



Amitkumar Virendar Dubey
Mechanical Engineering
Indian Institute of Technology, Bombay
Specialization: Manufacturing Engineering

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M.Tech.
Gender: Male
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Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2021	7.31
Graduation	Mumbai University	Pillai College of Engineering	2017	8.36
Graduation Specialization: Mechanical Engineering				
Intermediate	Maharashtra State Board	B.N.N College	2013	80.67%
Matriculation	Maharashtra State Board	S. J. P English Medium High School	2011	85.64%

SCHOLASTIC ACHIEVEMENTS

- Secured **99.42 percentile** among **1,67,000 candidates in GATE (Paper - ME)** conducted by IIT Madras. (Feb'19)
- Awarded Tuition Fee Waiver scholarship** worth 300k among 120 students in Bachelors. (Jul'13)

ACADEMIC PROJECTS & SEMINAR

M.Tech. Project | Laser Assisted Machining of Titanium alloy

(Jul'20- Ongoing)

Guide: Prof. Deepak Marla, Mechanical Engineering, IIT Bombay

Importance	<ul style="list-style-type: none"> Titanium is a durable metal with excellent properties and finds application in aircraft, spacecraft and missiles, however its machining is difficult.
Progress	<ul style="list-style-type: none"> Performed literature survey on conventional machining, laser assisted machining (LAM) of Titanium alloys, numerical methods and simulation of LAM. Identified and developed schematic of setups to be used for conducting experiments.
Future work	<ul style="list-style-type: none"> Develop a coupled computational model for laser heating and machining process. Identify optimum temperature for material removal by plastic deformation with excellent surface finish, minimum cutting force and tool wear. Optimize the laser heating and machining parameters followed by its experimental validation.

B.E. Project | Development of Feeder Mechanism for Cleft Lip and Cleft Palates.

(Jun'16-May'17)

Guide: Prof. Richa Agrawal, Mechanical Engineering, Pillai College of Engineering

Importance	<ul style="list-style-type: none"> A solution for Infants with Cleft Lip and Cleft Palate facing problems related to drinking milk and nasal regurgitation.
Work done	<ul style="list-style-type: none"> A new mechanism was proposed which would be positioned above the milk bottle cap, enabling the babies to develop suction pressure. The conventional bottle cap was redesigned to incorporate the mechanism. An appropriate mold design and a method (Polyjet 3D printing) to manufacture the mold was also suggested.

M.Tech. Seminar | Laser Assisted Machining of difficult-to-cut materials

(Jan'20- July'20)

Guide: Prof. Deepak Marla, Mechanical Engineering, IIT Bombay.

- Studied how machining of various **hard to cut materials** can be **improved** with the help of **laser assistance** to the conventional machining (**Hybrid machining**).
- Reviewed **50+ literature** on conventional machining of **hard materials** and Laser-assisted machining.

PROJECTS

Course Project | Internal positioning using Wi-Fi signal strength | Prof. Vinay Kulkarni, IITB (Jul'19- Nov'19)

- Used classification algorithms with **scikit-learn** library to locate the device using signal strength data from wi-fi routers.
- Imputed the missing values in dataset using **imputation** techniques such as Mean, Median, **KNN**, and Decision Tree.
- Compared performance of various imputation and classification models such as **LDA, QDA, SVM, Decision Tree**, and KNN.

Course Project | Analysis of 2D heat conduction on a plate | Prof. Shyamprasad Kharagadde, IITB (Jan'20- Jul'20)

- Discretized partial differential conservation equations by **Finite Difference** Method and **Finite Volume** Method.
- Distribution is obtained using Scilab code for uniform and non-uniform grids, with and without heat generation.
- Combination of **uniform** and **non-uniform grid** should be used for efficient problem-solving.

Ultrasonic Range Detector | Mechatronics Course Project

(May'16)

- Developed a Range detector using the Ultrasonic sensor and **Arduino Uno**, which works on **SONAR's** principle.
- **Accuracy** of around **30 cm** was obtained by placing obstacles in the field of **Ultrasonic sensor**.

Course Project | Temperature Profile evaluation of Laser irradiated Aluminium surface

(Jan'20- July'20)

Guide: Prof. Deepak Marla, Mechanical Engineering, IIT Bombay.

- Temperature profile is generated for **pulsed laser** irradiated Aluminium material by **Finite Difference Method** along the depth using Python code.
- Evaluated temperature profile over time along the depth of material and compared the result with **closed-form** solution.

Detecting COVID-19 with Chest X-Ray | Deep Learning | Coursera | Self Project

(Aug'20)

- Loaded the COVID-19 Radiography dataset with 3000 chest X-Ray scans applying data loader in Python using **Pytorch**.
- Implemented & trained the **RESNET-18** convolutional neural **network model** with **96% accuracy** for **image classification**.

CERTIFICATIONS

- **IBM Data Science** | 9 Courses | Coursera | **200+** Hours (Jan'20- Present)
 - Latest job-ready tools and skills learned, including open source tools and libraries, Python, databases, SQL, **data visualization**, data analysis, **statistical analysis**, predictive modeling, and **machine learning** algorithms.
- **Data Analysis** with Excel | DataCamp (May'20)
- Introduction to **Tableau** | DataCamp (May'20)
- Neural Networks and Deep Learning | Coursera | 20+ Hours (Apr'20)
- **Lean Six Sigma Green Belt** | KPMG (Oct'19)

KEY COURSES

- Engineering **Data Mining** and Applications
- Computational Tools for **Process Modelling**
- Laser Material Processing
- **Reliability Modelling** and Analysis for Engineering Systems
- Materials modelling using atomistic **first-principles** calculations
- **Deep Learning** - Theory and Practice (AU) (*ongoing*)

POSITIONS OF RESPONSIBILITY

Interview Coordinator | Institute Placement Team, IIT Bombay

(Dec'19)

- Coordinated with a team of **250+** members for interviews of **1600+** students
- Assisted in conducting Pre-placement Talks and Tests for 15+ firms.

Teaching Assistant | ME 119 | Eng. Drawing Lab | IIT Bombay

(Jan'20-Jun'20)

- **Mentored 120+** undergraduate students to help build their skills in Engineering Drawing by guiding them in using software like **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.

Student Companion | Institute Student Companion Program | IIT Bombay

(Jun'20-Present)

144 Student Companions were **selected** out of 356 applicants based on Interviews and Peer Review.

- **Trained by** the **Student Wellness Centre & Gender Cell** towards better mentoring.
- **Mentoring 7 students** throughout the year helping them on academic and non-academic fronts during the **Covid-19 pandemic**.

Teaching Assistant | Manufacturing Processes II | Prof. Deepak Marla, IIT Bombay

(Aug'20-Present)

- **Collaborated** in a team of 5 for conducting and evaluating quizzes and guiding students for **course project & term paper**.
- Assisted professor in conducting doubt sessions and performing various tasks in **Moodle** and **MS Teams**.

TECHNICAL SKILLS

- CAD Package : AutoCAD, SolidWorks
- Simulation Softwares : **openFOAM**, Ansys
- Statistical Analysis : **Tableau**, Excel
- Programming Languages : C, Python, MATLAB
- Libraries : NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn
- Additional Skills : **SQL**, MS-Word, MS-PowerPoint, **LaTex**

EXTRA CURRICULAR ACTIVITIES

- Secured **1st** position in **Half-step** Inter class tournament in school.
- Participated in Taluka level **Half Marathon** event organised by Samaj Kalyan Nyas in Bhiwandi.
- **Hobbies** - Cooking, Watching Sci-Fi documentaries and movies, Foosball, Playing online games.