SAI KARTHIK MAHESH REDDY CHAGANTI

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EDUCATION

University at Buffalo – The State University of New York — **Buffalo, NY**
Master of Science (M. Sc.) in Automation and Robotics — **Feb 2024**
Koneru Lakshmaiah Education Foundation — **Guntur, India**
Bachelor of Technology (B. Tech) in Mechanical Engineering — **May 2020**

KEY STRENGTHS

- Engineering Design
- Process Improvement
- Lean Manufacturing
- CAD/CAM
- CAE, FEA and DFMEA
- Testing & Validation
- Quality Control Initiatives
- Risk Assessment & Mitigation
- Design Review & Evaluation
- Rapid Prototyping
- Research & Development
- Operational Excellence
- Fabrication Techniques
- Design for Excellence (DfX)
- Sheet Metal Design

TECHNICAL SKILLS

SolidWorks (CSWA) | Autodesk Fusion 360 | AutoCAD | Siemens NX | CATIA V5 | Ansys Workbench | GD&T ASME Y14.5 2018 | Python | SQL | ROS | Microsoft Word, Excel, PowerPoint, Outlook | Windows | Linux

PROFESSIONAL EXPERIENCE

Designer and Brakes Engineer - Design of Quad Bike (All-Terrain Vehicle) — **Andhra Pradesh, India**
Team Unblockabulls, K L University — **July 2017-Jan 2020**

- Led a multidisciplinary team to the successful design, development, and analysis of a Quad Bike to emerge as champions in a prestigious national competition by strategically guiding the team through innovative design processes, testing, and iterative improvements.
- Executed Front and Back Impact Analysis with unparalleled precision using Ansys Workbench to accurately simulate the structural integrity and safety margins of designs under collision scenarios, achieving an error margin of only 0.05 for both front and back impact analyses.
- Achieved an exceptional level of precision in Side Impact Analysis to thoroughly understand and improve the structural performance of designs under lateral collision conditions by leveraging Ansys Workbench for detailed simulation and analysis, maintaining an error margin of 0.07.
- Utilized advanced CAD tools, including Fusion 360 and SolidWorks for the intricate design and analysis of the vehicle's chassis, to create a robust yet lightweight structure by applying chrome AISI-4130 for the frame design.
- Selected AISI 4130, a chrome-molybdenum alloy steel, for the chassis material to capitalize on distinctive characteristics by targeting good weldability and inherent strength.

South Central Railways: Wagon Workshop — **Andhra Pradesh, India**
Student Internship: Indian Railway Department — **May 2019 – Sep 2019**

Bridged the gap between theoretical knowledge and its real-world applications to augment engineering acumen by engaging in hands on tasks that required the selection and application of appropriate tools and techniques for wagon maintenance and repair, culminating in a deeper understanding of practical engineering solutions.

- Acquired an in-depth understanding of safety procedures and protocols within the railway industry to augment operational safety standards by adhering to established safety guidelines and actively integrating safety considerations into project planning.
- Applied welding, machining, and fabrication techniques to various railway projects to foster interdisciplinary collaboration and project management skills by working alongside professionals from different engineering disciplines.
- Resolved mechanical issues in railway wagons with accuracy to serve as a critical problem-solver by leveraging diagnostic skills to identify and address faults rapidly, utilizing a comprehensive understanding of mechanical systems.

PROJECTS

Design of Brake Rotor (Disc Brake) for Quad Bike (All-Terrain Vehicle) — **July 2016- Jan 2020, India**

- Pioneered the development and thermal analysis of a high-efficiency brake rotor utilizing Solidworks to achieve unparalleled braking performance by engineering a rotor design that demonstrated a 74.67% efficiency ratio, significantly exceeding the project's initial efficiency target by nearly 5%.
- Employed Ansys Workbench for comprehensive thermal analysis of the brake rotor to validate performance under realistic braking scenarios by innovatively designing various configurations of vent holes and conducting simulations to assess effectiveness in improving cooling efficiency.
- Opted for Aluminum Alloy 6063 for the brake rotor’s construction to leverage exceptional thermal conductivity and lightweight nature, obtaining a brake rotor, 20% lighter than conventional rotors available on the market and minimizing thermal expansion.

Baja SAE — **Feb 2018, India**

- Established an innovative 305cc, 4-stroke, 10 bhp Off-Road Car to compete in the rigorous Baja SAE 2018 competition by focusing on design and durability to withstand challenging off-road conditions.
- Engineered a custom differential gearbox tailored for the unique demands of off-road racing to achieve superior traction and handling by utilizing Solidworks and Fusion 360 for the precise design of gears, shafts, and the gearbox casing, culminating in an assembly that achieved an 11% weight reduction compared to standard market differentials.
- Secured 8th place in the static design event of the Baja SAE 2018 competition by presenting a vehicle that featured innovative engineering solutions, such as the custom differential gearbox.