

VARUN CHAKRAPANI

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Ann Arbor, MI 48105, United States

SUMMARY Mechanical engineer with 4.5 years of experience in the automotive industry with Black Belt certification in Design for Six Sigma (DFSS). Well versed in automotive technologies and related manufacturing processes. Seeking co-op positions from Jan 2021. Available for full time employment from May 2021.

EDUCATION **University of Michigan, Ann Arbor, MI** **April 2021**
Master of Engineering, Global Automotive & Manufacturing Engineering
Current GPA: 4.0/4.0
Coursework: Quality Engineering Principles, Integrated vehicle system design, Introduction to Systems Engineering, Systems Architecting & Embodiment Design, Modeling Analysis & Controls of Hybrid Electric Vehicles, Automotive body structures, Manufacturing Systems Design, Automatic Controls

University Visvesvaraya College of Engineering, Bangalore University, Bangalore, India **July 2015**
Bachelor of Engineering, Mechanical Engineering
Score Aggregate: 84.27%
Coursework: Advanced Thermodynamics, Materials Science Engineering, Strength of Materials, Controls Engineering, Theory of Elasticity, Finite Element Method, Manufacturing Processes
Dissertation: “*Analysis of Protective Coatings on Low Pressure Turbine Blades for Life Extension*”, a research project on turbofan engines, undertaken at the Hindustan Aeronautics Limited from 2014-15

EXPERIENCE **General Motors Technical Centre India, Bangalore, India** **Jul 2015 – Dec 2019**

Systems Engineer – (TATA Consultancy Services) **Oct 2019 – Dec 2019**
Executed Automatic Transmission (AT) Park System design changes for General Motors in the capacity of a consultant following GM-TATA outsourcing transition.

Senior Engineer – Transmission & Fuel Cell Design team **Jul 2015 – Sep 2019**

- Executed design change responsibilities for rear wheel drive AT and BEV drive unit park system assignments for GM Global Propulsion Systems
- Managed 3D math changes, component drawing development in Unigraphics (NX 11) as per GM S1100 standards with excellent first-time quality
- Executed tolerance model analysis using GD&T (Y14.5-2009) to meet functional requirements of safety components (FMVSS 114)
- Maintained tolerance layouts in Teamcenter for park system components and Internal Mode Switch (IMS) calculations for transmission calibration
- Performed packaging checks during assembly at the powertrain & vehicle level with Teamcenter VisMockup tool for flawless design launches
- Analyzed and benchmarked competitor vehicle transmissions to produce Value Add Value Engineering ideas, proposed USD \$500,000 cost saving solution by re-designing transmission fluid filter for a RWD AT program (DFSS Black Belt project)
- Implemented design for manufacturing knowledge to achieve Dust Cover parts commonization between multiple variants of Torque Converter housings for FWD application (BoM reduction and cost savings incurred)

Project Lead – Special Innovation Projects **Sep 2017 - Sep 2019**

- Led a diverse team of individuals to develop innovative solutions to enhance child safety in the vehicle as a stretch assignment, concurrent with product development responsibilities
- Conceptualized and proposed multiple solutions to GM Global Safety roadmap owning team using innovation skills such as Design Thinking to prevent child lock out in vehicles
- Developed novel ideas – 1 patent and 1 defensive publication on concepts establishing a more robust alert for the driver and by-standers to prevent heatstroke related fatalities of children

INTELLECTUAL PROPERTY	1. Co-inventor, Patent – “Door Handle Assembly Incorporating A Vehicle Occupant Alert System” with the United States Patent & Trademark Office (USPTO) bearing US 10589672 B1 granted on 03/17/20
PUBLICATIONS	1. Co-author – “Alternate Solution for EV Charge Point Infrastructure in Crowded Urban Areas Along the Shore”, SAE International Technical Paper in January 2019, doi: 10.4271/2019-26-0121 2. Co-author of the following research disclosures <ul style="list-style-type: none"> a. “Use of push message alert to save children left behind in cars” b. “On demand child seat for ride sharing vehicle”
POSITIONS HELD (University of Michigan)	<p>Graduate Student Instructor – Fundamentals of Automotive Body Structures Sep 2020 – Dec 2020</p> <ul style="list-style-type: none"> ▪ Assisting Prof. Donald Malen in setting course milestone, conducting office hours to explain topics covering strength of materials, torsion, bending, joints, panel and beam design and crashworthiness. Other responsibilities include conducting office hours for post class discussions, grading all assignments & quizzes for 56 students <p>President – ISD GSAC (Graduate Student Advisory Committee) Jan 2020 – Dec 2020</p> <ul style="list-style-type: none"> ▪ The committee aims to represent the graduate students of Integrative Systems + Design department by enabling a culture to foster professional engagement, channel and express student opinions and advising the faculty with recommendations for a fulfilling learning experience for the students
HONORS	1. General Motors Technical Education Program (GMTEP) candidate 2. Ranked 4 th in Bangalore University (Graduating batch 2015) for overall exceptional academic performance (Aggregate score – 84.27%)
OTHER PROJECTS	<p>Capstone Project, University of Michigan, Ann Arbor, MI Aug 2020 – Dec 2020</p> <ul style="list-style-type: none"> ▪ Project title: “Fast Calibration of single-cylinder engine using stochastic optimization techniques” ▪ Objective: To identify and implement a stochastic optimization technique which can identify global minima conditions best suited for reduced brake fuel consumption while meeting emission targets. ▪ The algorithm combined with automation of calibration with suitable interfaces is expected to provide a faster unmanned engine optimization process. ▪ Project involves active usage of engine dyno located in the Lay Auto lab, University of Michigan. ▪ Responsibilities include interfacing dyno readouts with optimization software, developing MATLAB as well as LABVIEW programs to automate calibration and test developed algorithms ▪ Engine parameters such as IMEP, fuel efficiency, emission particulate size, unburnt hydrocarbons will be analyzed to determine success of the project <p>Hindustan Aeronautics Limited (Engine Division), Bangalore India Nov 2014 - May 2015</p> <ul style="list-style-type: none"> ▪ Project title: “Analysis of Protective Coatings on Low Pressure Turbine Blades for Life Extension” ▪ Applied material science and failure analysis knowledge to improve product life of premature failing turbine blades of a 20 kN military turbopfan engine ▪ Performed feasibility study of aluminizing, thermal barrier coating and sermetal coating to improve material properties and robustness ▪ Concluded and proposed use of aluminizing process to form diffusion coating based on metallurgical results, ease of process implementation and spalling characteristics
SKILLS	<ul style="list-style-type: none"> ▪ Black Belt certified in Design for Six Sigma (General Motors) ▪ CAD Software Proficiency: Unigraphics (NX11) & CATIA V5 ▪ Teamcenter VisMockup ▪ GD&T (ASME Y14.1-2009) ▪ Tolerance stack-up and modeling analysis ▪ MATLAB and Simulink (meets course requirements) ▪ XLDyn 1.5, 2.0.2 (MBSE for Systems Engineering courses)