NILKUMAR SONI

EU Bluecard Holder (Karta Pobytu) –No work permit or Visa required to work in EU

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EMBEDDED SOFTWARE DEVELOPER/LEAD PROFESSIONAL

Proven expertise in designing and delivering complex embedded and IOT solutions; ***pursuing specialist engineering roles within reputed global companies***

PROFESSIONAL VALUE OFFERED

- **Experience in** in C Firmware development, AUTOSAR Architecture, AUTOSAR workflow, AUTOSAR BSW Modules, COM Stack, Diagnostic (DEM, DCM) Stacks Configuration, AUTOSAR ECU Integration, Agile SDLC, Waterfall SDLC and release for safety-critical ECUs
- Currently associate as Expert Software Engineer with **APTIV SERVICES POLAND.**
- Skilled in **Diagnostics (UDS/DoIP**), **Communication stacks (CAN/Ethernet),** and Functional Safety.
- Automotive domain exposure in **Electronic power steering, Infotainment, ADAS, HMI, DMS**
- Exposure to **C, Diagnostics (UDS), AUTOSAR Layered Architecture (Application, BSW, MCAL Layer, CDD), Testing of MCAL Drivers, and Agile based Software Development Process, SVN, GIT, CAN, Ethernet, SPI, I2C, UART, and RS-485**.
- Having good experience in design and development **software for various microcontrollers (8,16,32 Bit) and their interfacing with peripherals using Embedded C-Language**
- Development using **MAAB, MXAM, MISRA, ISO 26262 and AUTOSAR guidelines**.
- Good knowledge in AUTO-SPICE processes such as requirement capturing, design, implementation andtesting of different AUTOSAR software modules.
- Hands-on experience in Vector tools like **Davinci(Developer/Configurator), CANoe, CANoe Diva 15**
- IoT experience with microcontrollers, sensor interfaces, BLE/Wi-Fi connectivity, and real-time data processing.
- Analog, Digital and Power electronics circuits, signal conditioning for various sensor circuit, PCBdesigning using Orcad 16.0.
- Experience with build & test automation using Git-based pipelines and CI/CD workflows, relevant to GitLab, and Jenkins
- Participated in the **functional safety(ISO-26262) audit, checklist preparation, system analysis(DFMEA).**
- Participated in the implementation of the standard like **ISO26262, ASPICE and ISO/TS 16949, IEC, IEEE**
- Good competency in requirement analysis, team, task and risk management.

TECHNICAL COMPETENCIES

Operating Systems: Windows, Linux, Android

Programming Languages: C, Embedded C, Python

Tools & IDEs: Enterprise Architect, SVN, Git, JIRA, IBM DOORS / DOORS Next Gen, Reqtify, CodeBeamer, Polarion, Confluence, GHS Multi, MPLAB, GCC, AVR Studio, Tasking TriCore, Reactis, Trace32 (Lauterbach), Davinci Developer, Davinci Configurator, MATLAB (2017 & 2019), Polyspace (2017 & 2019), CANoe, CANtata

Domain Expertise: AUTOSAR Classic Platform, IoT Systems, Electronic Power Steering (EPS), ADAS, Infotainment, HMI, Embedded C development

Communication Protocols: CAN, I2C, SPI, SENT, Ethernet, UDS, USB, MCAL, CDD, Complex Drivers

Hardware Platforms: Renesas RH850 F1x/P1x, Infineon TriCore TC3xx,ARM Cortex-M3 (LPC1768),ARM7 (LPC2129),Lauterbach Trace32, E1 Emulator

Project / Test / Defect Management Tools: Confluence, JIRA, CodeBeamer

Requirements Management Tools: Reqtify, CodeBeamer, Polarion, DOORS

Microsoft Office Suite: Excel, Word, PowerPoint, Outlook

Training & Certifications: PG Diploma in Embedded Systems & Design, Advanced Programming in C++ (Sages), MISRA C Training (Sages), AUTOSAR Classic Training (Vector), CANoe / CAPL Training

ORGANIZATIONAL EXPERIENCE

Expert Software Engineer | Aptiv Services Poland S.A., Krakow, Poland June 2022 – Present

Projects: HMI Evolution(Customer Diagnostic, Projects: IHP,DTHE,HKMC,DMS)

Description: Develop and maintain diagnostic component for Infotainment projects with Agile approach. Diagnostic component is managing ECU diagnostics according to ISO14229 (Unified Diagnostic Services) and providing diagnostic communication with all the software components in AUTOSAR and Android environments. Also make the project ASIL B and ASPICE Level 2 compliant from unit level to integration.

Protocols/Modules Used: Embedded C, Python, Autosar DCM, DEM, BSWM Rules, J1939, COM stack , HiSip, MICROSAR OS, NVM, UART

Controller/Tools Used: Renesas RH850 F1x/P1x, Infineon TriCore TC3xx, Davinci, Canoe, Multi, Tasking Tricore, Trace32, Polarian, Git, Jira

Responsibilities:

