
Application	1. Phase Field Method can be used to **reduce the computational time** required for FEA, 2. **No Remeshing** is needed, can easily **tackle multiple cracks**, **material non-linearity**, other defects like cavities etc

Design, Development of sterling engine operated pump working on hybrid energy *(Jan'17 -may'17)*

***Course:** B.Tech Project | **Guide:** Prof. Dr. M.M Khot, Walchand College of Engineering, Sangli.*

- Aim of the Project is to develop **Renewable energy-based solution** for local irrigation Problem
- Design, Develop and manufacture **Sterling engine** which works on low grade energy like heat from biomass or solar energy collected using solar collectors.
- **Synchronization of Pumping system** with sterling engine to Deliver desired flowrate.

COURSE PROJECTS

Global Gouge Detection in Tool Path Planning for Freeform Surface machining *(July '19 -Nov'19)*

Course: *Computer Graphics and Product Modeling* | ***Guide:*** *Prof.S.S.Pande, IIT Bombay*

- Designed our **own Algorithm** identifying **potential gouge areas** of freeform surfaces prior to machining
- Developed **MATLAB program for global gouge detection** on Bezier surface, B-spline to be machined by ball end mill cutter.
- **MATLAB GUI** to facilitate the selection of an optimum cutting tool radius to eliminate the gouge phenomenon

Design optimization of Linear actuator using Genetic Algorithm. *(July '19 -Nov'19)*

Course: *Design Optimization* | ***Guide:*** *Prof. Salil K. Kulkarni, IIT Bombay*

- Optimization using **Monotonicity Analysis** and **Branch and Bound algorithms -Integer Programming**
- Design optimization validated using **Genetic Algorithms** using **MATLAB** as a tool.

Computer Aided Simulation of Spatial Chebyshev-Plantigrade Pantograph Mechanism *(July '19 -Nov'19)*

Course: *Computer Aided Simulation of Machines*| ***Guide:*** *Prof. Anirban Guha, IIT Bombay*

- Designed model of "**Spatial Chebyshev-Plantigrade Pantograph Mechanism**" and Performed kinematic simulation and static analysis on **ADAMS simulation software** and validated theoretically (**±5%**).
- Performed **sensitivity analysis** by varying dimensions and including joint clearance to understand effect on kinematics

Experimental Vibration Frequency Analysis Composite beam *(July '19 -Nov'19)*

Course: *Design Lab* | ***Guide:*** *Prof. V.Kartik, IIT Bombay*

- Determination of **Transverse frequency** and Deflection of Vibration of **Composite Beam** using 3D accelerometer.
- Benchmarking Results with theoretical calculations, **Numerical** Solution through **ANSYS** and Experimental Values.

MACHINE LEARNING PROJECTS

Real time Face Mask Detection for COVID-19 Surveillance using Convolution NN *(Summer 2020)*

- **TensorFlow, Keras** libraries are used for building Network Architecture
- Convolution Neural Network (CNN) is used for Image data for processing. **OpenCV** platform is used for providing real time input. Accuracy up to 98% is achieved using Deep CNN on training dataset and 92% accuracy on validation set.

INTERNSHIPS

SIEMENS (Switchgear Factory- Plastics) *(May'15-Jun'15)*

- Designed a **mechanical segregation** system for plastic products
- Learned to determine physical parameters of plastic components using Rheological Algorithm.

SIEMENS (Switchgear Factory-Metals) *(May'16-Jun'16)*

- Project on **safety guard on Haulick Roos (63T)**
- Implementation of **5's and Material Management.**

Selected for Internship at High Hind Vacuum Company Pvt. Ltd. scheduled at Spring Semester 2020-21

POSITION OF RESPONSIBILITIES

Student Companion (ISCP) | IIT, Bombay *(April'20-Present)*

- Worked in a team of **177+** people and helped Department Coordinator in conducting e-orientation for **144+ new** entrants. Trained by **Student Wellness Centre**, the Gender Cell and professionals from TISS towards better mentoring.
- Mentoring **9** PG freshmen by providing continuous help and support on academic and non-academic fronts.

Teaching Assistantship |Engineering Drawing (ED)| IIT, Bombay *(July'19-Dec'19)*

- Mentored **120+ UG students** to help build their skills in ED by guiding them in using **AutoCAD and SolidWorks**.
- Assisted in conducting lab sessions and provided support to conduct semester exams and **helped the academically weaker students** by solving their doubts and clearing key concepts related to the subject.

Assistant Aptitude Developer | MESA-MESC *(Jun'14-May'15)*

- Head of **Intellect event** at State level Technical fest VERTEX 2014 (**1500+** students) as Ass. Aptitude Developer
- Part of the **management team** of **NOVELS** an event organized for new entrants in mechanical department

ONLINE COURSES **ongoing*

Specialization1	An Introduction to Programming of **Internet of Things (IoT) Specialization*** | University of California, Irvine
Courses	1. Introduction to **IoT and Embedded** Systems 2. The **Arduino Platform** and **C programming** 3. Interfacing with Arduino 4. **Raspberry Pi** Platform & **Python** Programming for Raspberry Pi* 5. Interfacing with Raspberry Pi* 6. Programming **IoT Project***
FEA Course	A Hands-on Introduction **to Engineering Simulations (Ansys) | Cornell University**
Specialization2	**Deep Learning Specialization**| Instructor: Andrew NG
Courses	1. Neural Networks and Deep Learning 2. Improving Deep Neural Networks 3. Structuring Machine Learning Projects 4. **Convolution Neural Networks** 5. **Sequence Models** (**RNN,LSTM,GRUs**)

TECHNICAL SKILL SET

- **Modeling:** Creo, **SolidWorks,** AutoCAD
- **Simulation: ANSYS**, FEniCS, ADAMS
- **Programming: Python**, MATLAB, C(Basics)
- **Other:** Microsoft Excel, word, PowerPoint

KEY COURSES **ongoing*

- **Computational Structural Dynamics***
- **Design Optimisation**
- **Reliability Analysis**
- **Computer Graphics & Product Modelling**
- **Introduction to FEM**
- **Fracture Mechanics**

Scholastic achievements and extracurricular activities are not verified by the Placement Cell