Shreya Nagabhushana

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PROFESSIONAL SUMMARY:

Embedded Design Engineer with 2.7+ years in automotive embedded software, skilled in AUTOSAR, RTOS, ARM Cortex-M, in-vehicle protocols, and experienced in airbag systems, torque modelling, and ECU integration.

SKILLS:

- Proficient in C, C++.
- Expertise in AUTOSAR and ASPICE Standards.
- Proficient in Communication Protocols such as GPIO, SPI, I2C, UART.
- Expertise in RTOS based environments
- Proficient in Unified Diagnostic Services and MATLAB(Simulink).
- Experienced with Microcontroller programming (ARM Cortex-M).
- Expertise in Embedded System Peripherals and Modules.
- Experienced in utilizing debugging tools like TPT, INCA, MDA, UDE, PS-Diag, CANOE.
- Experienced in utilizing testing methodologies like HIL, SIL, SWQT and System Testing.
- Experience with ADAS (Advanced Driver Assistance Systems) development and validation.
- Soft Skills: Analytical and troubleshooting skills, Team collaboration, Efficient communication

PROFESSIONAL EXPERIENCE:

Embedded Design Engineer (Sep2022 – Mar 2025)
Bosch Global Software Technologies, Bengaluru, India.

Occupant Safety System

- Led development and optimization of advanced automotive safety systems including frontal, side-curtain, and knee airbags to enhance occupant protection in collisions.
- Engineered multi-stage airbags for adaptable deployment strategies based on crash severity, reducing occupant injury risk.
- Conducted comprehensive crash simulations to optimize airbag deployment, verified by extensive real-world testing and compliance with global safety standards.
- Developed robust algorithms for ECU's real-time crash data processing, ensuring precise timing and reliability in airbag deployments.
- Integrated and validated hardware components through simulation to verify functional accuracy under various operating conditions.

Torque Model Engine

- Developed innovative torque estimation models utilizing reduced-order algorithms for rapid computation suitable for embedded automotive systems.
- Integrated key engine parameters like engine speed, air-fuel ratios, exhaust gas temperatures, and fuel pressures for accurate torque prediction across diverse driving scenarios.
- Conducted rigorous vehicle-level validation and extensive road tests ensuring accurate real-world performance and compliance.
- Authored detailed technical documentation including architecture diagrams, algorithm designs, and specifications.

Charcon-Unit Testing

- Designed detailed unit testing protocols ensuring accurate evaluation and measurement aligned with project goals using Embedded C.
- Conducted thorough testing for critical automotive systems like ECUs, powertrain modules, and sensor-based systems to meet defined software requirements.
- Actively contributed towards enhancing unit testing frameworks and processes for better efficiency and faster turnaround.

PROJECTS:

Design of an Active Magnetic Bearing for a Rotor

- Developed an Active Magnetic Bearing (AMB) system to levitate and stabilize a rotor without physical contact, reducing friction and wear.
- Designed a control system using MATLAB to ensure stable rotor positioning through proportional-derivative (PD) control.
- Conducted comprehensive calculations to determine key design parameters (inner/outer diameters, pole width, bearing width). Simulated system performance using state-space modelling to assess rotor displacement and unbalance forces.

Terrace Farming Monitoring System – Embedded Smart Agriculture

- Developed a smart terrace farming system using Arduino Uno for automated plant care.
- Integrated sensors (soil moisture, DHT11, LDR, rain sensor) for real-time monitoring. Programmed in C/C++ for low-power, reliable performance with LCD display and serial data logging. Designed for modularity and potential solar power support.

Hybrid Robotic Lensman

- Developed an autonomous and manual photography robot designed to capture images at difficult angles and automate photography in social events.
- Integrated Raspberry Pi for system control, using Python-based algorithms for camera movement and face detection. Developed a pan-tilt camera mechanism controlled by servomotors for 360-degree image capturing.
- Designed the robot's hardware framework, including motor sizing and structural welding. Implemented obstacle avoidance and autonomous navigation using ultrasonic sensors.

EDUCATION:

Aug 2018 - Jun 2022

Bachelor of Engineering: Electronics and Communication Engineering

RNS Institute of Technology, Bengaluru, India

- Major Courses: Analog Electronics, Digital Electronics, Digital Signal Processing, Communication Systems, Control Systems, Signals and Systems, Microprocessor and Microcontroller, VLSI Design, Embedded Systems.

ACHIEVEMENTS:

Year 2022-2024

- Awarded Emerging Fresher of the Year at Bosch for 2022/2023 in recognition of outstanding performance, innovation, and contribution as a new joiner.
- Awarded the “Rising Star” Certification Prize at Bosch (2024) in recognition of outstanding performance, innovation, and contribution to embedded systems development.
- Secured 1st Prize in an Inter-Company Hackathon organized by Bosch, leading the design and implementation of a real-time embedded solution under stringent time and resource constraints.

LANGUAGE SKILLS:

- English (C2/Fluent)
- German (A1- Goethe Certified)