Suduli Kumar Balabantaray

Test Lead

Automotive Software V&V Lead | ISO 26262-Compliant Testing | Embedded Systems Validation. Seasoned professional with years of expertise in *Independent Verification & Validation (IV&V)* for safety-critical automotive systems. Proven leader in designing test strategies, automating validation workflows, and ensuring compliance with ISO 26262/AUTOSAR standards. Adept at bridging requirements to execution via tools like IBM RQM, ECU-Test, and dSPACE, delivering *40% faster test cycles* and *95% requirement traceability* for OEM partners like Stellantis.

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WORK EXPERIENCE

Test Lead
KPIT Technologies Ltd

11/2023 - Present   *Bengaluru*
Client- Stellantis

Achievements/Tasks

- Developed and managed validation plans using **IBM ALM** with traceability to requirements from **DOORS® Next Generation (DNG)**.
- Designed and implemented test cases, focusing on flexibility, efficiency, and **Automation** potential.
- Conducted Sanity, Manual, and Automated testing using **dSPACE** and **ECU-Test Tool**.
- Oversaw validation of features like **Steering Wheel Controls**, **Horn**, and **Crash detection** in system.
- Collaborated with cross-functional teams and provided regular project updates to stakeholders.
- Identified, tracked, and resolved Dev issues with timely fixes and retesting.

Specialist Engineer
HL Klemove India Pvt Ltd(Halla Group)

02/2022 - 11/2023   *Bangalore*
Skilled in System, Unit, & Integration testing. POC for ADAS projects. Completed onsite role in Korea for HKMC's ADAS product system testing.

Tasks

- **Test Development:** Design and execute test plans for embedded systems, both manually and using automation.
- **ECU Management:** Utilize **Trace32** for ECU flashing and validate firmware/software updates on embedded hardware.
- **Environment Setup:** Establish a Zero **DTC** environment with ADAS Analyser and maintain comprehensive test environments.
- **Collaboration:** Worked with developers, product managers, and the development team to ensure system requirements are met and defects are addressed.
- **Defect Management:** Identify and track system defects, maintaining a database of known issues and resolutions.
- **Review & Approval:** Engage peers for report reviews and obtain final approvals before dispatch.

Senior Engineer
Mando Softtech India Pvt Ltd (Halla Group)

03/2020 - 01/2022   *Bangalore*
Achievements/Tasks

- **Unit Testing & Integration Testing**: Designed, implemented, and executed unit tests for software components using **VectorCAST**,ensuring each function met design specifications
- **Defect Management:** Identified, logged, and tracked system defects, maintaining a record at the unit level
- **Code Coverage:** Utilized VectorCAST to achieve desired **Code Coverage**, identifying untested code areas and addressing them
- **Collaboration:** Worked with developers to resolve issues, providing feedback on code quality and testability
- **Project Management**: Handled estimation, work allocation, and reviews. Set up **MC/DC**, identified bugs,and participated in peer

SKILLS

System Testing · Integration Testing · Jira · Embedded C · LIN · White Box Testing · Black Box Testing · CAN · SIL · HIL · UDS · Python · CAPL · VectorCast · Regression Testing · DOORS · RTC RQM · ClearQuest · Rhapsody · SVN · dSPACE · ECU-Test Tool · STLC · CANoe · Git · VtestStudio · CAN · Understand C · Trace32 · Agile Model · Manual Testing · Test Case Design, Execution & Defect Reporting · Automation Testing · Visual Studio

SOFT SKILLS

Clear Communication · Continuous Learning · Cross Functional Collaboration · Solution Driven

LANGUAGES

English
Full Professional Proficiency

Hindi
Native or Bilingual Proficiency

EDUCATION

Aeronautical
The Aeronautical Society of India

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PERSONAL PROJECTS

Critical Vehicle Systems Validation (11/2023 - Present)

