SANDEEP HARISHKUMAR RATHI

Hardware-in-Loop Engineer, Validation & Automation Engineer, Test Specification Developer

	Electronics Engineer with total of 8.7 years of experience (7.7 years in Automotive Domain + 1 year in Rail Domain) who is keen to find a position in the HIL testing and validation team to utilize his practical knowledge in computing and system testing. Worked for multiple companies and gained a good understanding of research, development, testing, requirements validation, manufacturing, and marketing processes. Can work with HIL systems, design HIL systems, and having an understanding of BMS, EMS, ABS, ADAS, MCU, and BCM controllers. Excellent communication skills. Fluent in English and with nice etiquette. Completed German Language A2 Course.
Area of specialty	Hardware-in-Loop Testing, Plant Modelling, Test specification, Test Automation
Operating systems	Windows 10, Windows 11
Programming	Python, MATLAB/Simulink, C/C++, C#, WinWrap, XML
Tools and Environment	dSPACE: AutomationDesk, ConfigurationDesk, ControlDesk, INCA(ETAS), CANoe(Vector), ECU-TEST (tracetronic), PROVETech(AKKA), MATLAB-Simulink, PyCharm, Eclipse, Microsoft Visio, Eplan DOORS 9.7, DOORS Next Gen, PreeVision(Vector), SVN
Simulators	dSPACE SCALEXIO HIL System, ETAS LABCAR HIL System COMEMSO BATTERY CELL Simulator
Hardware Devices	Vector Devices: VN1640, 1630, VN5640, VN5650, VN1311 DC Power Supplies: TDK LAMBDA 750W/1500W & DELTA SM1500 Digital Oscilloscope TPS2000B & fluke Multimeter
Software processes	Agile, Scrum, Kanban
Methodologies	Functional Testing, Smoke Testing, FuSa Testing, Manual Testing.
Protocols	CAN, CAN-FD, LIN, Ethernet (Automotive)
Experience	8 years and 7 months (till Sep 2022)

PROFESSIONAL EXPERIENCE

07/2021 - Present	**Senior Technical Lead, Mercedes-Benz R&D, Bengaluru, India**
	  ▪ Plant Model Development, Ethernet Model Configuration. ▪ Requirement Analysis and Test Specification creation. ▪ Test Automation and Test Execution using ProveTech. ▪ Report & Log Defects, Discuss with System Responsible and Decide Defect Severity. ▪ Manage different ECUs, Analyse ECU schematic, Software Flashing via CAN and DOIP. ▪ Design ECU side harness and Load side harness. ▪ Test Planning, Time Effort estimation and Leading team of 5. ▪ Lab Audit, Technical write up, Vendor co-ordination. <u>Bronze Award for Q3, 2021 for resolving the HIL issues and Finding Defects in Software</u> *Technology Stack: MATLAB-Simulink, PROVETech, CANoe, DTS-Monaco, DOORS, PreeVision, Ethernet, Automotive Ethernet, CAN, CAN-FD, LIN, dSPACE HIL Systems*

