Kalyan **Chakravarthi**

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MATLAB || Simulink || Stateflow || MBD || MIL & SIL Testing

Having 6.5 years of automotive experience in M-Scripting and Model Based Development (MBD) using Simulink & Stateflow. Having extensive Knowledge on MIL & SIL Testing and also code generation using dSPACE.

In this years of competencies in building scalable and reusable applications and user interfaces to execute models and algorithms. Progressed along with the career from Technical Trainer to Sr. Software Engineer position. Gained experience in developing software modules and testing approaches.

Technical Skillset_____

Software	MATLAB
Programming	M-Scripting, Python (Knowledge), C (Knowledge)
Simulation Tools	Simulink, Stateflow, Embedded Coder, Database Toolbox, Signal processing, Statistics & Machine Learning Toolbox
Code generation	Embedded Coder and dSPACE
Testing tool	TPT, TPT-TASMO
Python libraries	OpenCV, NumPy, Pandas
Static tool	Polyspace
Configuration Management	SVN, GIT
Database	SQLite
Other tools	Jenkins, Jira, DOORS, Confluence

Experience_____

- **Sr. Software Engineer** in **Wipro** and Deputed at **Daimler Trucks** (client), Bangalore – March 2022 to Till date
- **Senior Engineer** in **L&T Technology Services**, Mumbai - Nov 2017 to Feb 2022,
- **MATLAB & Simulink Trainer**, Hyderabad - Jul 2013 to Nov 2017.

Key Expertise_____

- Experience in Model Based Development (MBD) using MATLAB, Simulink and Stateflow.
- Experience in MIL & SIL Testing and Autocode generation using Embedded Coder and TargetLink (dSPACE).
- Experience in Automation using M-Scripting (MATLAB) for Automotive and Industrial applications.
- Experience in using TPT, TPT-TASMO.
- Experience in using Polyspace for static analysis.
- Experience in modeling standard like MAAB guidelines.
- Experience in coverage analysis for Simulink models.
- Experience in creating automation for testing the MATLAB scripts & triggering the e-mail to clients.
- Experience in developing GUI using M-Script.
- Knowledge in writing Python scripts.
- Knowledge in developing Computer Vision & Image processing applications.
- Knowledge in Machine Learning & Deep Learning concepts.
- Good understanding in mathematical modeling, algorithm performance evaluation and simulations.
- Experience with engineering requirement.

Project Management_____

- Creative design & Strong decision maker.
- Understanding and gathering customer requirement & co-ordination with customer.
- Managing a team size of 5 and distributing tasks to the team and providing technical support to the team throughout the project.
- Taking ownership of projects from start to finish.

Education_____

B-Tech in **Electrical and Electronics Engineering** from GEC Gudlavalleru.

Projects

Wipro Technologies (MATLAB, Simulink, MIL & SIL, TPT – Daimler Trucks (client))

Responsibilities in Daimler Trucks – Battery Management System (BMS) projects:

- Skilled in effort estimation, task planning, analysis, bug reporting, debugging, team management.
- Hands on experience in developing test cases on TPT tool based on customer requirements.
- Experience in Model in Loop testing (MIL) and Software in Loop testing (SIL).
- Auto code generation using TargetLink.
- Analyzed and debugged issues in Decision Coverage (DC) to increase efficiency and code coverage.
- Key responsibilities include functional testing of different software components (ECUs) related to Trucks.
- Managed projects effectively to deliver finished work on time.
- Project delivery and maintenance.

Low Voltage Disconnect (MATLAB, Simulink, M-Scripting – Daimler Trucks)

The object of Low Voltage Disconnect (LVD) functionality to protect the battery from over discharge and ensuring full functionality of the vehicles.

Power Net Management (MATLAB, Simulink, M-Scripting – Daimler Trucks)

The Power Net Management (PNM) feature is to reduce the aging of the batteries and ensure the crankability of the engine.

Responsibilities in Daimler Trucks:

- The replacement of manual operations with automation using MATLAB
- Creating software model using MATLAB/ Simulink.
- Testing the Model and generating the Model Coverage.
- Converting the Simulink model (MBD) to Code, using TargetLink (dSPACE).
- Testing of Models (MIL /SIL) using TPT.

