SAUMIL JAIN

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SUMMARY STATEMENT

Proficient in high voltage traction systems, energy storage systems, hybrid powertrains and IC engines. Strong technical background in powertrain controls and its software implementation.

EDUCATION

Clemson University – Greenville, SC — Aug 2024
Master of Science - Automotive Engineering — *GPA: 3.95/4*

Savitribai Phule Pune University - Pune, India — April 2020
Bachelor of Engineering – *Mechanical, First class with distinction* — *GPA: 8.73/10*

WORK EXPERIENCE

Deep Orange 15, Clemson University — Jan 2023 - Present
Lead Powertrain & Controls Intern — *Greenville, SC*

- Lead the integration of a series hybrid powertrain based on the systems engineering V-model.
- Design model-based controls using Matlab C code generation on a rapid prototyping control unit.
- Create an energy management controller that minimizes energy consumption and cell temperature.
- Define fault handling using hardware redundancies in control systems for prototype testing safety.
- Validate control algorithms on test bench by analyzing and simulating signals on CAN.
- Create models for battery, motor, engine, and their thermals using Simscape to select components.

VIPR-GS, Clemson University — Aug 2023 - Present
Research Assistant — *Greenville, SC*

- Calibrate the vehicle motion PI controller to enable precise low speed maneuvers.
- Design and test a brake by wire PI controller with gain scheduling to meet rise time requirements.

Mahle Engineering — Dec 2021 - Jul 2022
Associate Engineer - Design — *Pune, India*

- Designed plastic oil mist separators & cylinder head covers for OEMs on NX & CATIA V5.

Varroc Engineering — Dec 2020 - Dec 2021
Graduate Engineer Trainee — *Pune, India*

- Developed automotive lighting products in accordance with regulatory & customer requirements.

Formula SAE - University of Pune — *Nov 2016- Feb 2020*
Powertrain Engineer — *Pune, India*

- Designed and tested a 100V, 6kWh battery pack made up of 18650 lithium-ion cells.
- Used Orion BMS to monitor cell temperatures, open circuit voltage and estimate remaining energy.

PROJECTS

Field- Oriented Control of PMSM using a STM32 microcontroller [C/C++] — May 2024

- Developing a FOC algorithm on C microcontroller making use of ADC and timers for PWM.
- Using a hall effect sensor to tune a state observer for estimating the electrical angle.

Hardware in the loop testing of an Electric motor [dSPACE] — Dec 2023

- Built a test bench to test a Curtis AC-9 Induction motor using dSPACE RTI with a MicroAutoBox.
- Used dSPACE control desk to create a dashboard to see the torque, speed and current of the motor.

Non-Linear Model Predictive Controller for e-Turbo [MATLAB/Simulink] — Dec 2023

- Created a state-space model of an electrically assisted turbocharger that recovers wasted heat for
- Cost function penalizes torque deviation from demand and fuel consumption, with turbo motor

SKILLS

Control: Matlab/Simulink/Stateflow/Simscape, C/C++, New Eagle RaptorDev/Cal, dSPACE, Kvaser Canking, STM32
Computer Aided Engineering & Design: Siemens NX, CATIA V5, Solidworks, Ansys workbench, GTSuite
Management: Git, SVN, Teamcenter, Microsoft Office Suite, GSuite,