




# VIJAY SHANTARAM RAGIT

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## Software Engineer | Avionics & Automotive Embedded Systems

 +91 7709541746 |  vijayr151195@gmail.com |  [linkedin.com/in/vijayragit](https://www.linkedin.com/in/vijayragit)

### SUMMARY

- Embedded Software Engineer with 3 years of experience in Avionics & Automotive Embedded Systems.
- Proficient in Embedded C, C++, and Python for software development, verification, and validation.
- Strong knowledge of ISO 26262, DO-178B/C, and MISRA C industry standards.
- Expertise in CAN communication, UDS services (ISO 14229), and HIL testing using dSPACE and CANoe.
- Skilled in automation scripting with Python & CAPL.
- Experienced in requirement analysis, test case development, debugging, and system integration.

### EXPERIENCE

#### Software Engineer | ALTEN Global Technologies | Bangalore, India | May 2022 - Present

- Software Development & Verification: Reviewed SAD, SDD, SRS for MISRA C.
- Embedded Systems: Designed UML-based architecture, developed and optimized Embedded C & C++ code.
- Testing & Validation: Conducted HSIT and HIL testing using dSPACE Scalexio, CANoe, and ControlDesk.
- Diagnostics & UDS Testing: Developed ISO 14229-based diagnostic scripts (CAPL, Python) for ECU testing.
- Communication Protocols: Extensive experience with CAN, SPI, UART, I2C ensuring seamless integration.
- Automation & Scripting: Implemented Python-based test automation, improving efficiency by 30%.
- Configuration Management: Worked with SVN, Change Control, and Requirement Traceability tools.

## PROJECT EXPERIENCE

### HSIT for Motor Control Unit (MCU) | September 2024 - Present

- Tools: CAPL, Python, CC Studio, Vector CANoe, NI Cards, NUMATO LAB Ethernet Relay.
- Automated test execution using Python scripts, reducing manual testing time by 40%.
- Developed and reviewed test procedures based on system and software requirements.
- Implemented UDS diagnostic testing scripts using CAPL for services: Diagnostic Session Control (0x10), Read/Write Data by Identifier (0x22/0x2E).
- Conducted CAN communication testing, verifying transmit/receive message integrity and timing.
- Controlled I/O signals using NUMATO LAB 16-Channel Ethernet Relay integrated with NI Cards.
- Ensured 100% requirement traceability through detailed coverage analysis.

### Crash Detection Unit (CDU) | April 2023 - August 2024

- Tools: Embedded C, Python, Microchip SAMV-70, MPLAB X IDE, MISRA C:2012.
- Developed ADC initialization and configuration drivers for SAMV-70 microcontroller.
- Designed and documented software architecture using UML (activity diagrams, flow and call tree).
- Authored Low-Level Requirements (LLRs) for each software function based on the implemented code, documenting them in the Software Design Document (SDD) to ensure accurate traceability to the Software Requirements Specification (SRS) and support effective verification.
- Authored and peer-reviewed unit and integration test cases, increasing defect detection.
- Ensured full compliance with MISRA C:2012 coding standards across the codebase.
- Performed traceability mapping from SRS to SDD and source code.

### BA-670 (Blue Avionics) | September 2024 - October 2024

- Tools: Embedded C, Cortex LPC3250, Smart Tester, Keil uVision 5.
- Performed unit testing on low-level software modules, increasing code coverage from 85% to 98%.
- Created and executed test cases aligned with Low-Level Requirements (LLR).
- Analyzed source code, including SRS, SAD, and SDD documents.
- Generated unit test reports, contributing to reduction in system errors by 18%.
- Documented hardware setup configurations and test environment settings.

### Validas - STL & Vector Libraries Testing | February 2023 - March 2023

- Tools: C++, Atlas, Visual Studio IDE.
- Performed unit testing on C++ Standard Template Library (STL) components.
- Tested critical vector modules: T\_const\_begin, T\_push\_back\_constTx, T\_push\_back\_Tx, T\_reserve.
- Executed and maintained unit tests for vector library implementations.

## ARM FuSa C++ Library - Architecture & UML Modeling | October 2022 - January 2023

- Tools: C++, Draw.io, Notepad++.
- Reviewed and analyzed Software Design Documents (SDD) and Software Requirement Specifications (SRS).
- Updated UML diagrams (Class, Sequence, and Flow Diagrams) based on evolving requirements.
- Created and revised Software Architecture Documents (SAD) and SDDs for multiple modules.
- Ensured consistency between documentation and implementation.

## TECHNICAL SKILLS

- Programming: Embedded C, C, C++, (Python, ADA - Basic).
- Development Tools: Keil, MPLAB X IDE, CC Studio, Visual Studio IDE, MATLAB, LDRA.
- Scripting & Automation: CAPL, Python, Draw.io (UML modeling).
- Standards & Compliance: ISO 26262, DO-178B/C, MISRA C, IEEE 12207, ARINC 615A/665-3.
- Communication Protocols: CAN, UART, I2C, SPI, RS232, RS422.
- Testing & Debugging: Smart Tester, RTRT, CANoe, CANalyzer, ControlDesk, dSPACE Scalexio.
- Version Control: SVN, Change Management, Requirement Traceability.
- Hardware & Platforms: NI Cards, NUMATO LAB Ethernet Relay, Ubuntu (Linux).

## EDUCATION & CERTIFICATIONS

- B.E. in Electronics Engineering - Rajiv Gandhi College of Engineering & Research (2021) - 86.66%.
- Diploma in Electronics Engineering - Bajaj Polytechnic (2017) - 73.09%.
- **Certification:** Advanced Embedded Systems Development - Vector India (June 2022).

## LANGUAGES

- English
- Marathi
- Hindi