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 for a 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.
- Cost function penalizes deviation from demand and energy consumption, optimizing using fmincon.

SKILLS

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