

Shubham R Jain

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PROFESSIONAL EXPERIENCE

Research Assistant, *MOST Lab, Michigan Tech* Jan '21 – Present
Open Source CAD design projects for additive manufacturing.

Manufacturing Engineering Co-op, *Whirlpool Corporation, Amana, IA* Jan '20 – Aug '20
Led 2 Major Kaizens with the support of a cross-functional team at a Refrigerator manufacturing plant.

- Achieved 3000 PPM improvement for door damage issues by modifying door protectors.
- Improved First Pass Yield by 6% for the Door Foaming Machine by attacking root cause at the assembly line.
- Attacked frosting issues in Freezer units by 3D Modeling Go/No Go gauges to arrest bad units before shipping.
- Saved \$6000/week in scrap loss by upgrading the pallets on a conveyor system to reduce handling.
- Exercised Quality Tools like 5G, 5W1H, 4M1D, PUGH Matrix, 5QZD, TWTP, etc. for accurately documenting projects.
- Revamped inspection criteria by 3D Printing a gauge for replicating a component assembled downstream.
- Presented the Quality Team's first 2 quarters data to Senior Leadership for reporting the annual findings.
- Had the best solution proposed for blocking foam leaks in a cross-functional team of engineering and production.
- Reached out to Subject Matter Experts for solving the top priority issues related to door value stream.

Quality Engineering Intern, *Indian Railways, Pune, India* Apr '18 – May '18

- Evaluated failure reports of diesel locomotives using fish-bone diagram & discussed solutions to minimize downtime.
- Suggested layout changes of power assembly division which reduced worker movements by 10%.

CAD/CAM Engineering Intern, *Kangtani Sales, Pune, India* May '16 – July '16, May '17 – July '17
Drafted AutoCAD drawings from clients' CorelDraw files and developed G-codes for a CNC machine using MasterCAM.

Audio Visual CAD Drafter, *Michigan Tech IT, Houghton, MI* Nov '18 – Dec '19
Assisted in drafting system CAD drawings using MS Visio and AutoCAD for Audio Visual classroom operations.

PROJECT & LEADERSHIP EXPERIENCE

Foam Leak Prevention, *Whirlpool Corporation* May '20 – Aug '20

- Identified root cause in the assembly line through process mapping for the Door Foaming machine.
- Drafted the Standard Operating Procedure and Standard Work documents for applying foam pads in corner edges.
- Co-ordinated with Supplier Quality team to ensure the raw material availability for pilot run.
- Maintained optimal inventory for the project using SAP by utilizing excess foam pads in store.
- Planned manufacturing activities alongside the production team with the aim to utilize the same labor resources.

Door Damage Blitz, *Whirlpool Corporation* May '20 – Aug '20

- Identified top damaged areas in a concentration diagram & strategically modified the existing door armors.
- Successfully eliminated scrap generated through loading & unloading from carts during the trials.
- Established a temporary system to keep track of scrap generated from assembly lines.

Static Structural Analysis for Baja Chassis, *Michigan Tech* Sep '19 – Dec '19

- Recreated chassis geometry in Catia and performed FEA in HyperMesh to ensure safety standards.
- A side impact failure for identified and appropriate triangulation was recommended to increase stiffness.

Open Source Orthopedic Surgical Table, *MOST Lab, Michigan Tech* Sep '19 – Dec '19

- Designed parts for a \$2k surgical table assembly as an alternative to commercially available \$100k equipment.
- Contributed to the Open Source Library of components for cheaper & decentralized manufacturing.

Laser Engraving Mod for 3D Printer, *MOST Lab, Michigan Tech* Sep '19 – Dec '19

Built Laser powered engraving machine for a delta type 3D Printer with quick changeover and updated the G-code settings in Inkscape to accommodate settings of laser power instead of thermistor.

