

**NEELESH KUMAR PANDEY**

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## **1+ years of Experience in Embedded Systems in Automotive Software Engineer**

### **PROFILE SUMMARY**

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Detail-oriented automotive engineer with extensive experience in Passive Entry and Passive Start (PEPS) systems, seeking to leverage expertise in Bluetooth Low Energy and CAN protocols to contribute to innovative automotive solutions and also worked on Vehicle collision avoidance system. I am skilled in collaborating with cross-functional teams to ensure the delivery of high-quality products.

### **CAREER HIGHLIGHTS-**

- Having 1+ Years of Experience in Embedded Automotive Development.
- Exposure in **CAN Protocol, CAN -TP Protocol, CAN-FD, UDS, UART, SPI, I2C** communication protocols.
- Experience in Development on Automotive Modules like **PEPS (Passive Entry and Passive Start) for SDV, BCM**.
- Utilized **Bluetooth Low Energy (BLE RN4870 module)** and included **AES-128 CBC encryption** for secure authentication processes.
- Performed ECU system testing with tools like CANoe and diagnostic tools, validating communication protocols (**CAN, LIN, UDS**) and improving crash response accuracy by **15%**.
- Implemented the **Memory Driver for Storing DID (Diagnostic Identifier) and DTC (Diagnostics Trouble Code)**.
- Good experience in Requirement analysis and configuration management tools.
- Good knowledge and experience about universal automotive test simulation tools, CANoe, CANalyzer, Cathode ray oscilloscope (**CRO**), **logic Analyser**.
- Hands on **C-programming** language, CAPL & Single Frame and Multi Frame Concepts.
- Message Format, Arbitration, Identifiers, Configure CAN messages in Vector.
- Keen analyst with excellence in understanding and gathering requirements of clients/ Vendors/ Consultants & other multiple stakeholders.
- Integration of **OLED Display** with the PEPS using SPI.

### **AREAS OF EXPERTISE-**

Firmware Development | NXP Microcontroller(S32K146) | STM Microcontroller (STM32F407VGT6 and STM32F407VET6) | Beagle bone black | PWM | Timers | Electronic Control Unit (ECU) | FreeRTOS | UART | CAN | CAN-TP | C Programming Language | CAPL | UDS | IPC Communication| Linux Device Drivers | RS 232 | ARM | Logic Analyser | CRO.

### **TECHNICAL SKILLS-**

Software Tools: Canoe | CANalyzer | S32 Design studio | STM Cube IDE | Git Hub | Jira | Real term | Operating Systems: Windows 32 bit / 64 bit , Linux.

## **PROFESSIONAL EXPERIENCE-**

- I am working as a Junior Embedded Engineer in Ceinsys Tech Ltd (Brand Name - CsTech.ai), Pune, from March 2024 to Present.

## **EDUCATIONAL QUALIFICATION-**

**PG:** PG Diploma In Embedded System Design (March 2023- August 2023)

- **Institute:** Advanced Computing Training School CDAC Pune,
- **Percentage:** 72.43
- **Course Modules:** Embedded C, Data Structure and Algorithm, IoT, Linux Device Drivers, Embedded OS, Microcontroller Interfacing and Programming, RTOS.

**B.Tech:** Electrical Engineering ( Dr. AKTU University)(August 2017-Sept 2020)

- **Institute:** Jss Academy of Technical Education, Noida
- **Percentage:** 76.10
- **Course Modules:** Embedded Systems, Digital Electronics, Signals and Systems, Microprocessors and Microcontrollers, Dc Machines, Power Electronics.

**Diploma in Tech:** Electronics and Communication Engineering (BTE Delhi) (August 2013-July 2016)

- **Institute:** Guru Nanak Dev Polytechnic Rohini
- **Percentage:** 75.04
- **Course Modules:** Embedded Systems, Digital Electronics, Linear Integrated Circuits, Electronic Devices and Circuits, C Programming.

## **PROJECT#1 Passive Entry Passive Start for SDV's -**

### **Project Description:**

The **PEPS for SDVs** project is focused on developing intelligent, software- defined vehicle solutions to enhance driving experience and also aimed to enhance vehicle security and user convenience through the development of a robust Passive Entry and Passive Start system. This system allows users to unlock and start their vehicles without needing to physically use a key, leveraging advanced technologies for seamless operation.

### **Roles and Responsibilities:**

- Analysis of system Requirement specification.
- Developed and implemented **PEPS functionality**, enhancing vehicle security and user convenience.
- Utilized **Bluetooth Low Energy (BLE RN4870 module)** and included **AES-128 CBC Encryption** for secure authentication processes.
- Designed and executed a **state machine** encompassing various operational states: OFF, ACC, IGN\_RUN, and CRANK.

- Collaborated on the integration of **Ajar Switch, Brake, Door Lock, and ESCL Release and Lock** functionalities.
- Implemented a **PIT Timer** for efficient CAN and PEPS operations.
- Created and managed **DBC files** in **CANoe** for comprehensive testing and validation.
- Developed and tested **Classic CAN** and **CAN-TP** (ISO 15765) protocols.
- Engineered a **memory driver** for storing and clearing the Diagnostic Identifier (DID) and Diagnostic Trouble Codes (DTC).
- Implemented the **UDS** (ISO-14229) and simulated the BCM module using CAPL.
- Integration of **OLED Display** for Signal strength in PEPS.

## **PROJECT#2 CDAC Project – Vehicle Collision and Avoidance System**

### **Project Description:**

The IoT-Based Vehicle Collision Detection and Avoidance System utilizes IoT technology to enhance road safety. By integrating sensors such as the LIS3DSH for collision detection and GPS for location tracking, the system enables vehicles to share their latitude and longitude. In the event of a potential collision, it alerts the driver with a buzzer and sends an emergency message, including the vehicle's location, to a registered mobile number via a SIM800 module. Additionally, an LDR sensor automatically activates the vehicle's lights in low-light conditions, improving visibility and safety. This project aims to provide real-time alerts and enhance driver awareness to reduce accident risks.

### **Roles and Responsibilities:**

- Led the design and implementation of an IoT-based vehicle collision detection and avoidance system aimed at enhancing road safety through real-time data sharing.
- Integrated various IoT sensors, including the LIS3DSH, HC-SR04 Ultra sonic sensor, SIM module 800, neo 6M GPS SENSOR for collision detection and ultrasonic sensors for proximity alerts, ensuring accurate and timely responses to potential collisions.
- Implemented a buzzer alert system that activates when a potential collision is detected, providing immediate feedback to the driver through auditory signals.
- Integrated an LDR sensor to automatically activate vehicle lights in low-light conditions, improving visibility and safety during nighttime driving.