Sai Santhosh Rao Kotha

Hyderabad, Telangana, India
santhoshrao4888@gmail.com
Phone No: 9676303853
https://www.linkedin.com/in/santhoshraokotha/

SUMMARY

A dedicated and performance-driven engineer with 2+ years of experience in mechanical design, research, and development. Currently pursuing an M.S. in Engineering Design at IIT Madras, focusing on **drive-by-wire systems** and **control systems** for autonomous electric vehicles. Proficient in CAD tools (Creo 9, SolidWorks 2023), GD&T, DFM, and Tolerance Stack-up Analysis, with good knowledge in vehicle dynamics, battery technology, and controls. Adept at managing cross-functional teams and delivering innovative, production-ready solutions from concept to release.

WORK EXPERIENCE

AUTONOMOUS SYSTEMS LAB – IIT MADRAS | CHENNAI, INDIA

Jan 2024 - Present

Research Scholar (Drive-by-Wire Systems for Autonomous Driving)

- As a research assistant in the Autonomous Systems Lab, under the guidance of Prof. Bijo Sebastian, I have been working on the development and implementation of drive-by-wire systems tailored for autonomous driving in electric vehicles.
- My project focuses on integrating advanced control algorithms and ensuring seamless communication between various vehicular subsystems.
- My responsibilities include designing and testing drive-by-wire systems to replace traditional mechanical control systems, developing and optimizing control algorithms to enhance vehicle performance and safety, and conducting simulations and real-world testing to validate system reliability and efficiency.
- I collaborate with a multidisciplinary team to integrate autonomous driving features and analyze data from experiments and simulations to refine system performance.

L & T TECHNOLOGY SERVICES | BANGALORE, INDIA

Sep 2022 - Dec 2023

Associate Mechanical Engineer (Mechanical Design, Product life-cycle management)

- Creation of sheet metal and plastic CAD models in Creo and Solidworks.
- Performing Tolerance stack-up analysis for all the components to be sent for manufacturing.
- Generating new engineering/Product change orders or requests.
- Creating or updating BOMs, part numbers, and specification documents in PLM sites.
- Manage product changes across various devices and coordinate validation and execution.
- Undertook technical courses such as GD&T, Tolerance Stack-up analysis, Sheet metal design, Plastic part design, Mechanisms & Linkages, and various professional courses at LTTS.
- Underwent tools training on Catia V5, Solidworks, PTC Creo, and Siemens NX under the Genesis program in LTTS

AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA | PUNE, INDIA

April 2022 - Aug 2022

Research and Development Intern (Electric Vehicles, Thermal Management)

- Worked on designing, developing, and testing thermal Management Systems for 2-wheeler Electric vehicle batteries.
- Performed simulation of cell and battery pack using multiphysics tool and examined the thermal behavior of Li-ion battery.
- Actively involved in lithium-ion battery (NMC) testing, cell modeling, thermal simulation, and Validation using COMSOL Multiphysics in 3-D for different C-rates of charging and discharging cycles.

DRDO (DLRL) – STRUCTURAL DIVISION | HYDERABAD, INDIA

Oct 2021 - Dec 2021

Project Intern

- Structural Analysis of Spiral Helix Antenna Radome.
- Performed CFD analysis on the radome structure used in Aircraft.
- Performed Fluid Structural Interaction analysis method and was responsible for composite layered material modeling of radome structure.

CAPABL | HYDERABAD, INDIA

Jul 2020 - Sep 2020

Vehicle Dynamics Intern

- This internship helped me build my knowledge of Vehicle dynamics. Concentrated more on designing an ATV throughout the internship. Worked on various industry-relevant problems as part of the internship.

EDUCATION

Jan 2024 - Present

Master of Science in Engineering Design Department

INDIAN INSTITUTE OF TECHNOLOGY MADRAS (IIT M) | CHENNAI, INDIA

- **Major**: Automotive Systems Design, Controls and Mechatronics.
- **Coursework**: Control Systems, Control of Automotive Systems, Vehicle Dynamics, Mechatronics System Design, Field and Service Robotics, Foundations of Machine learning.
- **CGPA**: 8.38/10

May 2022

Bachelor of Technology in Mechanical Engineering

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY | HYDERABAD, INDIA

- **Major**: Mechanical engineering.
- **CGPA**: 8.59/10

PROJECTS

May 2022

Experimental and CFD analysis of Grooved Wick Heat pipe

- Modeled and performed CFD analysis in ANSYS on a Grooved wick heatpipe to analyze the flow of fluid inside the heat pipe and temperature variation along the length of the heat pipe.
- Performed experimentation on grooved wick heat pipe and calculated heat transfer coefficient, thermal resistance, and thermal efficiency and validated experimental results with numerical results

Aug 2021

Design and Analysis of Vertical Axis Wind Turbine Rotors

- The main objective of turbine aerodynamics is to enhance the aerodynamic characteristics and performance of the turbine.
- Designed a small-scale vertical axis wind turbine using NACA 0018 aerofoil in ANSYS. Performed Computational Fluid Dynamics (CFD) on the turbine at different velocities, visualized the flow of air, and determined its efficiency.

April 2021

All-Terrain Vehicle (ATV) - SAE BAJA INDIA

- Member of Team Bruiser Heads, a Baja team consisting of 25 members working on the SAE BAJA project which involves the design, development, and Fabrication of an All-Terrain Vehicle.
- Designed and fabricated a complete ATV vehicle, which is suitable for all Terrain and tough tracks with specified regulations provided by BAJA SAE INDIA. Involved in the design, analysis, and optimization of roll cage structure and components like mounting brackets, and gearbox casing.

SKILLS

- MATLAB, Simulink, and Simscape for developing control systems.
- Mechanical Design, Battery Thermal Management, Product Lifecycle Management, Computational Fluid Dynamics, Geometric dimensioning and tolerancing (GD&T), Tolerance Stack-up analysis.
- **CAD Software:** Catia V5, Solidworks, PTC Creo.
- **CAE Software:** Ansys (Structural, Fluent), Hypermesh (pre-processing).
- **Programming Language:** Python and its libraries (Numpy, Matplotlib)
- MS Office, Problem-solving, Critical thinking, Time management.

COURSES

- CS50X: Introduction to Programming with Python by Harvard.
- Introduction to Self-driving cars Georgia tech university.
- Python for Mechanical Engineers by Udemy.

CERTIFICATIONS

- Certified Solidworks Professional (CSWP) in Mechanical design and Sheet metal.
- Certificate of Training in Ansys by Eleation Academy.

ACHIEVEMENTS & CO-CURRICULAR ACTIVITIES

- Presented a paper titled "Experimental and Numerical Analysis of Grooved Wick Heatpipe" at the 13th International Conference on Material Processing and Characterization (ICMPC-2022)
- Automation in Manufacturing –NPTEL Course.
  - Finished in the Top 2% and got a Gold Medal in the NPTEL exam conducted by IIT GUWAHATI
- Processing of Polymers and Polymer Composites-NPTEL Course.
  - Awarded Gold Medal in this NPTEL exam conducted by IIT ROORKEE
- Fraternity of Mechanical and Automotive Engineers (FMAE)
  - Runner Up in FMAE BAJA 2020
- Participated in SAE BAJA 2020 Competition
- Participated in the Aakruthi Design Competition by Dassault Systems (2020)

HOBBIES

- Badminton, Cricket.
- Travelling and Reading novels.