Dheepakram Laxmimala Barathwaaj

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Summary

Graduate Automotive Engineer with experience in the Automotive Industry as a Vehicle Dynamics Engineer and demonstrated leadership skills, specializing in vehicle performance, testing, and controls. Actively seeking full-time opportunity.

Education

- **MS in Automotive Engineering, Clemson University** - GPA: 3.72 / 4 *Exp. Aug 2021*
- **B. Tech in Mechanical Engineering, Amrita University** - GPA: 9.02 / 10 – Distinction *May 2017*

Skills

- **Tools:** MATLAB/Simulink, nCode, CarSim, Solidworks, CATIA, AutoCAD, NX CAD, Beta CAE-ANSA, MS Office, Arduino, Siemens LMS TestLab, SOMAT eDAQ, SOMAT TCE, 3D Printing, CANalyzer/ CAN Bus, Labview, C++. **Certifications:** MSC ADAMS, Python

Experience

Systems Test and Validation Engineer Intern – Bobcat, ND, USA *Feb 2021 – Aug 2021*

- Developed detailed systems requirements and testing details for HIL and On-machine testing to verify product functionality
- Developed and executed NI TestStand test cases for sub-system developed by suppliers
- Tested and Validated the developed controllers for DTC's, Performed root-cause analysis for the failed tests
- Designed and automated HIL setup environment using NI TestStand/VeriStand, CAN/J1939, and C# to reduce testing time
- Performed on-machine validation testing to identify issues on the ADAS and other functionalities

Vehicle Dynamics Engineer - Fiat Chrysler Automobiles, India *Mar 2018 – Jun 2019*

- Developed full vehicle models on ADAMS to perform ride and handling analysis for upfront design validation
- Extracted Suspension component loads and correlated virtual analysis results with the physical test data after post-processing
- Developed 8 DOF parametric vehicle model to optimize the ride parameters of the suspension system
- Led an R&D project to develop virtual vehicle testing tracks on ADAMS for upfront design validation in the development stage
- Performed ride analysis to characterize ride quality of the vehicle and improved the primary ride quality by 20%

Vehicle Dynamics Team Lead – SAE BAJA & Vice–Captain – SAE Efficycle - Amrita Racing *Jan 2014 – Feb 2016*

- Designed and fabricated an ATV and a Human-powered electric hybrid vehicle
- Designed the suspension and conducted design review at every stage to optimize the design
- Performed Kinematic & Compliance analysis using ADAMS Car and tuned the suspension & steering hardpoints
- Organized and directed a team of 10 people to secure All India 4th out of 200 teams and Won "Best Business Plan Award"

Multi Body Dynamics Internship - Renault Nissan Technology and Business Centre India Pvt. Ltd. *Nov 2014 - Dec – 2014*

- Built virtual vehicle models in ADAMS to characterize the ride quality and performed root-cause analysis (DFMEA) of ABS
- Conducted four post shaker testing on ADAMS and carried out data analysis for virtual and physical test result correlation

Academic Projects

Fault Diagnosis of a Vehicle Chassis System with Steer By Wire– Clemson University, USA *Nov - Dec 2020*

- Developed a 3DOF non-linear chassis model with a steer-by-wire system & Implemented observer-based fault detection algorithm
- Detected and isolated sensor fault and parameter fault from the disturbance and generated unique error code signature

On Road Vehicle Lateral Handling Testing on Volvo S60 – Clemson University, USA *Oct 2020*

- Instrumented the vehicle with sensors to evaluate the performance and SOMAT eDAQ system was setup
- Acquired data for DLC, Slalom & CRC maneuvers and evaluated the steady-state and transient vehicle handling characteristics

Reverse Engineering of CAN Bus Data Transmission using Vector CANalyzer in Volvo S60 – Clemson University, USA *Oct 2020*

- Plugged in CAN Bus to the OBD port and tested the vehicle on a drive cycle
- Determined Generic messages like speed, pedal position etc. and OEM specific messages like Motor current, voltage, SOC etc.

Range estimation and Electric Drive Assessment on Toyota RAV4 EV – Clemson University, USA *Sep 2020.*

- Drove the vehicle over SC03 and NYCC drive cycle to determine the SOC, range, efficiency, regen power, tip in delay etc.
- Conducted acceleration performance test under hot & cold condition to find the overall performance & performance degradation

MPC based Torque Vectoring System for Vehicle Stability Control (ADAS) – Clemson University, USA *Mar 2020 – May 2020*

- Built a lateral handling vehicle model in Simulink to implement ESC with torque vectoring
- Implemented a PID & MPC controller to execute the torque vectoring strategy through CarSim
- Evaluated the lateral handling performance of the vehicle by running through double lane change and sine with dwell maneuvers

Control of a Scaled-down Autonomous Vehicle – Clemson University, USA *Mar 2020 – May 2020*

- Performed calibration of camera and ultrasonic sensor for autonomous lane keeping and adaptive cruise control
- Implemented road sign detection using Deep learning and controlled the steering using Stanley control algorithm

Design of an Electro-Mechanical Brake-By-Wire System and Integration with ABS *Mar 2020 – May 2020*

- Developed an Electro-mechanical Brake-by-wire system in Simulink and implemented a cascaded PID control architecture
- Analyzed the developed system for different brake input scenarios and simulated using CarSim
- Validated the system by integrating with quarter car ABS module and achieved a reaction time of 0.1 seconds