Shubham Rajesh Patil

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2020 - Present	M.Tech- (Solid Mechanics and Design)	Indian Institute of Technology, Kanpur	9.50/10
2015-2019	B.Tech- (Mechanical Engineering)	Government College of Engineering, Amravati	8.83/10
2015	HSC(XII)	Guru Nanak Jr. College, Nagpur	92%
2013	SSC(X)	Guru Nanak High School, Nagpur	93.82%

Scholastic Achievements

- Was among the **top 1%** students in **Maharashtra State Board** during **HSC** who got the **INSPIRE** scholarship for higher education from Government of India.
- Secured **All Indian Rank 828** in **GATE 2020** among the 1.378 Lakh candidates.
- Among the **top students all over India** shortlisted for the interview of **Scientist/Engineer-C** in **Indian Space Research Organisation(ISRO)** in 2020.
- Among **the top students all over India** shortlisted for the interview of **Scientific Officer** in **Bhabha Atomic Research Centre(BARC)** in 2020.
- Got **Academic Excellence Award** at IIT Kanpur for academic year 2020.
- Scored a **10 SGPA** in 2^{nd} Semester during M-Tech.

Key Projects

- **M-Tech Thesis | Vibration analysis of a coupled rotor system with shaft misalignment and prediction of the amount of misalignment using Wavelet Transform** (*Jun'21- Ongoing*)
  Mentor: Prof. N. S. Vyas, Department of Mechanical Engineering, IIT Kanpur.
  - To do the complete **vibration analysis** of a **coupled rotor system** in **ANSYS**.
  - To build a **machine learning regression model** by extracting features from the CWT coefficients to **predict the amount of misalignment** present in the rotor system.
- **B-Tech Major Project | Optimisaton of Exhaust Gas Recirculation (EGR) Cooler for better performance**
  Mentor: Prof. H. S. Farkade, Department of Mechanical Engineering, GCOE Amravati. (*Jun'18- Apr'19*)
  - In this project 5 different designs based on different baffle orientations and diffuser shape of **EGR cooler**, which is basically a **Shell and Tube Heat Exchanger** were analysed using **ANSYS FLUENT.**
  - The most optimum design was found based on heat transfer and pressure drop trade-off.
  - The results obtained from ANSYS has been **experimentally validated**.
- **B-Tech Minor Project | Automatic Pneumatic Riveting Machine** (*Dec'17- Apr'18*)
  Mentor: Prof. R. S. Dalu, Department of Mechanical Engineering, GCOE Amravati.
  - The objective of this project was to **design and fabricate** an automatic pneumatic riveting machine to replace the conventional manually operated riveting process.
  - The process is made **automated** using an electromagnetic relay system operating the pneumatic piston driving the riveting gun. The programming of the complete relay and pneumatic system was done using **ARDUINO UNO Microcontroller**.

Self Projects

- **Machine Learning regression model to do car price prediction** (*Dec'20*)
  - A kaggle data set containing information about used cars was used to build a **machine learning regression** model to predict car price. Model was build using **Random Forest Regressor**.
  - **FLASK** API framework was used at the backend.
  - The frondend was built using **HTML**.
- **Deep Learning classification model to predict the presence of Malaria disease** (*May'21*)
  - A kaggle data set containing information in the form of cell images was used to build a **Deep Learning model** to predict the presence of Malaria disease. **Transfer Learning** was used to built the model.
  - **FLAS**K API framework was used at the backend.
  - The frondend was build using **HTML, Javascript and CSS.**

Course Projects

- **Stability analysis for chatter in turning and milling process using Graphical Method** (*Mar'21- Apr'21*)
  - **Course:** Machining Dynamics (ME 668A).
  - **Instructor:** Prof. M. Law, Department of Mechanical Engineering, IIT Kanpur.
- **Bending of an Elastic Beam on an Infinite Foundation** (*Jan'21- Feb'21*)
  - **Course:** Continuum Mechanics (ME 622A).

  - **Instructor:** Prof. B. L. Sharma, Department of Mechanical Engineering, IIT Kanpur.
- **Buckling behaviour of a growing elastic rod** (*Feb'21- Mar'21*)
  - **Course:** Continuum Mechanics (ME 622A).
  - **Instructor:** Prof. B. L. Sharma, Department of Mechanical Engineering, IIT Kanpur.
- **Steady accretion of an elastic body on a hard spherical surface and the notion of a four-dimensional reference space** (*Mar'21- Apr'21*)
  - **Course:** Continuum Mechanics (ME 622A).
  - **Instructor:** Prof. B. L. Sharma, Department of Mechanical Engineering, IIT Kanpur.

Industrial Exposure

- One Month **internship** at **Sebros Engineering Solutions Pvt. Ltd.**, MIDC Higna, Nagpur, MH. (*Dec'17*)
- **Industrial visit** to **Sebros Steel Pvt. Ltd.**, Borgaon, Chindwara, MP. (*Sept'18*)

Technical Skills

- **Modelling and Analysis:** CAD Softwares(CREO Parametric, SOLIDWORKS and CATIA- Solid Modelling, Surfacing, Drafting and Reverse Engineering), ANSYS(Static structural, Fluent, cfx, Modal, Transient and Harmonic Analysis), ABAQUS(Structural Analysis)
- **Programming Languages:** C++, MATLAB, Python, MAPLE, CNC programming
- **Software Utilities:** MS-Office, LaTeX, SQL

Positions of Responsibility

- **Teaching Assistant** under **Prof. N. S. Vyas** at IIT Kanpur. (*Aug'21-Ongoing*)

Relevant Courses

A grade - [*]

Strength of Materials *	Introduction to Continuum Mechanics *
Fluid Mechanics *	Finite Element Methods(FEM) in Engineering Mechanics *
Thermodynamics *	Applied Dynamics and Vibrations
Heat Transfer	Non-Linear Vibrations *
Theory of Machines *	Machine Design *
Computer Aider Design(CAD) *	Computer Aided Manufacturing(CAM) *

Extra-Curricular Activities

- Was a part of **National Cadet Corps(NCC)** during school days and **National Service Scheme(NSS)** during graduation.
- Played **football**, **handball** and **volleyball** for college team during graduation.
- Participated in various events including **Robotics, Paper presentation, CAD strife,** etc during **Prajwalan'16/'17/'18 Techfest**.
- Volunteered in various **cultural events** at **Zenith'17/'18**.