SOURAV PATTNAIK

Vehicle Dynamics Engineer · Ride, Handling & Steering

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Vehicle dynamics engineer who developed ride, handling and steering across 12 ICE and EV programs at Tata Motors, from vehicle targets to proving-ground sign-off. Designed a torque vectoring controller at Polestar and holds an MSc in Automotive Systems from HAN University, the Netherlands.

EXPERIENCE

Senior Manager, Driving Dynamics — Oct 2025 – present
Post Graduate Engineering Trainee, Driving Dynamics — Oct 2024 – Oct 2025
Tata Motors Passenger Vehicles, Pune

- Set vehicle-level ride, handling and steering targets and cascaded them to chassis systems on 12 ICE and EV programs, 6 of them launched.
- Tuned conventional, frequency-dependent and semi-active dampers, and built a semi-active damper proof of concept.
- Ran ride, steady-state cornering, transient handling and K&C tests and correlated the results with subjective ratings.
- Developed a ride evaluation method and metrics that track what drivers feel more closely.
- Delivered vehicle-level tyre development and EPAS calibration, including drive modes.
- Authored the annual chassis futuring report that shaped ride, handling and steering technology choices.
- Worked with 6+ suppliers and with CAE, design, production and testing teams on part readiness.

Vehicle Motion Thesis Worker — Mar – Oct 2023
Polestar, Gothenburg, Sweden

- Designed a hierarchical torque vectoring controller for a dual-motor front axle: reference yaw generator, yaw moment control, and side-slip and longitudinal-slip control.
- Compared PID and integral sliding mode control in CarMaker4Simulink on self-defined lateral dynamics KPIs; PID performed better and the slip controllers held stability in every manoeuvre.
- Extended the study to quad-motor torque vectoring, which showed further gains.

Powertrain Engineer → Technical Director — 2017 – 2020
Camber Racing, Formula Student team of SRM IST, Chennai

- Sole designer of the cooling system across three cars, naturally aspirated and turbocharged: radiator sized with LMTD and NTU, fan and shroud designed from flow studies and CFD.
- As Technical Director, directed design across powertrain, vehicle dynamics and electrical. P2 (2020) and P3 (2019) in Engineering Design at Formula Bharat.

SELECTED PROJECTS

- **Non-linear handling model** of a modular research vehicle: double-track, MF-Tyre, load transfer; validated against V-Box data on ISO manoeuvres.
- **Li-ion cell thermal model:** black-box and white-box core-temperature estimation, validated on measured charge and discharge cycles.
- **Level control:** limit switch, PID, lag-lead, cascaded and MPC compared on hardware; MPC had the lowest error.

EDUCATION

MSc Automotive Systems — 2021 – 2023
HAN University of Applied Sciences, Arnhem · HAN Excellence Award & Holland Scholarship

BTech Mechanical Engineering — 2016 – 2020
SRM IST, Chennai · Industrial training at Volvo Eicher Commercial Vehicles and Sandhar Automotive

SKILLS

Vehicle dynamics	Ride & handling, damper tuning, tyres, EPAS, K&C
Test & measure	Proving ground, DAQ / V-Box, DOE, subjective rating
Model & control	MATLAB, Simulink, IPG CarMaker, MF-Tyre, MPC / PID
Code & CAD	Python, C++, CATIA V5, SolidWorks, ANSYS

AWARDS

2021	HAN Excellence Award & Holland Scholarship
2020	P2, Engineering Design, Formula Bharat
2019	P3, Engineering Design, Formula Bharat