VINAYAK DAS

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SUMMARY

Mechanical Design Engineer with 3+ years of experience in **sheet metal design, DFx, and GD&T** across automotive and heavy equipment industries. Proven track record of **leading end-to-end design and cost-saving projects** from concept through validation and manufacturing launch. Skilled in **material selection, prototyping, custom tooling/fixturing, and advanced manufacturing methods**, with additional experience integrating **sensors and electronics into prototypes** to deliver reliable, cross-functional design solutions.

EDUCATION

University of Washington **Jun 2025**
Master of Science, Mechanical Engineering (GPA: 3.78/4.0)

Birla Institute of Science and Technology Pilani **Jul 2020**
Bachelor of Engineering, Mechanical Engineering (GPA: 8.8/10.0)

EXPERIENCE

Genie | *MECHANICAL DESIGN ENGINEER CO-OP* **Jun 2024 - Dec 2024**

- Investigated and redesigned a sheet-metal shroud assembly by applying DFM principles to address fitment, interference, assembly, and over-design issues, achieving a 30% reduction in parts count, complete elimination of welded components, and an expected saving of $20,000 pa.
- Collaborated with NPD and sustaining design teams to test and validate a new hydraulic power unit for a quality-driven project; facilitated ECO management, addressed supplier issues, updated assembly structures, and implemented an aftermarket kit that resulted in annual savings of $70,000.
- Directed a global decal creation project to resolve critical customer quality issues by researching, conceptualizing, and finalizing a new removable decal design within a four-week period.
- Collaborated with NPD and sustaining teams to ensure manufacturability, quality, and cost targets were met on multiple global projects.

Hero Moto Corp Ltd. | *DESIGN AND DEVELOPMENT ENGINEER* **Aug 2020 - Jun 2023**

- Engineered motorcycle prototypes and custom tooling/fixturing with GD&T standards, raising first-pass yield from 80%→90% and reducing rework cost.
- Developed and optimized sheet metal blanks for stamping, delivering a one-tool solution in one week that eliminated secondary operations and cut tooling costs.
- Directed DFM/DFA efforts in prototype builds, consolidating components to reduce assembly time by 20% and improve manufacturability.
- Programmed and refined CNC operations for a 5-axis CO_2 laser trimming process, cutting scrap by 8% and reducing cycle time.
- Drove cost-quality trade-off reviews, implementing design changes that reduced failure rates by 15% and enhanced reliability.

ISRO Inertial Systems Unit | *RESEARCH INTERN* **May 2018 - Jul 2018**

- Analyzed and optimized the performance of a vibratory gyroscope, reducing error to 0.07% through methodical algorithm development.
- Utilized ANSYS Workbench for simulation purposes, validating theoretical models and ensuring increased measurement accuracy.

RELEVANT PROJECTS

Auxetic Stent Material Testing **Mar 2025 – Jun 2025**

- Conducted experimental testing on novel handed shearing auxetic stent structures to evaluate their lateral expansion behavior under torsional loading.
- Designed and iterated precision 3D-printed jigs and fixtures to minimize backlash and ensure accurate torque transfer while handling delicate 2 mm diameter stent samples.
- Developed a complete test plan and validation workflow, using a servo-driven torsion setup to twist samples in controlled increments and correlate experimental results with ANSYS FEA predictions as part of graduate research.

Touch Sensitive Musical Gloves **Oct 2024 – Dec 2024**

- Designed and prototyped wearable gloves integrating capacitive touch sensors, microcontrollers, and Arduino programming to trigger musical notes through fingertip input.
- Applied DFx and rapid prototyping methods to optimize sensor placement, circuit integration, and durability.
- Showcased ability to translate abstract concepts into a functional prototype, balancing design, electronics, and manufacturability.

SKILLS

- **Design & Prototyping:** Product Design, Prototyping, Prototype Production Technology, 3D Printing
- **Manufacturing & Process:** Design and Manufacturing, Tool and Die Design, Metal Stamping, DFM, DFA, DFMEA, Kaizen, Six Sigma
- **CAD & Modeling Software:** Solid Modelling, Solidworks, CATIA v5 Surfacing, PLM, DraftSight, AutoCad
- **Analysis & Simulation:** FEA, ANSYS
- **Additional Technical:** GD&T, Motorcycle Chassis Design, Arduino, Hydraulic Systems