

# Abhishek Kolekar

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📍 Göteborg, Sweden

🌐 /kolekar-abhishek

📎 Transcript

🚗 Have IDP, B-type ongoing



## 📄 Professional Summary

Passionate engineer with a strong interest in the automotive industry, with multifaceted knowledge in areas of powertrain systems and testing. I hold a Master of Science in Mobility Engineering, focusing on powertrains, vehicle dynamics and control. Through various roles during my Formula Student tenure and projects, I have developed skills and knowledge with a data-driven approach to engineering, with a focus on sustainability and performance. I am eager to bring my expertise and enthusiasm to your company, where I can grow professionally while contributing to shaping the future of mobility.

## 🎓 Education

### Chalmers University of Technology

08/2022 – 08/2024 | Göteborg, Sweden

*Master of Science (MSc.) in Mobility Engineering*

Coursework: Powertrains, Control Systems, Vehicle Dynamics

### PCT's A. P. Shah Institute of Technology

08/2018 – 11/2022 | Thane, India

*Bachelor of Engineering (BE) in Mechanical Engineering*

## 📁 Professional Experience

### Master's Thesis

01/2024 – 06/2024

*Volvo Car Corporation*

#### Title: Tire Warmup Relation to Rolling Resistance

- Designed an innovative **MATLAB** model for calculating **transient rolling resistance using tire temperature** as a model input, enhancing the precision of **energy efficiency assessments** and adding insights to the tire selection process.
- Verified and validated (V&V)** an existing Thermal-Schuring model for rolling resistance through **statistical analysis of experimental data**, achieving model accuracy within 5% of measured values.
- Developed **test methodologies** and **conducted rolling resistance tests** on steel drum and dynamometer rigs over a 4-month period; employed **INCA, MDA, and MATLAB** for comprehensive data analysis.
- Proactively identified opportunities to **improve vehicle efficiency from a rolling resistance perspective**, with modeled rolling energy loss deviating between 3% and 6% from measured values.

### Automotive Engineering Project

08/2023 – 01/2024

*Volvo Car Corporation*

#### Title: Method to Improve a Wheel Suspension Design using VI-CarRealTime and optimization techniques

- Automated vehicle simulations** in VI-CarRealTime by integrating it with a Reinforcement Learning Agent via the MATLAB API.
- Utilized **Reinforcement Learning** to **optimize polynomial curve coefficients of wheel motion splines**, consistently achieving specified target ranges.

## 📁 Projects

### Driver Behaviour Analysis & Active Safety Systems in Critical Rear-End Situations

08/2023 – 12/2023

*Active Safety - Course Project*

- Collaborated in a team to design, verify and validate **active safety ADAS** such as **Forward Collision Warning (FCW)** and **Automatic Emergency Braking (AEB)** systems.
- Analyzed **driver behaviour from SAFER crash database** and integrated insights into the safety systems.

### Drivetrain Anomaly Troubleshooting and HIL Integration of ECU using CAN Protocol for Formula Student Vehicle

06/2023 – 08/2023

*Summer Project at Chalmers REVERE*

- Conducted **Hardware-in-the-Loop (HIL)** testing for motor control.

- Assisted in developing a Python script to **establish communication between the motor controller and the ECU** using the **CAN** protocol.

## Virtual Vehicle Control Design & SIL Testing using IPG CarMaker

03/2023 – 05/2023

### Vehicle Motion & Control - Course Project

- Designed a **normal force estimator** and implemented a **low-normal force warning function**.
- Modeled **AD/ADAS features** such as **cruise control** and **curve speed control**; executed function **verification and validation (V&V)** and **performed Software-in-the-Loop (SIL) testing using IPG CarMaker**.
- Optimized suspension tuning parameters and compliances, achieving the desired handling characteristics.

## Microservice Development with CI/CD Integration

03/2023 – 04/2023

### Connected Fleets - Course Project

- Formulated a **simple microservice using Docker containers**.
- Established a **CI/CD pipeline** using GitLab to automate the build, test, and deployment process for the microservice with **cross-compilation across different architectures** (linux/amd64 and linux/arm64).

## Other Notable Relevant Projects

- Development of a Lap-Time Simulation and Energy Consumption Estimation for Electric Vehicles [↗](#)
- Development of Traction Control in Automobiles.
- CFD Analysis, Wind Tunnel Testing, and Shape Optimization of a Bus Model.

## Positions of Responsibility

### Modified Auto Club Racing - Formula Student

02/2021 – 11/2021

#### Team Manager

- As Team Manager, led the team to a top 10 finish in Formula Bharat Virtuals 2021, showcasing **exceptional teamwork and engineering prowess**. The vehicle design **emphasized safety and sustainability**, featuring an optimized drivetrain for reduced energy consumption.
- **Prepared design critical documents** like FMEA, Design Verification & Validation Plan, Design Spec Sheet, Production Planning Gantt Chart, and Cost Report of the vehicle.

### Modified Auto Club Racing - Formula Student

02/2021 – 11/2021

#### Powertrain Department Lead

- Led a team in designing a high-performance Formula Student vehicle's drivetrain, achieving a **0-100 km/hr theoretical time under 3.5 seconds** and a **top speed of 115 km/hr**.
- Optimized drivetrain parameters for performance and energy efficiency using **MATLAB improving efficiency by 12% from baseline spec**.
- Designed parts and assemblies of the drivetrain subsystem in **SOLIDWORKS & CATIA V5**, and carried out structural FEM analysis using **ANSYS Mechanical**.

## Certificates

- Certified SOLIDWORKS Associate - Mechanical Design [↗](#)
- Certified SOLIDWORKS Associate - Additive Manufacturing [↗](#)
- ENGR2000X: A Hands-on Introduction to Engineering Simulations - CornellIX - EdX [↗](#)

## Skillset

- |                              |                                 |
|------------------------------|---------------------------------|
| • MATLAB/Simulink            | • IPG CarMaker                  |
| • Python                     | • MDA & INCA                    |
| • CAN (using Kvaser CanKing) | • Test Scripting and Deployment |
| • Statistical Data Analysis  | • OBD Tools and Codes           |

## Languages

English – Native/Bilingual

Swedish – Conversational

## Additional Information

References Available Upon Request

Expert Driver on Various Vehicle Makes and Models.