ROHAN EMMANUEL VIJAYA KUMAR

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SUMMARY:

A motivated Mechanical Engineering Graduate Student looking to bring a breadth of applied research experiences to the fast-paced e-mobility industry. Highly adept in solving complex Design, Battery, Physics and Data driven problems both individually and in teams, applicable to the EV industry. Proficient in hardware packaging and manufacturability through Internship experiences

EDUCATION:

Wayne State University, Detroit, MI
Master of Science, Mechanical Engineering — **GPA: 3.72** ***(May 04th ,2021)***

SRM Institute of Science and Technology, India
Bachelor of Technology, Mechanical Engineering — **GPA: 3.43** ***(May 10th, 2019)***

Relevant Coursework: Computational Fluid Dynamics, Heat and Mass Transfer, Mechanics of Materials
Finite Element Analysis, Manufacturing Process Technology, Geometric Dimensioning & Tolerances

ACADEMIC PROJECTS:

Thermal modelling of a prismatic Lithium-Ion pouch cell using ANSYS Fluent.

- Studied Li-ion cell chemistry, thermal characteristics, and charging & discharging methods.
- Gained in-depth understanding in c-rates, SOC, SOH, Energy & power calculations.
- Led the design of the cooling system for a 35Ah air cooled Lithium-ion cell using Solidworks.
- Investigated and applied advanced thermodynamics and CFD skills to conduct liquid flow simulations.
- Performed iterative optimization on ANSYS Fluent using variety of cooling mediums for data driven decision making.
- Improved thermal efficiency by 30% in an expedient manner by systematically utilizing previously acquired CFD skills.

Finite Element Analysis of a Battery pack intrusion during a Frontal Crash in LS-Dyna.

- Studied concepts of FEA and methods to model and analyze simulation.
- Developed testing procedures and validated stress/strain results with literature articles.
- Conducted crash safety simulations based on FMVSS and NHTSA standards.
- Reduced the deformation by changing the material and thickness of crush can.

Thermal Abuse modelling of a cylindrical cell at a constant current charge and discharge circuit.

- Modelled the charging and discharge profiles using MATLAB Simulink.
- Used tools in COMSOL to predict the thermal behavior at abusing conditions.
- Performed power calculations as per the USABC standards.
- Summarized the data acquired using MS Excel and concluded voltage dependence on increasing temperature.

WORK EXPERIENCE:

Student Research Assistant (Advanced Automotive Research Lab) at Wayne State University ***August 2019 –June 2020***

Wayne State University is a top public research university in Detroit, a part of the research corridor in Michigan research corridor.

- Structured the experiment design, performed part designs using GD&T techniques and calibration activities.
- Performed calibration and maintenance activities on sensors, transducers, multimeter, and thermocouples.
- Developed a new method for radiation heat transfer measurement methodology using Infra-red imaging.
- Reviewed and validated experimental measurements, post processing & documentation of data using LABVIEW & MS Excel.
- Achieved proficient knowledge to design, validate and analyze experiments.
- Co-authored a journal publication of **Energy and Fuels** in the **American Chemical Society** (Impact Factor: 3.421)

Manufacturing Intern at Tubes Products of India ***September 2017 – May 2018***

TPI is one of the world's leading precision tube manufacturers for the automotive industry; They are ISO certified for Quality and superior product excellence

- Exhibited strong contribution towards measurement system analysis, root cause analysis and continuous improvement.
- Tracked BOM of relevant assemblies and managed inventory of all subcomponents before testing.
- Worked with cross functional teams to reduce 2% of cycle time by eliminating bottlenecks through process flow analysis.
- Collaborate with cross functional teams and illustrated excellent ability to produce technical reports & presentations.

Manufacturing Intern at Wheels India Pvt Ltd ***January 2017 – July 2017***

Wheels India is India's largest wheel and ancillary components manufacturer for the automotive and commercial vehicle industry.

- Collaborated tightly with testing & validation team to ensure efficient implementation and validation of new features.
- Gained hands-on experience in welding, sheet metal forming and machining on the shop floor.
- Understood flow process, results and run experiments and testing independently and with cross-functional teams.
- Exemplified strong desire in designing and testing in a fast faced environment.
- Showcased strong communication skills and technical ability while presenting results to multifunctional teams.

SKILLS

Software: Solid Works, CAD, Pro/E, ANSYS FLUENT, Matlab, Simulink, Catia, StarCCM

Technical: Design of Experiments, 3D printing, CNC machining, Part Design, GD&T, DFM, Product Engineering.