06/2020 - 06/2021	**Software Application Engineer, Alstom Transporation, Vadodara, India**
	▪ Features Implementation (Program Organization Units): - Automatic Train Protection (C coding) - Automatic Train Control (C Coding) - Passenger Emergency Alarm (Function Block Diagram) ▪ Requirement Management - Analyze Customer Requirements in DOORS 9.5 and derive system requirements and software requirements in DOORS NG. - Presentation preparation after every sprint for current development status. ▪ Review function architecture documents before System requirement and Software requirement phase. *Technology Stack: MATLAB/Simulink, C coding, DOORS 9.5, DOORS NG, ASIL-B*
11/2017 - 05/2020	**Project Engineer, ETAS Automotive (BOSCH), Pune, India**
	▪ Project 1: Integration HIL system for TATA Motors (Trucks division), Pune, India (ABS, EMS, BCM) (1-System) ▪ Project 2: Application HIL systems for JohnDeere Agriculture, Pune, India (Motor Control Unit, EMS, Agriculture specific ECUs, CAB control) (15-Systems) ▪ Project 3: HIL System for Electric Vehicles, Mahindra Electric, Bangalore, India (12 Cells BMS, 120 Cells BMS) (2-Systems) ▪ HIL requirement discussions with customers. ▪ HIL System design: - Prepare HIL system complete schematic in ePLAN tool up to level 3. - Prepare HIL system drawings in Microsoft Visio of front and rear view of the HIL including ECU placement, Wiring routing, Components placement ▪ HIL system commissioning, Acceptance testing, Plant Model Parameterization: - Deploy HIL system at customer's lab - Check HIL at Power level, I/O level, Function level, FIU level, BOB level, - Install the software in HIL host-PC and Configure HIL system with RTOS. - Tailor and Parameterize plant model as per customer's need in MATLAB/Simulink - Configure power supplies for automatic controlling from HIL using C code. - Automation in Techtronic ECU-Test tool (Python based) One-time Annual Award from ETAS for excellent work for JohnDeere India, Germany, US *Technology Stack: MATLAB/Simulink, ECU-Test(Python), ePLAN, Visio, SVN, C coding, Labcar Operator, INCA, ETAS HIL Systems*
05/2016 - 10/2017	**Senior Engineer, Robert Bosch Engg. and Business Solutions (BOSCH), Bangalore, India** Deputation at Mercedes Benz R&D, Bangalore, India
	▪ Project: BMS ECU Validation (48 volts Battery, 200 volts Battery) ▪ Write Test cases and Linking to requirements in DOORS. ▪ Write Python and WinWrap scripts in the ProveTech Test Automation tool. ▪ Test Execution on (dSPACE SCALEXIO HIL system + COMEMSO Cell Simulator + DELTA Power supplies + Vector CAN & LIN Piggybacks). ▪ Analyze test results and discuss with the system engineer. ▪ Support Modelling Team in Preparing and Tailoring Battery Cell Models. ▪ Support Hardware technicians in BMS ECU replacement. ▪ Flash new BMS software in ECU using vFLASH tool. *Technology Stack: MATLAB/Simulink, Cell Simulator, dSPACE HIL, Vector devices and CANoe, ProveTech, vFLASH, Battery Management system(BMS)*

05/2016 - 10/2017	**Software Engineer, L&T Technology Services, Bangalore, India** Deputation at Continental Automotive (ADAS Team), Bangalore, India Project 1: Vehicle Dynamics Software testing with CAMERA Sensor testing on MONitor HIL (MON-HIL) ▪ Write Test cases and Linking to requirements in DOORS. ▪ Write Python test scripts ▪ Simulate vehicle driving recording in MTS tool and generate binary files (.bin, bsig) ▪ Feed these .bin files in the Python scripts to compare vehicle dynamics software output data with CAN data, GPS data. ▪ Execute python scripts and generate .pdf reports. ▪ Analyze test results and discuss with counterpart (Continental-Germany, Continental-US) - Trained other team members for test & validation activities and in Python. - Conducted sessions on Vehicle Dynamics Basics. Project 2: Cluster Testing on HIL (CNH Client), at L&T Mumbai, India. ▪ Write python test scripts in AutomationDesk tool. ▪ Execute test on SCALEXIO HIL System (dSPACE) and analyze the test results. ▪ Review test scripts Award 1: Spot Award by Continental for Vehicle Dynamics (VDY) software validation. Award 2: Employee award by L&T Technology Services for valuable contribution at Continental Client. *Technology Stack: Vehicle Dynamics, Radar, Camera, AutomationDesk, SCALEXIO HIL System, CAN, GPS, Python,*

EDUCATION/TRAINING

05/2009 - 01/2014	**B.E. in Electronics and Communication Engineering (7.7 CGPA),** **P.I.E.T, Gujarat Technological University, Vadodara, India**

COURSES AND CERTIFICATES

- State flow for Automotive Applications, MathWorks
- Simulink for Automotive System Design, MathWorks
- Simulink Model Management and Architecture, MathWorks
- C# Basics for Beginners: Learn C# Fundamentals by Coding, Udemy
- C# Intermediate: Classes, Interfaces and OOP, Udemy
- Effective Listening, LinkedIn Learning
- Interpersonal Communication, LinkedIn Learning
- Time Management Fundamentals, LinkedIn Learning
- Scrum: The Basics, LinkedIn Learning
- German Language A2, Mercedes Benz
- Advance Python Training, L&T Technology Services

PERSONAL INFORMATION

•	Interests/Hobbies	Badminton, Table Tennis, Trekking, Hiking
•	Driver's License	Indian Driving license (LMV)
•	Languages	Hindi(Mother Tounge), English(fluent), German(A2)