

# Suduli Kumar Balabantaray

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## Professional Summary

Automotive software validation engineer with 8+ years of experience in IV&V for safety-critical embedded systems. Proven track record in reducing testing time by 40% through automation and achieving 95% requirement traceability. Expert in AUTOSAR, ISO-26262, and testing tools (dSPACE, Vector, VectorCAST).

## Technical Skills

**Programming & Scripting:** Embedded C, Python, CAPL

**Testing Tools:** ECU-TEST, VectorCAST, dSPACE, VTestStudio

**Vector Tools:** CANalyzer, CANoe, CANdb, CANdela

**RQM Tools:** IBM RQM, DOORS, RTC, EWM, Rhapsody

**Protocols:** CAN (ISO-11898), UDS (ISO-14229), XCP, SOME-IP

**Standards:** AUTOSAR, ISO-26262

**Testing:** Functional, Performance, White/Black Box, HIL/SIL, Unit, Integration, Regression, Smoke

**Debug Tools:** Trace32, Understand C

**Coverage:** Statement, Branch, MC/DC

## Professional Experience

### KPIT Technologies Ltd

Nov 2023 – Present

*Test Lead*

*Bengaluru, India*

- Led validation of infotainment systems (Steering Wheel Controls, Horn, Crash Detection) for Stellantis OEM using dSPACE and ECU-Test automation frameworks
- Achieved 95% requirement traceability by integrating IBM RQM with DOORS Next Generation (DNG)
- Reduced manual testing effort by 40% through optimized test scripts and ECU-Test automation
- Created reusable XAM signal mapping files, reducing test setup time by 30%
- Resolved 30+ defects across critical features including Drive Mode and crash detection systems
- Managed cross-functional collaboration and delivered regular project updates to stakeholders

### HL Klemove India Pvt Ltd (Halla Group)

Feb 2022 – Nov 2023

*Specialist Embedded Test Engineer*

*Bengaluru, India*

- Designed and executed comprehensive test plans for centralized ADAS domain controller (DCU-20) processing data from cameras and radars
- Established Zero DTC testing environment with ADAS Analyser for system-level validation
- Conducted onsite testing at Korea Head Office, serving as Point of Contact (POC) for the project
- Successfully performed System Testing including EOL, Failsafe, and USM Testing
- Utilized Trace32 for ECU flashing and firmware validation on embedded hardware

### Mando Softtech India Pvt Ltd (Halla Group)

Mar 2020 – Feb 2022

*Senior Embedded Test Engineer*

*Bengaluru, India*

- Designed and executed unit tests using VectorCAST to ensure software components met design specifications
- Achieved desired code coverage (Statement, Branch, MC/DC) and identified untested code areas
- Developed integration tests for software module validation and external system interfaces
- Managed project estimation, work allocation, and conducted peer reviews

### Binsoft Techno Solutions

Sep 2017 – Feb 2020

*Test Engineer*

*Bengaluru, India*

- Implemented unit testing framework using VectorCAST for automotive embedded software components
- Maintained defect tracking database and achieved comprehensive code coverage metrics
- Collaborated with development teams to ensure timely defect resolution

## Key Projects

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### BCM Systems Validation – Stellantis OEM

*KPIT Technologies*

- Project overview: Led automotive software validation for Stellantis OEM infotainment ECU, covering steering controls, crash detection, and vehicle lighting.
- Implemented end-to-end testing from requirement analysis to automated validation using dSPACE and ECU-TEST.
- Collaboration: Worked closely with Stellantis engineers, developers, and integration teams; coordinated cross-functional reviews and defect resolution.
- Lead tester: Drove manual and automated ECU testing using dSPACE environments and ECU-TEST frameworks.
- Process architect: Reduced manual testing effort by 40% through optimized test scripts and ECU-TEST automation.
- Quality assurance: Achieved 95% requirement traceability using IBM RQM and DOORS Next Generation (DNG).
- Innovation: Created reusable XAM signal mapping files, reducing test setup time by 30%.

### DCU-20 (Domain Control Unit) – ADAS Controller

*HL Klemove*

- Validated next-generation domain controller architecture consolidating multiple ADAS functions (camera processing, radar fusion) into single ECU, enabling scalable OTA updates
- Reduced system complexity by replacing the distributed ECU network with a centralized controller, improving maintainability and reducing wire harness costs
- Deployed a comprehensive test strategy covering EOL diagnostics, failsafe behavior validation, and update software management across development cycles
- Operated as a technical liaison between the Indian engineering team and Korea HQ, presenting test results and risk assessments to HKMC client stakeholders
- Leveraged CANoe/VTestStudio for automated regression, ADAS Analyzer for sensor simulation, and Trace32 for low-level firmware debugging

### Adaptive Cruise Control Radar Systems

*HL Mando*

- Drove quality assurance for 3 radar variants enabling ACC Stop & Go functionality, supporting autonomous braking and acceleration for Tier-1 automotive clients.
- Spearheaded testing strategy delivering LRR25 and MRR30 platforms on schedule, earning "Best Project Award" for both releases.
- Established automated regression framework reducing testing effort by 60% while maintaining 98% MC/DC structural coverage for safety compliance.
- Led cross-functional collaboration as project POC, coordinating requirements reviews, defect triage, and release planning across radar, software, and validation teams.
- Implemented peer review process and MC/DC analysis methodology, reducing post-release defects by 40% compared to previous platform.
- Mentored 2 junior engineers on VectorCAST unit testing, code coverage analysis, and ADAS system domain knowledge.

## Education

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### B.E. in Aeronautical Engineering

The Aeronautical Society of India

## Achievements & Awards

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- Breakthrough Achievement Award
- A+ Grade Recognition
- Best Project Award – LRR25 (HL Mando Softtech)
- Best Project Award – MRR30 (HL Mando Softtech)
- Spotlight Award – HL Mando Softtech India
- Spotlight Award – HL Klemove India