GOKUL GS

Trivandrum, Kerala, India | +91 9495943016 | gsgokul.engg@gmail.com | linkedin.com/in/gokulgs7

SUMMARY

Mechanical Engineer with hands-on experience in FEA, simulation, and software development. Self-motivated and focused on delivering reliable, high-performance solutions through R&D and cross-disciplinary collaboration.

SKILLS

- Python, Solidworks, Ansys, MATLAB, ROS2, Patran & Nastran, Machine Learning, C++, AutoCAD, Mechatronics, KiCad, Automation, MS Office, Documentation, Leadership, Communication, Teamwork, Reliability

WORK EXPERIENCE

Flexsim Simulation Engineer **Aug 2025 - Present**
Commercial Consultancy Services *Thiruvananthapuram, Kerala*

- Undergoing intensive training in FlexSim simulation modeling with focus on discrete event systems and process optimization.
- Gaining hands-on experience in building simulation models for manufacturing, logistics, and supply chain case studies.
- Developing skills in custom logic creation using FlexScript to handle decision-making within models.

Mechanical Engineer – R&D (Contractual) **Jun 2025 - Aug 2025**
Indian Space Research Organisation (ISRO) *Thiruvananthapuram, Kerala*

- Developed a standalone GUI in MATLAB App Designer for conducting Operational Modal Analysis, incorporating multiple OMA methods to facilitate streamlined data input, processing, and visualization, improving workflow by 20%.
- Performed static structural evaluation of the metallic vibration test fixture for the Velocity Trimming Module (VTM) using ANSYS and MSC NASTRAN, validating stress distribution and deformation with a margin of safety of 1.27 under operational loading conditions to ensure structural integrity.
- Conducted a deviation study of the SITVC port under minimum thickness conditions of a solid motor using ANSYS, analyzing stress concentrations near weld locations to evaluate structural integrity and improve design reliability
- Developed a Python-based automation tool to generate X, Y, Z coordinates in the weld area of motor cases using CMM and thickness data, enabling accurate ID and OD profile extraction for FEM analysis in ANSYS.

Graduate Engineer Trainee (Research and Development) **Jun 2024 - Jun 2025**
Indian Space Research Organisation (ISRO) *Thiruvananthapuram, Kerala*

- Developed a neural network model to predict the aerospace hardware deviations for design clearance with more than 99% accuracy and integrated it with a user-friendly GUI.
- Co-authored a paper on the neural network surrogate model for aerospace hardware deviation prediction, published in the National Aerospace Manufacturing Seminar 2025, to be published in the International Journal for Numerical Methods in Engineering.
- Developed a Python-based algorithm to compute the time-varying propellant surface area for thrust/pressure prediction in a multi-segment Solid Rocket motor case, improving burn rate prediction accuracy by 20% compared to traditional geometric approximation methods.
- Designed and replaced a composite upper-stage vibration test fixture with a dynamically equivalent metallic fixture for the launch vehicle's Velocity Trimming Module (VTM), achieving over 95% dynamic equivalence with the original composite module through frequency and random response analysis in NASTRAN, thereby enhancing test accuracy and reliability
- Validated flight hardware by predicting microstrains using Finite Element Analysis in NASTRAN and correlating with test data from strain gauge sensors, achieving correlation coefficients of more than 0.96.
- Designed mechanical components for a satellite damping system using SolidWorks, followed by structural and modal simulations in ANSYS, to ensure less than 5% deformation, and also ensuring its design integrity and performance.

Intern **Apr 2022 - May 2022**
Kerala Automobiles Limited *Thiruvananthapuram, Kerala*

- Acquired knowledge about powertrain, battery pack, and electric motor.
- Familiarity with EDM and CNC machines and their applications in manufacturing.
- Familiarity with different fabrication machines used in the automotive industry.

EDUCATION

APJ Abdul Kalam Technological University **Aug 2019 - Jun 2023**
Bachelor of Technology, Mechanical Engineering *Thiruvananthapuram, Kerala*

- **GPA:** 8.3

N S S Public School **Jun 2018 - Apr 2019**
12th, Science *Thiruvananthapuram, Kerala*

- **GPA:** 75.6

PROJECTS

Autonomous Mobile Robot Simulation | ROS2, Gazebo, RViz **Mar 2025 - Apr 2025**
Self-Paced
- Modeled a mobile robot using URDF, visualized and validated its structure in RViz, and implemented motion control through ROS2 plugins; blended with SLAM for real-time mapping and autonomous localization, and developed path planning and navigation algorithms using ROS2's Nav2 Stack for goal-directed movement with real-time obstacle avoidance in a simulated environment.

Boston Dynamics Spot Design (SolidWorks) **May 2024 - Jun 2024**
Self-Paced
- Designed a 3d model of the Spot Robot of Boston Dynamics in SolidWorks using a combination of surface and solid modeling techniques, achieving more than 95% geometric and visual accuracy.
- Incorporated advanced mating conditions and motion studies to simulate realistic joint articulation and walking sequences, enabling dynamic analysis and functional visualization of robotic movement.

Predictive Maintenance Analysis using different ML Algorithms (KNN, SVM, DT) **May 2024 - Jun 2024**
ROBO-AI - Internship
- Analyzed predictive maintenance capabilities of multiple machine learning algorithms (KNN, SVM, Decision Trees) using sensor data from Amazon's warehouse robots to identify stability and potential failures.
- KNN and SVM models outperformed others, achieving a 96% prediction accuracy, which enhances early fault detection and minimizes downtime in smart warehouse operations.

Ford EV Engineering Job Simulation on Forage **Mar 2024 - Apr 2024**
Forage
- Completed a job simulation involving battery technology and PID controller tuning for Ford's EV engineering team.
- Visualized data using Excel to understand the relationship between battery chemistries and capacity.
- Examined Python code for tuning a PID controller to understand its role in improving control accuracy.
- Built a robot operating system (ROS2) package, gaining proficiency in ROS2 fundamentals, node setup, and understanding the essentials of ROS2 components.
- Examined the integration of ROS2 components in a practical setting, configuring publishers and subscribers to facilitate seamless communication between various robotics components, showcasing adaptability, and practical knowledge in the context of robotic systems.

Amazon Clone **Jan 2024 - Feb 2024**
Self-Paced
- Developed an Amazon Clone App using React.js.
- Incorporate user authentication using Firebase, ensuring secure and personalized access to the app.
- Integrated Firestore database to efficiently manage and store user-related data, order details, and product information for seamless retrieval.
- Implemented the Stripe payment gateway to ensure secure and reliable payment processing within the application.

Self-Driving System Implementation **Nov 2023 - Dec 2023**
University of Toronto - Coursera
- Developed and implemented advanced Kinematic and Dynamic modeling algorithms, improving autonomous vehicle performance by achieving a 25% increase in overall safety.
- Implemented the model with Python code for autonomous driving, achieving 95% success in precise waypoint navigation.
- Executed the model in CARLA Simulator, navigating through specific waypoints.

CERTIFICATIONS

- **ROS2 Nav2 [Navigation 2 Stack] - with SLAM and Navigation:**Udemy
- **ROS2 for Beginners Level 2- Tf | URDF | RViz | Gazebo:**Udemy
- **ROS2 For Beginners: ROS Foxy, Humble:**Udemy
- **ROBO_AI - TOPAZ Robotics Internship:**MyEquation
- **Advanced Driver Assistance Systems:**Udemy
- **Ford EV Engineering:**Forage
- **GE Aerospace Explore Engineering:**Forage
- **Introduction to Self-Driving Cars:**University of Toronto, Coursera.
- **Certified SolidWorks Associate:**Udemy