# SAI MANISH RALLA

## MECHANICAL
## ENGINEERING STUDENT

## CONTACT

+91-9885681166

saimanishralla@gmail.com

Mahindra University, Hyderabad

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## SKILLS

**AutoCad, Python, C, Ansys, Matlab, Data Structures and algorithms**

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## EDUCATION

**Bachelor's of technology in Mechanical Engineering**

**Mahindra University**
2020-2024
CGPA - 7.06

**INTERMEDIATE**

**Sri Chaitanya Jr. College**
2018-2020
CGPA - 86%

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## ACHIVEMENTS

**Merit Scholarship for academic excellence. Rs 1,00,000 year 2020-21**

**NASA SPACESETTLEMENT CONTEST**
- Designed the Shuttle" KOSSMOS ".
- Ideology of creating sustainable place for life to exist in in space instead of colonising a planet.

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## CERTIFICATION

**Fusion 360 Complete Course**
https://www.udemy.com/certificate/UC-6ff059a6-a966-4deb-bc07-efb89b448937/

**Certificate of completion : INCOSE**
for having completed workshop on Model Based Systems engineering Conducted at Mahindra University

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## EXTRA CURRICULAR

- **Participated in Campus Cleanliness drive.**
- **Member of hurricane club**
- **Participated in EIC orientation.**

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## PROFILE

Motivated Mechanical Engineering student at Ecole Centrale School of Engineering, Mahindra University, Hyderabad, specializing in sustainable energy solutions and electric vehicle technology. Demonstrated practical experience in component design and quality assurance at Electriq Pvt Ltd. Proficient in AutoCAD, Python, C, Ansys, Matlab, and Data Structures. Actively engaged in research on battery thermal management and microgrid load forecasting. Known for a pragmatic approach to problem-solving and a commitment to advancing engineering for a greener world.

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## WORK EXPERIENCE

### Intern

**Only Electriq pvt lim**                    **July 2023 - Present**

Electriq is a cutting-edge company at the forefront of the electric vehicle revolution. Specializing in the development of advanced components for electric vehicle systems, Electriq is known for its innovative solutions that drive sustainability and efficiency in the automotive industry.
Roles:
- Collaborated closely with the engineering team to conceptualize, design, and develop pioneering components tailored for electric vehicle systems.
- Ensured strict compliance with industry standards, elevating quality assurance measures and reinforcing Electriq's commitment to delivering high-quality products.
- Acted as a linchpin in troubleshooting and resolving technical issues, showcasing robust problem-solving skills.

## PROJECT AND RESEARCH WORK

**Fracture Mechanics analysis on glass fiber reinforced polymer:**
**01/2024-Present**

- Undertaking a final year project at Mahindra University focusing on fracture mechanics analysis in glass fiber reinforced polymer (GFRP) materials.

- Investigating both Mode I and Mode II fractures to enhance understanding of GFRP material behavior under different loading conditions, aiming to contribute insights to the advancement of composite materials' structural integrity and performance.

**RESEARCH ON BATTERY THERMAL MANAGEMENT:**
**08/2023-Present**

- To engage in research and experimentation aimed at identifying the most effective thermal management solution for a battery pack. This endeavor encompasses the exploration of diverse cooling techniques such as natural convection, forced convection, immersion cooling, and Phase Change Material (PCM) methods.
- Constructing a Machine Learning model to predict State of Charge (SOC), representing the remaining energy stored within the battery. This element is crucial for optimizing battery performance.

# PROJECT AND RESEARCH WORK

## RESEARCH ON MICROGRID SHORT TERM LOAD FORCASTING:

- Developed a comprehensive understanding of localized power systems integrating various energy sources. Employed advanced forecasting techniques, including classical statistical models and machine learning methodologies, to predict electricity consumption patterns on an hourly and daily basis. Emphasized the critical role of accurate data input, considering factors such as holidays, weekends, and meteorological conditions

**09/2023 - 01/2024**

**Learnings:**
- Machine Learning techniques
- Implementation of Machine Learning techniques
- Data Pre-Processing

## Break Drum Dynamometer-Based Test Rig for E-Bike Battery Characterization:

- Designed and implemented a Break Drum Dynamometer-based test rig to apply consistent loads for in-depth analysis of e-bike battery performance under varying conditions. This innovative setup facilitated comprehensive studies on battery characteristics, providing valuable insights for optimizing electric vehicle power systems.

**07/2023- 01/2024**

**Learnings:**
- Learned how to design and operate a Break Drum Dynamometer-based test rig for e-bike battery testing.
- Design steps from conceptual to preliminary design to detailed design and development of that test rig.

## Systems engineering: Challenges in cryptocurrency adoption:

- Focused on "Challenges in cryptocurrency adoption," leveraging the powerful PESTEL approach to dissect the complex environmental dynamics. The outcome showcased my adept Systems Engineering skills, revealing an innovative prospect – the repurposing of recycled processors for creating cost-effective, high-performance mining rigs. This strategic solution not only addresses cryptocurrency challenges but also champions sustainability by repurposing e-waste. This endeavor underlines my deep-seated passion for Systems Engineering, coupled with an innate ability to decipher and address intricate challenges within dynamic environments.

**09/2023- 11/2023**

**Learnings:**
- How to apply Systems Engineering and PESTEL analysis to identify and address challenges in cryptocurrency adoption. I also discovered an innovative solution for sustainability: repurposing e-waste into cost-effective, high-performance mining rigs.

## Integrated Control System for Performance-Modulated E-Bike with Chain Drive Mechanism:

- Developed and implemented a Chain Drive Mechanism for E-bike propulsion, integrating a Raspberry Pi for performance modulation. Programmed control overrides via throttle input and established remote access for enhanced operational control. Conducted rigorous testing, recording Speed vs. Distance under consistent loading to analyze traction dynamics and determine required effort.

**10/2022 - 01/2023**

**Learnings:**
- To develop and implement a Chain Drive Mechanism for E-bike propulsion, integrate a Raspberry Pi for performance modulation, and program control overrides. I also gained experience in establishing remote access for enhanced operational control and conducting rigorous testing to analyze traction dynamics.
- This project honed my skills in hardware integration, programming.

## Advanced Thermal Analysis and Optimization of Tesla Battery Packs:

- Conducted comprehensive simulations of Tesla battery packs using ANSYS, evaluating their thermal behavior under varying flow rates and diverse fluid compositions. Employed advanced modeling techniques to analyze heat dissipation and optimize cooling strategies, contributing to enhanced battery performance and longevity. Results-driven insights informed critical design decisions, showcasing proficiency in simulation-driven engineering and thermal management expertise.

**08/2022 - 09/2022**

**Learnings:**
- I learned how to conduct comprehensive simulations of Tesla battery packs using ANSYS, evaluating their thermal behavior under different conditions. I also learned to use advanced modeling techniques to analyze heat dissipation and optimize cooling strategies. This project enhanced my proficiency in simulation-driven engineering and thermal management.