**Bhooshan Gavhare | ME20S019**
**Indian Institute of Technology Madras**

Placement registration number: PR/55/ME/23/019

## EDUCATION AND SCHOLASTIC ACHIEVEMENTS

| Program | Institution | CGPA / Percentage | Year of completion |
|---|---|---|---|
| M.S. (Mechanical Engineering) | Indian Institute of Technology Madras | 8.76/10 | 2023 |
| B. Tech. (Mechanical Engineering) | Jaipur National University, Jaipur | 78.45% | 2018 |
| XII (CBSE) | Kendriya Vidyalaya Barkuhi (M.P.) | 85.4% | 2014 |
| X (CBSE) | Kendriya Vidyalaya Barkuhi (M.P.) | 10/10 | 2012 |

- Successfully qualified **GATE** with a rank in the 97th percentile. *2020*
- Successfully qualified **GATE** with a rank in the 97th percentile. *2019*
- Awarded with **CERTIFICATE OF MERIT** in secondary school examination *2012*

## KEY PROJECTS

**Development of active chassis control for vehicle roll control and yaw stability**

**(M.S. project)**

*(Aug'21-present)*

- Developed a **hybrid control algorithm** (**SMC** + **LQR**) based on a nonlinear **vehicle dynamics** roll model for dual electric stabilizer bars to suppress vehicle roll angle produced in cornering maneuvers simulated in **CARSIM** and **MATLAB/SIMULINK** environment.
- Electric stabilizer bar is designed considering **actuator dynamics**, to optimize the design **structural** and **dynamical analysis** is done with **FEA** and **MBD** solvers.
- Integration with active co-axial steering for **chassis** control and **HiL simulations** to be conducted.

**Comparative Analysis: Mild Steel(MS) vs Stainless steel coated MS**

**(B.Tech project)**

*(Jan'18-May'18)*

- Conducted a comparative study between mild steel specimen and stainless steel coated mild steel specimen.
- Stainless steel was melted using AC **electric arc welding** machine and deposited which acts a coating over mild steel specimen.
- Material properties were evaluated like surface hardness, corrosion resistance, impact testing like, **Brinell Hardness**, **Vickers's Hardness**, **Izod Test**.

**Design of the gearbox of a Mercedes-Benz Actros heavy duty truck**

**(Transmissions Course Project)**

*(Jan'22-May'22)*

- Designed a 3-stage **gearbox** given the technical specifications of the engine and the required gear ratios.
- **Kinematic Diagrams** and empirical relations are used to find the module & number of teeth of each gear. Bearing & Lubricant selection are also done.
- **FEM** in **ANSYS** is done to validate the design by calculating total deformation and stress distribution on critical surfaces.

**Comprehensive report on automotive standard type AIS -133**

**(Automotive Systems Course Project)**

*(Jul'21-Nov'21)*

- Conducted a comprehensive study on automotive industry standard **(AIS-133).**
- **Electronic Stability Control (ESC)** Systems for vehicles of category M1 and N1 were studied.
- General requirements, performance requirements, test conditions and test procedures were evaluated.

## INDUSTRIAL INTERNSHIPS

**Raymond Limited, Sausar**

*(Mar'18-April'18)*

- Attended a 45-day training program where the workings of the various subdivisions of the textile division were demonstrated and power unit of mechanical engineering department was allotted for further training.
- Learnt about the operations of Back Pressure (bleeding) Turbines and Thermo packs for main power generation to run the textile division and auxiliary power unit consisting of diesel electric generators were also demonstrated.

**North Western Railway, Jaipur**

*(Jun'17-July'17)*

- Undergone practical training for 45 days at Divisional Training School, Coach Care Complex, Jaipur. Demonstration of maintenance and overhaul of coaches at different substations of the depot.
- Learnt about the Tribological aspects and maintenance procedures for rakes and bogies specially the air brakes, as it is the most safety critical component of the train.

## COURSE WORK

| | | |
|---|---|---|
| • Mechatronic Systems | • Fundamentals of Automotive Systems | • Design of Mechanical Transmission systems |
| • Introduction to Autonomous Vehicles | • Multi Body Dynamics & Applications | • Optimization Methods for Mechanical Design |

## TECHNICAL SKILLS

- CAE: Solid Works, Fusion360, ANSYS , ADAMS, CARSIM
- Programming Language: Python
- Numerical Computing: MATLAB, SIMULINK, MATHEMATICA
- Documentation: LaTeX, Microsoft Office

## POSITIONS OF RESPONSIBILITY

- **Teaching Assistant** for **Mechatronic System course**, Mechanical Engineering Department, IIT Madras *2022*
- **Teaching Assistant** for ME5381- Basic Manufacturing Lab, Mechanical Engineering Department, IIT Madras *2022*