Murtuja Talikoti

Lead Software Engineer

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Innovative with degree in B.E (Electronics & Communication), Lead Software Engineer working at SEG Automotive India Pvt Ltd, Bangalore with 8 years 8 months of V&V Software testing experience in Automotive and Avionics domain. Quickly learns and masters new technologies while working in both team and independent settings.

Technical Profile

- **Programming Languages :** C, Embedded C Testing level
- **Scripting Languages :** Python, CAPL(Basic)
- **Embedded Protocols :** CAN, UDS (ISO14229), RS422, RS232, ARINC-429
- **Knowledge on :** V&V, SDLC/STLC, DO-178B, Vxworks(RTOS)
- **CM Tools :** MKS Integrity Client, DOORs, Bitbucket, TortoiseSVN, CNCT, PTC(Windchill)
- **Hands on experience Tools :** dSPACE|Control desk|Automation desk, CANoe, CANalyzer, VectorCAST, Eclipse, MATLAB, SCADE, Analog Devices VisualDSP++, Tornado 2.0

Competencies

Project planning

Technical Analysis

Technical Support

Testing and maintenance

Work History

2022-06 - Current

Lead Software Engineer

SEG Automotive India Pvt Ltd Deputed By Adept Chip Services Pvt Ltd, Bangalore

<u>Project 6:</u> **HIL testing of Boost Recuperation Machine(BRM) software for Audi, Volvo and Volkswagen cars.**

Project Description:

- BRM provides electrical energy which is stored in 48V battery via DC/DC converter the 12V on-board power supply is ensured. While decelerating the vehicle, BRM converts car's kinetic energy into electric energy which is then stored in 48V battery. During acceleration, BRM works like a electric motor, providing a noticeable increase in torque to the engine, this allows driver to accelerate dynamically while driving in boost mode.
- While driving in constant speed, driver can take their foot off the accelerator pedal, switching the automatic transmission into the freewheeling function. Engine shuts off and saves fuel while the speed remains almost constant. Once the acceleration is reinitiated, BRM restarts the engine within milliseconds, allowing for a seamless transition.
- The 48V battery provides the necessary energy for reliable, smooth and fast restart. As soon as the vehicle comes to a stop, start/stop technology switches the combustion engine off, meaning there is no fuel consumption or emissions. When the journey goes on, BRM provides a smooth restart of combustion engine.

<u>Roles and Responsibility:</u>

- Testing the BRM projects software components in Hybrid Electric Vehicle which delivers more torque for a vehicle and decrease the fuel consumption.
- BRM Projects: Software requirement analysis, Test specification creation, Test Spec Review, Test execution for various features Network Management, State machine, CAN, CAN safety, Sensors, Sensor Safety, UDS, OBD, Smoke Test on dSPACE SCALEXIO HIL setup.
- Creating layouts on Control Desk to measure the input/output signals for manual test cases.
- Preparation of libraries for the generalized functions in Automation Desk using Python to automate manual test cases.
- Reported multiple issues during HIL testing and involved with development team to resolve these issues before delivering the baseline software to customer.
- Supporting the developers in unit testing using CANoe.
- HIL/Open loop bench setup for BRM projects for different variants like Audi, Volvo, VW, DTNA etc.
- Planning test executions for BRM projects and sharing the project Test execution status to stakeholders effectively.
- Involving stakeholder meetings, Management meetings and sharing the information to team effectively.

2015-01 - 2022-06

Lead Engineer
HCL Technologies Ltd, Bangalore
Project 5: HIL Testing for Tractor HMT, Rice Transplanter, Combine Harvesters, Excavator products developed by Yanmar.
Projects Description:
Tractor HMT:
- Yanmar tractors are used in many places and in a variety of roles, such as in agriculture or in lawn & garden. Equipped with a Yanmar liquid-cooled diesel engine, high-end power while boasting low fuel consumption.
- In E-CONTROL, it is possible to configure the PWR mode to prevent engine stall, and the ECO mode to improve fuel economy. These settings are configured in the color liquid crystal display. Further, the engine change amount and vehicle speed change amount can be set arbitrarily using the color liquid crystal display.

Rice Transplanter:
- Rice transplanters are indispensable for efficient rice seedling planting. Yanmar has various types of the rice transplanters developed with Yanmar's proprietary technology, from advanced models equipped with HMT transmission for car-like pedal operation or to the simple walk-behind type
- Planting unit is controlled so that it is horizontal against the paddy field when this unit is lowered or when planting is being done. When the planting unit is raised or when in it is in a neutral position, it is driven to make the unit parallel to the machine or drive down right or down left as per the manual operation.

Combine Harvesters:
- Yanmar has head-feeding combine harvesters for good rice selection and conventional combine harvesters good for versatile use.
- UFO: In UFO auto control, depending on the difference between the incline of main body (incline sensor) and the control target angle (UFO adjustment dial), vary the ON/OFF time (drive Duty) of hydraulic pressure valve and adjust the drive speed of UFO cylinder.
- Auger: Auger turning/up/down position is controlled by using auger manual switches and auger turning angle
- ARH: Auto reaping height control automatically instructs Up and Down of the reaping unit to matching the target reaping height by sensing the reaping unit height with sled sensor. Whenever the reaping height switch is pressed, the mode changes in the order of 'OFF' → 'auto reaping height' → 'OK lift'
- Work Clutch: The working clutch control is to control the power transmission of the reaping unit, feed chain (abbreviated as FC), threshing unit from the engine or HST
- Auto Combine: Timing control is installed in the AutoECU as part of the autonomous drive control feature. From various target values calculated in autonomous drive control, instructions are sent to the combine ECU as the

up/down timing of the reaper and the combine ECU activates the actuator to raise up or lower the reaper

