Sathyanarayanan

* Around 5 years of experience as an embedded engineer, firmware developer in Embedded Industry.
* Experienced in programming languages such as C, C++, and python for embedded systems on both Linux and RTOS platforms, enabling the development of efficient and robust software solutions.
* Hands on experience in creating Python scripts, to automate the generation of C code for various models.
* Well versed in device communication protocols such as USB, Ethernet, Wi-Fi, and Bluetooth.
* Proficient in MATLAB/SIMULINK, State flow, Embedded C, CAN, and Hardware in Loop Simulation.
* Good working knowledge in standards and protocols like CAN, LIN, Flex Ray, TCP/IP, UDP, I2C, SPI etc.
* Expertise in using CAN based tools such as CANalyzer, CANoe, CANape, etc.
* Good knowledge of designing and working with embedded systems & Microcontroller, Serial communication links especially CAN Bus system.
* Developed and tested specialized UDS calibration software for electric vehicle (EV) applications, ensuring optimized battery health and performance.
* Meticulously documented battery calibration procedures, test results, and validation reports to ensure compliance with industry standards.
* Proactively researched and adopted emerging technologies and best practices, consistently staying updated with industry trends to drive innovation and maintain a competitive edge.

**TECHNICAL SKILLS**

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| --- | --- |
| * Languages | C, C++, Linux Shell Scripting, MISRA C, Python Scripting. |
| * Testing Tools | CANalyzer, Oscilloscope, Vector CANoe, Wireshark |
| * Debugging Tools | GNU, GDB, CLion, Visual studio, MATLAB Simulink, SysML, Rhapsody |
| * Protocols Awareness | TCP/UDP, IP (v4 & v6), DNS, DHCP, SSH. |
| * Operating Systems | QNX, Linux, Windows |
| * Networking Concepts | VLANs, Basic Switching & Routing |
| * Microprocessors/ * Microcontrollers | Atmel 8051, ATmega328P (Arduino Board), PIC16c57c (Basic Stamp), ARM Cortex-A8, PLC (Allen Bradley) |
| * Embedded IDEs | Kiel IDE, IAR GHS, Eclipse, SDE, MATLAB Simulink, SysML, Rhapsody |
| * Tools and protocols | CAN, UDS, INCA, DOORS. |
| * Analysis Techniques | FTA (Fault Tree Analysis),FMEA(Failure Mode and Effects Analysis) |
| * Others | Good knowledge on Data structures, BSPs, Firmware, Verification and Validation (V & V), System Integration and Testing |

**Project Details:**

**Embedded Engineer**

**Radiance Technology- Dayton, OH July 2022 – current**

* Collaborated with stakeholders to identify and implement ECU software for ADAS functionalities using C/C++ programming languages, adhering to AUTOSAR standards.
* Participated in requirements analysis, architecture, and design processes, translating stakeholder requirements and industry knowledge into engineering requirements.
* Utilized industry-standard tools such as Vector CANoe, CANape, and Trace32 for communication diagnostics, software debugging, and analyzing report logs.
* Leveraged MATLAB/Simulink for modeling and simulation of ADAS functionalities, analyzing system behavior, and optimizing performance according to established objectives.
* Configured communication stack modules according to AUTOSAR specifications to optimize communication for ADAS custom protocols such as CAN.
* Conducted thorough powertrain calibration, with a specific focus on integrating and optimizing ADAS features to meet established performance targets.
* Integrated plant models with dSpace for HIL testing of ADAS control algorithms, ensuring accurate simulation of vehicle dynamics for performance evaluation.
* Rigorously validated ADAS system performance through extensive testing on simulators and actual vehicles to ensure reliability, safety, and compliance with regulatory standards.
* Implemented Model in Loop (MIL) and Hardware in Loop (HIL) validation techniques to ensure functional safety and performance compliance with ISO 26262 standards.
* Worked closely with cross-functional teams, including powertrain engineers and ADAS specialists, to identify and address issues impacting ADAS system performance.
* Collaborated with other departments and system suppliers to ensure proper calibration of ADAS systems.
* Utilized Git for version control to efficiently track changes and maintain code integrity.
* Utilized the MS Office suite for documentation, reporting, and presentation purposes, supporting the development of ADAS feature know-how and road map development.

