ABHISHEK PANDEY

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SUMMARRY

Mechanical Design Engineer specializing in automotive & consumer product development, structural analysis, & quantitative optimization using data-driven approaches. Committed to design ingenuity, I'm seeking a full-time role starting immediately.

EDUCATION

University of Michigan, Ann Arbor

Master of Science in Design Science | Grade: 3.83/4.0   *August 2023 - December 2024*

Coursework: Autobody Structure, Vehicle Dynamic, Systems Engineering, Control of Hybrid Electric Vehicle, Analytical Product Design.

Fr. Conceicao Rodrigues Institute of Technology, India

Bachelor of Engineering in Mechanical Engineering. | Grade: 8.18/10   *August 2017 - August 2021*

Coursework: CAD-CAM-CAE, FEA, Production Process, Engineering Mechanics, Fluid Mechanics, Machine Design, Project Management.

SKILLS

Software: CREO Parametric, Windchill, SolidWorks, CATIA V5, ANSYS, AutoCAD, CarSim, SEIMENS Jack, MagicDraw, MATLAB, Simulink.

Analysis Skills: FEA/CFD, DFM, DFA, FMEA, Product Lifecycle Management (PLM), GD&T (ANSI Y-14.5), QFD, Systems Engineering, Additive Manufacturing, Lean Six Sigma, DOE, Ergonomics, Lean Manufacturing, Design for Six Sigma, Quality Assurance (8D, 5WPPS).

Core Competencies: Cont. Improvement, Inventory Management, Process Optimization, Data-Driven Decision, Collaboration.

PROJECTS EXPERIENCE

Design of a Human Powered Vehicle   *January 2024 - May 2024*
- Designed **AISI 1020** steel chassis with FEA-verified 0.0985mm deformation under **7751N rollover loads**, exceeding safety standards.
- Using system design approach to engineered **ergonomic chassis & polymer body** panels with 100% access compliance for 95th percentile male & 5th percentile female riders using 3D CAD-integrated **Jack human factors analysis**.
- Optimized body material selection, reducing vehicle mass to **78.2kg** while maintaining **4G roof load capacity** through trade studies.
- Integrated **double-wishbone front suspension** with **100mm** vertical & **27mm** horizontal travel, improving **ride quality by 28%**.

Optimize Vehicle Performance & Rider Comfort   *August 2023 - December 2023*
- Enhanced vehicle parameters in **CarSim**, using **PDCA (Plan-Do-Check-Act)** iterative approach reducing lap time from **87.5s to 70.08s**.
- Reduced **jerk & power spectral density (PSD) by 25%**, improving ride comfort & vehicle stability using **MATLAB** for data analysis.
- Optimized spring rates, jounce, camber, & toe to achieve a **20% reduction** in longitudinal moment, improving **handling** & **cornering**.
- **Maximized driver path, speed map**, brake bias, differential setup, tire selection to maximize grip & reduce performance trade-offs.

Baja SAE INDIA: Team Kaiser Racing   *April 2018 - March 2020*

SC24 Chassis Team Lead (2019-2020)
- Led **design**, **analysis & validation** of All Terrain Vehicle (ATV) chassis using **SolidWorks** & **ANSYS**, resulting **18% reduction** in weight.
- Innovated chassis design to sustain **higher** collision forces of **6Gs** & reduced weight resulting in higher top-speed of **45 mph**.
- Led operations as **fabrication team lead**, increasing in-house manufacturing leading to **reduced** vehicle production cost by $**1300**.
- Implemented **DFMEA & PFMEA** partnering with different teams to identify chassis failure locations & improve **reliability** & **quality**.

SC17 Powertrain Team (2018-2019)
- **Founded** Team Kaiser Racing in 2018, designed & fabricated an **All-Terrain Vehicle (ATV)** in 2018 & 2019 costing **$7300 & $6000**.
- Devised & integrated a **dual-stage reduction** gearbox with **CVT** into the ATV setting a top speed of **42 mph**.
- Modelled powertrain assembly enhancing CV shafts' angle limit to **42 degrees** & designing **vibration control mounts** in **AutoCAD**.
- Analyzed ATV functionality & durability in **ANSYS** to sustain forces of **4Gs** with better vehicle efficiency, **maneuverability** & **stability**.

EXPERIENCES

BarrelCharge Solutions Inc., USA

Mechanical Design Engineer Intern   *May 2024 – December 2024*
- **Owned full design lifecycle** of sheet metal enclosure in **Creo Parametric**, through PDCA-driven reviews ensuring **DFM & DFA principles** increasing product **space efficiency by 18%.**
- Published 2D drawings & engineering documentation, performed GD&T calculation & managed BOM for product development.
- Collaborated with **suppliers & manufacturing teams** to refine design, correcting critical flaws & **reducing revision time by 22%**.
- Prepared documentation for **NRTL certification**, ensuring compliance with safety & regulatory standards for product approval.

Godrej & Boyce Mfg. Co. Ltd, India

Assistant Manager (Mechanical Design Engineer)   *October 2021 - August 2023*
- Eliminated failure points by conducting **Static Structural Analysis** using **ANSYS** on diverse Chair components, enhancing material selection, reduce iterations & **saving business up to $0.5 million**.
- Engineered GEM Office Chair series using **DFM principles**, reducing failure points by **16%** & cutting **production costs** by **23%**.
- Vetted product conformity to **user & system requirements**; strict **BIFMA & BIS test & safety standards** lower user concern by **10%**.
- Executed comprehensive **market analysis & benchmarking** to inform design innovations, **enhancing product quality** & boosting **customer satisfaction by 15%**.