GUNDETI SRIVARDHAN

Roll No.:210103130
B.Tech - Mechanical Engineering
Indian Institute Of Technology, Guwahati

+91-9494625295
gundetisrivardhan@gmail.com
s.gundeti@iitg.ac.in
Portfolio | Github | Linkedin

Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech. Major	Indian Institute of Technology, Guwahati	7.79 (Current)	2021-Present
Senior Secondary	TSBIE BOARD	97.4%	2021
Secondary	CBSE BOARD	89.2%	2019

Experience

- **Battery Design & Analysis Lab (BDAL)** *May. 2024 - Aug. 2024*
  Research Intern (***LOR***$_1$, ***LOR***$_2$) Huazhong University of Science and Technology, China
  - Engineered a cooling plate inspired by the **herringbone structure** of fish skeletons, optimized using **topology techniques**. Achieved a **1.02°C** drop in **T max**, a **45.41%** reduction in **pressure drop**, and a **32.46%** reduction in **material usage** compared to conventional designs, leading to **lower production costs** and **improved efficiency**.
  - Boosted energy efficiency by **cutting parasitic power consumption by 45.41%**, surpassing traditional designs at **various flow rates**, while simplifying the system architecture.
  - Conducted **topology optimization (TO)** in **COMSOL**, defining design constraints and using the **Method of Moving Asymptotes (MMA)** for the 2D design. Transitioned to 3D geometry in **SolidWorks** and ran **Computational Fluid Dynamics (CFD)** analysis in **ANSYS** to validate results.
  - Received **LORs** from professors for demonstrating **exceptional diligence** and **hard work** during my research internship.
  - Submitted research findings to **E transportation journal**, highlighting key contributions to **Li-ion battery thermal management.**

Projects

- **Optimizing Charging Time of Electric Vehicles (EV's)** *Jan. 2024 - May. 2024*
  Project supervised by Professor, Dr. Poonam Kumari, Department of Mechanical Engineering, IITG. Github
  - Devised a battery charging strategy using **MOSFETs** and **IGBTs**, resulting in a **66% reduction in charging time** for electric vehicles. Conducted market analysis to achieve a **25% cost reduction**.
  - Implemented a dual-cooling mechanism with **Phase Change Material (PCM)** coolant and **0.6 mm hollow fins**, improving circulation. Applied **multi-layer PTFE insulation** for enhanced heat dissipation and safety.
- **Chatter Prediction Using Image Processing** *Jan. 2024 - May. 2024*
  Project mentored by Professor, R. K. Mittal, Department of Mechanical Engineering, IITG. Github
  - Built a **Convolutional Neural Network (CNN)** model using **TensorFlow** to classify **91 pairs** of machined surface images as **Chatter** or **Chatter-free**, achieving **71% test accuracy**.
  - Targeted **real-time chatter prediction** by planning integration of high **FPS cameras**, improving the model's applicability for **practical machining environments** and aiming to **increase accuracy** beyond **95%**.
  - Converted **DSLR images** to **CSV** using **OpenCV**, **PIL**, and **Numpy** for high-quality data and **accurate predictions**.
- **JLR - Automotive Fault Detection** *Dec. 2023*
  Self Project Github
  - Developed a sophisticated automotive **fault detection** model for Jaguar Land Rover, utilizing **Python**, **Pandas**, **Numpy**, **scikit-learn**, **Wavelet Transform**, **Fast Fourier Transform**, and **ensemble learning techniques**.
  - Utilized **accelerometer data** to develop a model that achieved **87% accuracy** in classifying faults into **seven categories** (0-6), significantly improving fault detection and classification.

Research Publication

- **Herringbone-Based Fish Skeleton Cooling Plate for Lithium-Ion Batteries** *E Transportation 2024*
  Guided by Prof.Akhil Garg (HUST) & Prof.Biranchi Panda (IITG) Certificate
  - Pioneered research on a **herringbone-based cooling plate** for lithium-ion batteries, optimized using **topology methods**. Secured validation from professors at **Huazhong University of Science and Technology (HUST)** and **IIT Guwahati (IITG)**, leading to **publication acceptance** and recognition within the engineering community.

Technical Skills

- **Engineering Software**: COMSOL, ANSYS, LINKAGE, MATLAB*
- **CAD and CAM**: SOLID WORKS, CATIA, SOLID EDGE
- **Programming Languages**: C/C++, Python
- **Others**: Numpy, Pandas, MS Excel, HTML, CSS, Power BI, WhiteBoard Animation ** Elementary proficiency*

Key courses taken

- Optimization Methods in Engineering
- Fundamentals of Artificial Intelligence
- Industrial Engineering and Operations Reseach.
- Dynamics of Machining Processes
- Applied Thermodynamics
- Heat Transfer
- Mechanical Measurements
- Design of Machine Elements
- Modern Control
- Solid Mechanics
- Fluid Mechanics

Positions of Responsibility

- **Core Team**, TechExpo, Techniche, IIT Guwahati *Dec. 2022 - Sep. 2023*
- **POC - Smart Assistant**, Robotics Club, IIT Guwahati *Nov. 2022 - Apr. 2023*

Achievements

- **LORs**,Received Letters of Recommendation for **outstanding research contributions** and **exceptional diligence**. *2024*
- **Merit-cum-Means Scholarship**, Awarded the **MCM Scholarship** from IIT Guwahati for **academic excellence.** *2023*
- **National Level Player**, Vall Veechu (Sword Fight), School Games Federation of INDIA (**SGFI**) *2019*