**Embedded Engineer**

**Daimler –Redford, MI Aug 2021 – Dec 2021**

* Configured UDS services according to AUTOSAR standards for ECU diagnostic information reading, enhancing vehicle system diagnostics and optimizing implementation for efficiency.
* Utilized Vector CANalyzer for analyzing the ECU network, configuring communication protocols, and ensuring system integrity.
* Designed, developed, and tested UDS calibration software tailored for EV applications, ensuring adherence to industry standards with Trace32.
* Validated Unified Diagnostic Services protocol for compatibility and reliability in EV environments.
* Configured UDS services in accordance with AUTOSAR standards for enhanced diagnostics of EV BMS ECUs.
* Leveraged Trace32 for real-time debugging and optimization of EV BMS ECU software.
* Conducted diagnostic tests on EV BMS ECUs, providing insights for continuous improvement.
* Utilized MATLAB/Simulink for modeling and simulation of EV powertrain systems.
* Conducted diagnostic tests and calibration procedures to optimize battery performance and ensure longevity.
* Collaborated with the ADAS team to ensure seamless integration of UDS calibration solutions into ADAS functionalities, enhancing overall vehicle performance and safety.
* Worked closely with the ADAS team to analyze and address DTCs affecting ADAS system performance, ensuring optimal functionality and reliability
* Leveraged UDS functionalities to detect and address battery anomalies promptly, minimizing downtime and maximizing reliability.
* Documented calibration procedures, test results, and validation reports meticulously.

**Embedded Engineer**

**Philips, India May 2019 – Aug 2020**

Project 1: PREDICTING BREAST CANCER after diagnosis.

* Developed a machine learning model using python for predicting breast cancer diagnosis, utilizing logistic regression and a GLM (generalized linear model) classifier, and analysing factors such as tumour thickness, age groups, radiation exposure, and menopause stage.
* Created a neural network model for the class and used a confusion matrix to measure accuracy, sensitivity, and specificity.
* Utilized machine learning techniques to improve the model's performance and accuracy.
* Implemented the model and analysed the results to determine the effectiveness of the model in predicting breast cancer diagnosis.

Project 2: INFANT INCUBATOR with IoT Process

* Developed a low-cost IoT-enabled infant incubator, incorporating advanced sensors and communication modules for vital sign monitoring.
* Applied C++ programming skills in a Linux environment (Device driver kernel) to implement Layer 2 and Layer 3 network protocols, ensuring efficient data link handling.
* Utilized Arduino board for control and communication, showcasing proficiency in embedded systems programming and hardware-level network interaction.
* Integrated multimodal sensor perception, Wi-Fi, and GSM modules, enabling real-time data transmission. Employed C++ for Layer 3 network protocol management.
* Programmed built-in alerts and notifications for abnormal readings, showcasing expertise in C++ for immediate recovery actions.
* Conducted testing and fine-tuning, optimizing networking components for seamless integration with the IoT ecosystem.

**Software Intern**

**Accord Software and Systems Pvt Ltd, India Aug 2018 to March 2019**

* Contributed to the development of an automotive networked body module as part of a collaborative team effort.
* Developed a scheduler/dispatcher algorithm for an End of Line tester unit, targeting hardware featuring the Atmel AT89C51SND2C Microcontroller.
* Utilized Python to develop scripts for emulating requirements and managing file structures.
* Conducted automated testing for Airbag Electronic Control Units (ECUs), involving data reading and logging for identification of Device Under Test (DUT), with interfacing via CAN communication.
* Validated the developed systems through White box/Black box testing, providing comprehensive reports on code coverage, functionality errors, and memory leaks.

**EDUCATION**

**Cleveland State University**, Cleveland, OH Dec 2022

### *Master of Science in Electrical Engineering - specialization in computer systems* GPA: 3.55

**Anna University,** *Chennai, India*  May 2019

### *Bachelor of Engineering in Electronics and Communication* GPA: 3.0