- **Project Overview**: Automotive software validation for Stellantis OEM, focusing on safety-critical embedded systems including steering controls, crash detection, and vehicle lighting. Implemented end-to-end testing processes from requirement analysis to automated validation.
- **Collaboration -** Partnered with Stellantis engineers, developers, and integration teams - Coordinated with cross-functional teams for requirement reviews and defect resolution.
- **Role & Achievements:** Lead Tester: Spearheaded manual/automated testing of ECU software using dSPACE environments.
- **Process Architect:** Reduced manual testing by 40% via optimized test scripts and ECU-Test automation.
- **Quality Assurance:** Achieved 95% requirement traceability using IBM RQM/DNG integration.
- **Innovation Driver:** Created reusable XAM signal mapping files, cutting test setup time by 30%.
- **Issue Resolution:** Led debugging of 200+ defects across critical features (horn operation, crash detection).
- **Tools Used:** Proficient in test management tools (IBM RQM, DOORS NG) and automation frameworks (ECU-Test, TBC/TCF configurations). Experienced in dSPACE virtual ECU setups, XAM signal mapping, and establishing bi-directional traceability between DNG and RQM.

ADCU(Automated Driving Control Unit)

- **Project Overview:** Centralized Automated Driving Control Unit (ADCU) designed to process data from various vehicle sensors, including cameras and radars. Centralization approach simplifies the architecture, reduces costs, and enhances scalability and software updates. Eliminated the need for individual ECUs for each function.
- **Collaboration:** Collaborated closely with developers to prepare software demos for the HKMC client.
- **Work Environment:** Worked onsite at the Korea Head Office. Utilized a Zero DTC Environment, CAPL, Python and Windows 10.
- **Tools Used:** CANoe, VtestStudio , ADAS Analyzer, Trace32, and Jira.
- **Achievements:** Successfully conducted System Testing including EOL, Failsafe, and USM Testing.
- **Role:** Served as the Point of Contact (POC) for the project.

ADAS-LRR, MRR, SRR (Long Range Radar, Mid-Range Radar and Short Range Radar)

- **Project Overview:** Worked on the ADAS-LRR, MRR, SRR systems, focusing on Long, Mid, and Short Range Radars for vehicles. These radars play a pivotal role in the Adaptive Cruise Control System (ACC), measuring the distance and speed of preceding vehicles to adjust following distances.
- **Key Features:** The ACC system boasts a "Stop & Go" feature, enabling vehicles to automatically follow, stop behind, and restart based on the movement of the preceding vehicle.
- **Environment & Tools:** Operated in an environment utilizing C, Python,Windows 10 and Understand C. Employed tools such as VectorCAST, SVN, and Redmine to drive project success.
- **Testing Achievements:** Led various testing initiatives, including Unit Testing, Integration Testing, and Regression Testing, ensuring thesystem's robustness and reliability. Conducted in-depth MC/DC coverage analysis to ensure comprehensive software testing.
- **Role:** Served as the primary Point of Contact (POC) for the project, overseeing communication and project milestones.

TECHNICAL SKILLS

Protocols & Standards
CAN , UDS , AUTOSAR, ISO 26262 Guidelines

Programming & Scripting:
Embedded C, Python, CAPL

Testing Methodologies
White/Black Box,
HIL/SIL/System/Unit/Integration/Regression Testing

Testing Tools
Vector Tools (CANoe, CANalyzer, CANdb, CANdela, VectorCast, VtestStudio), Trace32, UnderstandC, dSPACE, ECU-Test Tool, RQM, RTC

Debugging & Analysis
Flashing, Trace32 Debugging, Code Analysis

Software Lifecycle
SDLC, STLC, Bug Life Cycle

Coverage Analysis
Structural Coverage (Statement, Branch,Singular Point), MC/DC Expertise

Requirements Management
DOORS

Version Control
Git,SVN

HONOR AWARDS

Spotlight Award (01/2023 - 04/2023)
HL Klemove India Pvt Ltd

Best Project Award in LRR25 (12/2022 - 01/2023)
HL Klemove India Pvt Ltd

Spot Light Award (04/2021 - 04/2021)
HL Mando Softtech India Pvt Ltd

Best Project in MRR30 (01/2021 - 12/2021)
HL Mando Softtech India Pvt Ltd