Airplane Production Process Improvement, *Michigan Tech* Jan '19 – Apr '19

- Using time study and Kanban techniques, achieved a reduced cycle time of 19.3s below takt time of 20s.
- Improved Flow by Layout Planning & Value Stream Mapping and reduced labor requirements by Heijunka.

Additive Manufacturing of a Product Targeting the Consumer Market Segment, *Michigan Tech* Jan '19 – Apr '19

- Eliminated assembly time and reduced overall production time of a gear train for a wristwatch.
- Manufactured the product using only a third of the budget and costing 78% cheaper than traditional manufacturing.

Reliability Analysis & Optimization of a Plate Nut, Michigan Tech Sep '18 – Dec '18

- Performed stress & deformation analysis on 200 geometries in Ansys using parameter sets function.
- Optimized the plate nut geometry for maximum reliability using GP Regression & Genetic Algorithm in Matlab.

Quality Control using Statistical Methods, Michigan Tech Aug '18 – Dec '18

- Successfully implemented Shewhart's control chart technique to identify root causes in test data.
- Employed Minitab for drafting graphs & for making statistical decisions after identifying sampling errors.
- Carried out Process Capability study and recommended corrective actions for furthering continuous improvement.

Frequency Shift Detection of a MEMS resonator using DOE, Michigan Tech Aug '18 – Dec '18

- Built Simulink model to approximate a single DOF mass-damper system to simulate the MEMS resonator.
- Designed factorial experiments for gauging frequency output changes using Minitab.
- Recommended design parameter levels to maximize mass detection change without error.

Design, Development & Analysis of Aerodynamics for a Car, Pune University Jul '17 – Jun '18

- Reduced overall drag by 14% after simulating aero-body designs iteratively using SolidWorks, Creo & Ansys Fluent.
- Fabricated radiator ducts for better cooling efficiency and reduced core size of the radiator by 22%.
- Increased the negative lift (downforce) by using an undertray ("venturi" like diffuser) to improve cornering speeds.

Deputy Captain, Chassis & Body works Lead, Team VAMOS Autocross, Pune, India Aug '15 – Jul '18

Led a team of mechanical engineering students designing a race car for events in India & Japan.

- Performed DFMEA as per DVP for wheel assembly and drive train components of the formula styled prototype.
- Designed 12% lighter space frame chassis in Creo and modelled the outer body in Catia.
- Analyzed different chassis iterations for optimizing strength/weight ratio in HyperMesh and Ansys Workbench.
- Converted 3D solid part files to 2D drawings in AutoCAD for machining and BOM documentation.
- Slashed expenses by 15% after negotiating sponsorship contracts with machining partners for out-sourced parts.
- Implemented jigs and fixtures for mistake-proofing (*poka yoke*) for fabricating the frame.
- Presented virtual business plan and cost report in front of a panel of industry professionals.
- Managed raw material and spare parts inventory & practiced 5S in the machine shop.

CORE COMPETENCIES

Manufacturing: WCM, Lean Six Sigma, DFM, PFMEA, SPC, DMAIC, Kaizen, 8D, 5S, 5G, 5Y, 4M1D, HERCA, GD&T

Software: AutoCAD, Catia, Creo, SolidWorks, FreeCAD, OpenSCAD, Ansys, HyperMesh, Matlab, Minitab, Tableau, Visio

EDUCATION

Michigan Technological University, Houghton, MI Graduated: Dec '20

Master's in Mechanical Engineering | Manufacturing GPA: 3.89

Pune University, India Graduated: May '18

Bachelor's in Mechanical Engineering | FSAE Team Member GPA: 3.59

Lean Six Sigma Green Belt | Coursera Issued: May '20

Mechanical CADD Diploma – CADD Center, Pune, India | Catia, Ansys, AutoCAD Issued: Oct '17

PATENTS

- 'Inertia Coupling'-Couple/Decouple Compressor Unit from the engine crankshaft for a Twin Charger
- Tire lifespan assessment assembly
- Variable Geometry Sun Visor