SAGAR KOKATE

Software Developer

✉ sagarkokate619@gmail.com

📞 9773102394

📍 INDIA

🚩 INDIA

∞ SINGLE

PROFILE

Have 6 years of experience in Automotive Application Development.Currently working as Software Engineer and mainly responsible for the development of the RF Modules Like KG(Keyless Go), RKE(Remote Keyless Entry), PEPS(Passive entry Passive start), Transponder(Passive RFID) , Immobilizer , KeyFob(NCF29AE)

Responsible for the Configuration of UHF driver ATAX 5781,LF Driver ATAX 5293 with 5 antenna through SPI protocol,configuring the Tr ansponder through LIN 2.0 protocol.

Responsible for the Development of the Bootloader for Inhouse Bootloader,Integration of the Vector FBL stack,Experience in Development of the Cyber security Feature like Secure Boot, Secure Flashing, Secure Logging,ADA (Authenticated Diagnostic).

Responsible for the Development and configuration of Modules Like BSW,BSWM Rules,DCM,DEM,RTE,FEE,FLS,CDD,NVM,NvM manager.

MCAL Development for various Modules Like PWM,ADC,TIMERS,COUNTERS,WDG,Interrupt ISR's. Worked on communication protocol like CAN, LIN,I2C,SPI,UART etc Experience with low-level embedded driver integration (i.e. Emulated EEPROM, GPIO, Timer and Counters).

Experience in Building and debugging using various tool chains, compiles like ghs,IAR,Kiel micro vision 5,Code Composer studio, ST Visual programmer, Atollic True STUDIO and debugger like Multi debbuger, Renesas E1/E2 debugger, Trace 32 debugger.

Experience in preparation of Software Requirement document, Software design document and traceability Matrix. Experience in Make file based Build and Compilation. Familiar with Embedded Software Development Life Cycle.

PROFESSIONAL EXPERIENCE

Aptiv Component Pvt Ltd

June 2022 – present
Bengaluru, INDIA

Software Engineer

RFHM(Radio Frequency Hub Module) this Module is mainly Responsible for the Features like KG(Keyless Go) , RKE (Remote) PE(Passive Entry), KeyFob(NCF29AE) and Transponder (PJ7F22) ABIC II(Advanced Base station 2), Proxomity and Welcome light Feature.

RFHM Node is Interfaced to Vehicle can Via CAN interface(FD3,FD9), Door unlock is initiated from User by Touching the Door handle, this Request is Transmitted to RFHM module to Authenticate, RFHM initiate the Security Module for Authentication of Valid Keyfob and sends the Auth Sts to BCM to unlock the Door.Similar the RKE request is Proccessed by RFHM and if Authenticated the Request is proceesed and Send to BCM Module.

- Responsible for Implementation of various Diagnostic Services for RKE modules.
- Implemented the Kitting/Pairing RID $FF05 for Pairing the RFHM with the KeyFob
- Implemented the KIN Backlight through LIN protocol (UJA1023) using the PWM.
- Impemented the RKE Module for Processing the RKE request, the RKE request is Recevied through ATAX 5781. Decrpt the Received Data and if Authenticated then Extracts the Required Data(LOCK/UNLOCK/PANIC/AS/REMOTE START) from the UHF Frame format. and Sends to the BCM.
- Implemeted the PE module, the Door handle unlock/PULL/LOCK request is initiated from BCM to RFHM's security module through CAN,
- Created the Required frame format for LF Tx the tx data is Conterved into Manchestor Format as per the Requirement and filled the Buffer for LF Transmission through SPI Protocol,
- Implemented the LF Diagnostic Routine which will Test the LF antenna Faults Like Short to GND , Open circuit.
- Implemetation of KG module, when the User is intiating to Start the Engine, the request is received by Security Module and Initiate to Transmit the LF signal from the Antenna 4 which is located inside the Car and the Request is Received by keyfob and the Keyfob Reponds via UHF band with RSSI which Helps to Calulate the Keyfob Position, if its inside and Authenticated the The IGN_POS is changed to IGN_RUN and sends to BCM through RFHUM_FD2 can Message.
- Implemented the CyberSecurity Features Like Secure Boot, Secure Flashing, ADA(Authenticated Diagnostic), Secure Logging
- Modified the linker file file based on the Projectect Requirement such as Changing the Vector Address, Memory sections.
- Implementing the Bootloader Features like Reflashing, BLU updator,Writing the Finger Prints(APP/APPDATA/BOOTLOADER). Reprogramming Counter.

