**HARSH PATEL**

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**SUMMARY**

* Currently working at Ford Motor Company with 2+ Years of work experience as an Embedded Systems Engineer in Feature Development for Powertrain Control Module.
* 1 Year of work experience at Neptune Pvt. Ltd, as a Model Based Systems Engineer for Electrical Harness Systems.
* 2 years of Powertrain experience in Formula SAE (Participated in SFJ 2014 and FDI 2015)
* Powertrain experience in developing Energy Consumption Simulators for EV, IC and HEV vehicles using MATLAB at University of Michigan as a Project for Electrified HEV subject.
* Received an Award from FORD for Quality releases which includes preparing Models and Artifacts for Suppliers.

**EDUCATION**

MS in **Automotive Systems Engineering**, University of Michigan- Dearborn, USA Aug 2017- Dec 2018

BTech in Mechanical Engineering, Vellore Institute of Technology, India May 2012- May 2016

**SKILLS**

Matlab, Simulink, Visio, CANalyzer, CANoe, GitHub, JIRA, Python, ISO 26262, DFMEA, DVP&R, Oscilloscope, Powertrain

**PROFESSIONAL EXPERIENCE**

**Embedded Systems Engineer**, Ford Motor Company, Michigan, USA. Feb 2019- Current

* Feature implementation by developing Control Strategy based on requirements provided by Feature Owner.
* Developing and releasing behaviour models using MATLAB/Simulink for Powertrain module Features.
* Performing route cause analysis and fixing the issues for ‘Body Features’ and Powertrain received on HIL, MIL, SIL, Bread Board and Vehicle using CANoe and CANalyzer.
* Meet functional Safety Standards- ASIL, QM, during new Feature Development,
* Logging issues in JIRA if caught after Development and take it to CCB for requirement Change approval.
* Updating Vehicle Networks which includes CAN signal Translation to meet CMDB requirements.

**Model Based Systems Engineer**, Neptune Private Limited, India Jan 2016- Dec 2016

* Created MATLAB Simulink Models for Unit Testing and Verification Process to achieve 100% MCDC coverage.
* Performed route cause analysis and fixed the issues caused in Electrical Wire Harness System.
* Designed Harnesses for Electrical Distribution System to bring energy Safely to the outlet.
* Analyzed the electrical needs for the project by calculating current requirements and incorporate the data into harness design.

**FORMULA SAE**

Formula Student Japan 2014 and Student Formula India 2015 Sept 2013-Dec 2015

* Designed the final drive ratio to make the motors operate in maximum efficiency region to improve overall range.
* Troubleshooting the issues with motors, motor controllers and wiring harness for High and Low voltage circuits.
* Major contribution in Power train Engineering forming and reviewing the entire cost and design report for statics event.

**PROJECTS**

**Paper review on Real Time control Strategy to maximize HEV powertrain efficiency** Jan 2018-May 2018

* Efficiency maximizing and charge sustaining map control was developed to achieve maximum fuel economy.
* 15% fuel reduction compared to TCS conventional strategy and 13% fuel reduction compared to PFCS conventional strategy.

**Static and Dynamic Shift simulation for six speed Automatic transmission using MATLAB** Jan 2018-May 2018

* Developing simulation model for fixed gear operations and dynamic shift processes of a 6-speed FWD Automatic Transmission in MATLAB – Simulink/ Labview using general state variable equations in matrix form.
* Obtaining the transmission output torque and will be performing clutch torque profile optimization for shift quality.

**Energy consumption simulator for Series Hybrid Electronic Vehicle using MATLAB** Jan 2018-May 2018

* Created control strategy to minimize fuel consumption and Battery State of Charge balance.
* Merged results of BEV and IC Engine and perfect battery and engine size was obtained which satisfied the control Strategy.

**Energy consumption simulator for Battery Electric Vehicle using MATLAB** Sept 2017-Feb 2018

* Computed wheel demand as a function of time which includes speed, torque and power at the wheel.
* Obtained motor and battery size and created motor efficiency map. Computed torque losses, power losses and efficiency.
* Completed Sizing of all components to be able to drive the EPA City, EPA highway, US06 and WLTP operating cycles.

**Energy consumption simulator for Internal Combustion Engine Vehicle using MATLAB** Jan 2018-Mar 2018

* Optimum operating line was obtained to achieve minimum fuel consumption and best performance output.
* Sizing of engine, generator and motor was done using wheel demand and above mentioned operating cycles.