- Responsible for leading the team and providing technical support to ensure on-time delivery of project milestones.
- Integration of Vector SIP and ECU Extracts within the AUTOSAR Classic development workflow.
- Software development in **C** for automotive Electronic Control Units (ECUs), with responsibilities focused on diagnostic functionality.
- Configuration and implementation of **Diagnostic Trouble Codes (DTCs)**, **Data Identifiers (DIDs)**, **Routine Identifiers (RIDs)**, and other **UDS-based diagnostic services**.
- Configuration of AUTOSAR Classic components, including the **Diagnostic Event Manager (DEM)** and **Diagnostic Communication Manager (DCM)**.
- Took ownership of **DiagRouter**, **DiagQuery**, and **DiagClient** components responsible for diagnostic communication with the SoC via the **Hisip** interface.
- Responsible for key **UDS security** features for the bootloader (SWDL).
- Developed and deployed **Python-based automation scripts** for diagnostic modules, significantly reducing manual effort and improving efficiency across multiple projects.
- Collaborated directly with customers and stakeholders to clarify diagnostic requirements, analyze issues, and provide technical solutions.
- Developed and executed unit and component tests using **Cygwin** and **GoogleTest (GTest)**.
- Performed validation and debugging of diagnostic functionalities using **Lauterbach Trace32**, **GHS Multi**, and **Vector CANoe**.
- Configured and integrated **Complex Device Drivers (CDD)** and associated CDD files based on project-specific diagnostic requirements.
- Validated compliance with customized automotive standards, including **MISRA C**, **ISO 26262**, **ISO 14229 (UDS)**, and **AUTOSAR** guidelines.
- Authored, maintained, and updated software and system requirements using **Polarion ALM**.
- Hands-on experience with Vector tools such as **CANalyzer** and **CANape** for diagnostics and communication analysis.
- Worked within **ASPICE-compliant** development processes following the **V-Model**.
- Applied **MISRA C** guidelines and conducted structured peer code reviews to ensure software quality and compliance.
- Worked with **Git/GitLab**, **Jenkins**, and **CI/CD pipelines** to support continuous integration and software delivery.
- Organized Agile/Scrum ceremonies and collaborated with cross-functional development teams.
- Responsible for client communication and travelling to client sites when required.

Technical Specialist/Technical Leader | Tata Elxsi Limited., Bangalore August 2018 – April 2022

Project: EPS(Electrical Power Steering) System, Renesas RH850 F1x/P1x, Vinfast

Description: Project aim for the Develop an Electronic Power Steering Software Platform to be utilized with the Infineon controller chipset. Maintain existing Renesas controller and newly developing Infineon controller under the platform such that customer shall be able to configure controllers and necessary functions based on the needs. Develop and document a Safety Case that allows for usage in an ASIL D application. Generate evidence that the work products were created using a process compliant to ASPICE (Level3), KGAS, and MISRA2012.

Protocols/Modules Used: Autosar BSW, COM stack (CAN), CDD, DCM, DEM, MCAL

Controller/Tools Used: Infineon Tricore TC38xx, Renesas RH850 F1x/P1x, SVN, DOORS, JIRA, Git, GHS Multi, Reactis, Reqtify, Davinci Developer, DavinciConfigurator, GCC, Trace 32, Matlab 2017, Polyspace 2019

Responsibilities:

- Configure Autosar basic Software (COM,PduR,CAN_IF) and DCM,DEM as per UDS (ISO 14229)
- Component owner responsibility of Motor Velocity, Motor angle measurement, Nexteer Timer in EPS system. This includes requirements to testing of the component, which needs to be ASIL D compliant.
- Crafted SWE3 requirements aligned with SYS requirements
- Bug analysis and fixes using various debugging tools, functional testing on real and development hardware.
- MATLAB Model development for the existing C Code.
- Validating customized standards for Automotive Model Based Development using MAAB, MXAM, MISRA, ISO 26262 and AUTOSAR guidelines.
- Creating DFMEA for the components.
- Lead Customer interactions for clarification discussions of technical issues

Senior Embedded Software Developer | Opulent Infotech Pvt Ltd., Pune June 2015 – August 2018

In-house embedded and IOT product design and development in that management of the embedded software development team, coordination of technical activities, and process improvement within the team regarding live project/product

Project: Automated Drip Irrigation Controller System, Mobile based GSM starter

Protocol/Module Used: Embedded-C, I2C, UART, ADC, Timer, PWM, EEPROM, BLE/Wi-fi, GSM, GPS

Controller/Tools Used: LPC1768 (ARM Cortex-M3), Keil – uVision, JTAG Debugger

Responsibilities:

- Pivot (Self controlled Irrigation system) Controlling software with IOT
- Debugging, Unit Testing, Integrated testing of all modules.
- Firmware development of modules I2C, ADC, UART, EEPROM, RTC for ARM Cortex – M3 (LPC1768) that use for peripheral interfacing in Master Control Board.
- Full Responsible for ADC Configuration, I2C based EEPROM, Serially read data from Secondary control board.
- Perform requirement review, Create architecture, Design, User Manual for responsible modules and trace from requirement to source code.
- Perform Unit test All Supported Compiler, Perform Traceability from design to unit testing, Code generation test.
- Integrations of modules developed by entire team for Main Control Board.

ACADEMIC CREDENTIALS

- P.G. in Diploma in Embedded System Design,

  May 2015, Savitribai Phule Pune University, Pune, Maharashtra, India
- B.E.(Electronics & Communication Engineering),

  June 2014, Gujarat Technological University, Ahmedabad, Gujarat, India

ADDITIONAL INFORMATION

Languages known: English , Hindi , Gujarati

Personal skills:

- Provide updates to top **management** and **co-ordinate** with the team
- Confident, articulate, and **professional speaking abilities** (and experience)
- **Empathic** listener and **persuasive** speaker, **influencing**, leading, and delegating abilities
- Innovative professional, delivered & created multiple processes in the team reducing manual work