- Implemented the Diagnostic Service Table which is functions and Subfunctions.
- Integrated the HSM module Provided by ISS.For CyberSecurity Created the Cerstore which has Aptiv in house Certificate which was Created using Openssl.which is used for Authentication.
- Implemented the Secure logging for Logging Critical Events like Flash Failure,Wrong RFHM unlock PIN.

May 2021 –
June 2022
Bengaluru, INDIA

Software Engineer
RSA(Remote Start Antenna), this Node is Responsible to Handle the RKE/TPMS request and Sends the Data to IBCM through LIN 2.0 Protocol.
- Responsible for Implementing and Integrating the Vector Bootloader Stack withing the RSA Environment.
- Vector Stack was configured through Geny Tool , which has configurations like CAN baudrate, Standard can,Extended CAN, bit rate, DATA Flash storing the Fingerprints, Reprogramming Counter.
- Implementation of NvM module for storing the TMPS time stamp and other ECU data.
- Configuration of ATAX 5781 chip which is responsible to receive the RKE/TPMS frames,which includes configuring Service path A/B , Modulation ASK/FSK, Operating Frequency 434MHz, 334MHz,Polling mode, Mode Configuration.
- Implemented the Diagnostic Services Like DID's RID's,Implementation of LIN Diagnostic, IBCM will Initiate the Diagnostic Request through LIN 2.0 Protocol to RSA node.

February 2020 –
April 2021
Bengaluru, INDIA

DevSys Embedded Technologies, Software Engineer
This project consist of a Two wheeler Electric motor keypad which is an CAN node used to interface with the main ECU to send messages using CAN protocol. Keypad has 16 buttons which includes the numeric digits from 0-9, SOS , LOCK, ON/OFF ,PAUSE ,BOOT and # key. Numeric is used to enter the OTP and the # is used to Send SOS signal like Fuel empty Using CAN identifiers. Thus Sensors information is provided to the user on the display using CAN protocol.
- Responsible for Implementation of CAN stack(Physical layer, Data Link) for interfacing with Vehicle CAN of BCM Module.
- Responsible for Implementing the Automotive Keypad using switch.
- Responsible for Developing the Software as per the Requirement.
- Responsible for Unit testing and Validation.

February 2018 – February 2020 Bengaluru, INDIA	**Klaus IT Solutions Pvt Ltd,** Associate Software Engineer

This PTC Heater Controller unit is designed to be used in HVAC unit to control the heating element provided in the Car, which is produced in Europe and China. As each core rating is above 2.6KVA, multiple IGBT are used as a switching device to reduce the input power to the PTC heater core. Depending up on the temperature kept by the user in the dashboard, EVC sends the LIN message through LIN bus to control the PWM and switches IGBT to control the temperature. Thermistor is used to sense the temperature and protect core and IGBT from overheating.

- Responsible For Developing the PWM and ADC , LIN using UART for STM32 micro-controller
- Three core was interfaced with IGBT for controlling the HVAC Coil using PWM.
- Implemented the Software algorithm for Efficiently heating the HVAC Coil using PWM such that three PWM channel controlls the IGBT out of Phase.

SKILLS

DCM Module (Configure the DCM module for Diagnostic such as creating the RID and DID Runnable configuring DSP,DSL, Buffer size)

RTE (Creating the Sender Receiver(queued/non queued) , Server Client port for Communication Between Application and BSW Module.)

BSWM (Created BSWM rules for the RKE validation, EcuM States like Sleep wake up based on the CAN/LIN communication. Created BSWM Rules for 28 Services for CAN Communication.)

GPT (General Purpose TImer) (Created the SMAR24 Hour Timer for the PE(Passive Entry) Module configure the CLK frequency and Ticks per second.)

DEM (Configured the Various DTC's from the CDD, configured the Enable condition, Debounce algorithm, Reference Cycle (Power cycle),Ageing Counter etc.)

EDUCATION

June 2010 – July 2014 Mumbai, INDIA	**Mumbai University,** B.E

COURSES

April 2017 – November 2017 Bengaluru, INDIA	**Embeded system,** Vector Institue of India