Abhishek Kolekar

✉ abhishek_kolekar@outlook.com   📞 +46-727777635

📍 Framgången 220, Göteborg, 41280   in /kolekar-abhishek

🔗 Transcript   🚗 Have IDP, B-type ongoing

📇 Profile

Passionate engineer with a strong interest in the automotive industry, with multifaceted knowledge in areas of powertrain systems and vehicle dynamics. I hold a Master of Science in Mobility Engineering, focusing on vehicle dynamics, safety, and control. Through various roles during my Formula Student tenure and projects, I have developed skills and knowledge geared toward vehicle propulsion and energy storage systems, balancing performance and efficiency. Motivated and detail-oriented, I strive to build sustainable and impactful technologies. 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
- *Focus on **Vehicle Dynamics, Safety & Control***

PCT's A. P. Shah Institute of Technology   08/2018 – 11/2022 | Thane, India
Bachelor of Engineering (BE) in Mechanical Engineering

📂 Projects

Tire Warmup Relation to Rolling Resistance   01/2024 – 06/2024
Master's Thesis with Volvo Car Corporation
- 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.
- Improved upon and **verified and validated** 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.
- Acquired knowledge of range testing certification in accordance with the **SAE J1634** standard.

Method to Improve a Wheel Suspension Design using   08/2023 – 01/2024
VI-CarRealTime and optimization techniques
Automotive Engineering Project with Volvo Car Corporation
- **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.

Drivetrain Anomaly Troubleshooting and HIL Integration of ECU   06/2023 – 08/2023
using CAN Protocol for Formula Student Vehicle
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
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
- **Managed and supervised a team of 32 people**, devising solutions for cohesive working and problem solving, achieving the 7th overall rank in the Formula Bharat Virtuals 2021 competition.
- **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 and OptimumLap,** 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 - CornellX - EdX ⊘

◌ Software Skills

MATLAB/Simulink — Expert   **Python** — Expert

Microsoft Office Suite — Expert   **C++** — Proficient

Git — Proficient   **MDA & INCA** — Proficient

CAN (using Kvaser CanKing) — Competent   **CI/CD (Gitlab, Docker, Jenkins)** — Competent

⊕ Languages

English — Native/Bilingual   **Swedish** — Conversational

⤳ References

References Available Upon Request