Lift Lockout module (MATLAB, Simulink – Off Highway)

- Testing the Simulink model with the functionality given as per document
- Writing test cases for requirement document, testing the different scenarios and analyzing the logs for finding the cause of bugs
- Develop MIL & SIL testing using Test Harness for the developed model

AGB feature (MATLAB, Simulink & Stateflow – Automotive)

To satisfied the software design of the Model component for the AGB feature.

- Designing the Simulink model and testing the model.
- Simulations and performance evaluation.
- Identify design errors present in the Simulink model.
- Writing test cases for requirement document, testing the different scenarios and analyzing the logs for finding the cause of bugs.
- MIL testing using Test Harness for the developed model
- Conducting the coverage analysis
- Documenting the work product

Actuator output control (MATLAB, Simulink – Off Highway)

Developing the functionality for balancing the load between the two actuator.

- Writing test cases for requirement document, testing the different scenarios and analyzing the logs for finding the cause of bugs.
- MIL & SIL testing for the developed model.
- Documenting the work product.

PRNDL Software unit (MATLAB, Simulink & Stateflow – Off Highway)

- Analyzing and Understanding the requirement from requirement document
- Develop Composition and Component logic in Simulink as per the requirement
- Develop MIL testing using Test Harness for the developed model
- Verifying and validating the test cases using validation Script
- Generate the code for the developed logic in the component level
- Documenting the work product

Automated feedback control when wafer is tilted (MATLAB, Simulink – Industrial Application)

Modeling the system to get the degree of tilt to adjust automatically

- Applied the mathematical calculations to find out the degree of tilt and converting into Simulink model (MBD)
- Designing the Simulink model and testing the model
- Measure the heights, compare the heights for two adjacent coordinate, if there will be a height difference, send input to the it to motor at run time to take the tilt action in the same test cycle

Trip In-Trip out application of Oil Rigs (Prediction - Digital Twin) (MATLAB script & Machine Learning)

- Working with manufacturing team in Analytical & Statistical improvements of Application.
- Working in all software development life-cycle phases, including requirements gathering, software design, development, testing, implementation, and maintenance.
- Testing the Entire TITO Application requirement documents and Error Handling Techniques.
- Automated the script to periodically email the reports to the stakeholder.
- Modular and maintainable optimizing the code to achieve better performance.
- Developing MATLAB application to read values from Excel sheet and undergoing various data quality.
- Delivering the Compiled version of Application for Deployment.
- Preparing Quality Documents conferring to client standards.
- Working with Customers to understand their requirements & challenges they face on field of monitoring Rig, to enhance the application and to make more user friendly to customers
- Development of test scripts for the application to test it under the Unit Test Framework of MATLAB to generate automatic results.
- Assign the task to the team based on the priority.

GUI using (MATLAB script)

- Analyzing the time series data coming from sensors
- Extracting required data for processing / predicting
- Able to choosing Variables from the data sets, Merge the data sets and representation in form of graphs

Excavator Boom Cylinder Tracking (Image Processing | Python & OpenCV)

Real-time tracking of excavator boom cylinder length by camera based imaging vision system Encoding/decoding, feature detection and matching, image segmentation and transformation.

The Imaging vision setup can work with machine vision camera or pre-recorded video from site. Compute Vision Tracking software running on a laptop with the camera connected to the laptop. The imaging vision system will capture the scenes of boom travel and Compute Vision process enabled software on a computer will track the length of the boom cylinder. The continuous varying length of the boom will be recorded with time stamps

Measure number of teeth present on Gear Based on Machine Vision (Image Processing | Python & OpenCV)

The vision system has been proposed as a new noncontact measurement system for inspection of gear. A program has been developed to analyze the captured images and perform the measurements using image processing and analysis the number of teeth present in image. The proposed vision system has been calibrated and verified with sample gear images.

Certification

- Convolutional Neural Networks – Coursera
- Improving Deep Neural Networks - Coursera
- Neural Networks and Deep Learning - Coursera
- Structuring Machine Learning Projects - Coursera
- Machine Learning - IIT Roorkee & CloudXLab
- Deep Learning - IIT Roorkee & CloudXLab
- Python for Machine Learning - IIT Roorkee & CloudXLab
- MATLAB, Deep Learning Onramp - MathWorks
- How to code a MATLAB/ SIMULINK automation from scratch - Udemy
- MATLAB/ Simulink for the Absolute Beginner – Udemy
- C Programming For Beginners - Master the C Language – Udemy

Personal Details

- Nationality: Indian
- Passport: Valid till 2029