Excavators:
- Yanmar have 2 series of models, "Vio" and "SV", ranging from 0.8t to 10t class excavators. The "Vio" series are true zero tail swing excavators and the "SV" series are minimal tail swing excavators. Used for construction, mining, digging, foundation work, demolition etc.
- This system is built in with a hydraulic pressure system and low cost, high energy saving engine in which the engine output is reduced to less than 19kw and the price competitive hydraulic excavation machinery (hereinafter, referred to as backhoe).
- In this system, tested functions are Speed sensing control, Quick hitch control, DTC (Seat belt warning/Weight warning), Specification setting (LCD button/LCD CAN), PTO(Proportional) control, Auto Engine Stop, Overload warning and Engine speed control.

Project 4: ALOFT Aero Architects AFCU (Auxiliary Fuel Control Unit)
Project Description:
- The AFCU is a redundant, dual microcontroller-based unit, with the ability to receive fuel quantity information from its Auxiliary Fuel (tank group's) Processing Unit (AFPU) and control the flow of fuel into and out of its auxiliary fuel tank group. The redundant architecture of the AFCU will be such that no single failure within the AFCU will prevent the ability to transfer fuel from the auxiliary fuel tank group.

Project 3: Bombardier Global 7000/8000 Flight Control System Remote Control Electronics (REU).
Project Description:
- REU is an electronic unit that manages the aircraft's flight control surface actuators like-Aileron, Elevator, Rudder, Spoilers and Horizontal Stabilizers.
- REU takes the signals from Primary Flight Control Computers (PFCCs) and Interceptor Interface module (IIM) and commands the hydraulic actuators via Electro-Hydraulic Servo Valves (EHSVs, primary and spoiler surfaces) and Mode Select Valves (MSVs, primary surfaces only) on each actuator.

Project 2: Electric Backup Motor Control Electronics (EBMCE) Gulfstream GVII.
Project Description:
- EBMCE is a part of Gulfstream AAP (Advanced Aircraft Program) Flight Control Systems. It is a single channel device receiving commands from either Remote Electronics Unit (REU) or a Flight Control Computer (FCC). It performs the velocity servo-loop closure and position-loop closure to control actuator surfaces like aileron, elevator, rudder, and spoiler for flight.

Project 1: Model Based Testing (MBT) for BAE_FCS_Active_Inceptor Gulfstream and Embraer projects.
Project Description:
- Active inceptors System provides actively generated static and dynamic tactile force feedback to the pilot at the grip. This tactile force is generated by a programmable model linked to a servo motor within the inceptor.

Roles and Responsibility:
- Prepare the Item Input (Plant Model) by using the input/output definition sheet(CAN Matrix) provided by Yanmar
- Understand the requirements (from specification document) and mapping it to the corresponding source code for the scenarios while developing the test cases
- Test Case development for the shared Checklists/requirements as per HIL Automation Framework
- Convert NED coordinate to Lat/Lon coordinate
- Create path data from generated path data with Lat/Lon coordinate
- Create Path data csv files for comprehensive testing by using HILS_Testing_PathPatterns like Alpha turn, Fish Tail turn and U turn patterns
- Developed Path configuration test case creation tool using Python

- Review of Item verify, Item input list, Test cases and CSV files before sharing with Yanmar
- Executing all delivered test case scripts on HILs by using dSPACE|Control desk|AutomationDesk tool
- Reviewing the test results (Digest and Time Series Data files) and update the test cases/requirement specification in case of failures
- Debug the failures and raise issues in case of requirements specification document updates and get clarify with Yanmar
- Written the test cases and test procedures for Model Level testing.
- Verifying the QTE, MTC and CLCM results for developed Scripts using SCADE.
- Wrote test cases, procedures to perform RBT as per DO-178B/C for HLT and LLT.
- Wrote TCS and DRT scripts to perform Black Box Testing.
- Wrote TCL/Tk scripts to perform White Box Testing.
- Executed scripts on the LabView Test Bench and Analog Devices VisualDSP++.
- Performed checklist-based review for all project artifacts.
- Active Role in failure reporting sessions with client.
- Software testing in VxWorks for PMC1553 card and Discrete I/O card using Tornado 2.0
- Unit testing, Integration testing (SSIT) as part of Build of Deliverables.
- Preparation of Acceptance test Report (ATR) and test cases for hardware testing.

Education

2007-09 - 2011-06

B.E Degree: Electronics & Communication Engineering (ECE

SDMCET - Dharwad
GPA: 72.66%

2005-06 - 2007-05

PUC (XII)

Karnataka PU Board
GPA: 79.66%

2004-06 - 2005-05

X STD

VBHST - Bijapur
GPA: 90.08%

Accomplishments

- Mentored new employees to bring them up to speed on projects, resulting in quicker overall completion milestones.
- Received appreciation awards from HCL Tech, SEG Automotive Ltd
- Achieved project delivery target by completing tasks with accuracy and efficiency.
- Resolved product issue through consumer testing.
- Supervised team of 7 staff members.

Languages

English

Hindi

Kannada

Certifications

2012-05

Embedded System Course

Address Details

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At/P: Talikoti Tq:Muddebihal Dist:Vijayapura, State:Karnataka PIN:586214

Hobbies

Cricket, Table Tennis, Listening to music