

MUHAMMED SAAIM SAAD

MODEL-BASED DEVELOPMENT ENGINEER · POWERTRAIN EMBEDDED SOFTWARE

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PROFESSIONAL SUMMARY

Model-Based Development Engineer with **3+ years** of automotive powertrain software experience at KPIT Technologies, delivering production-grade control software for **Cummins** across four vehicle programs spanning diesel and gasoline. Owns the full **V-model lifecycle** per change request — from ASPICE-compliant requirements through MATLAB/Simulink/Stateflow design, Embedded Coder generation, Polyspace static analysis (MISRA-C / CERT-C), MIL/SIL/composition/bench validation, and global multi-region Design Review Board presentations. Specialist in **Air Handling & Combustion Controls** including aftertreatment, emissions, and OBD diagnostics. Co-inventor of a registered design patent; recognized by customer architects and held a team CSAT of 4.8/5.

TECHNICAL SKILLS

MBD & Modelling: MATLAB · Simulink · Stateflow · Embedded Coder · Model Advisor · MAAB Guidelines · MIL / SIL · MC/DC Coverage

Automotive & Safety: AUTOSAR Classic · PREEvision · ASPICE (SWE.3 / SWE.4) · MISRA-C · CERT-C · Polyspace · OBD Diagnostics · ISO 26262

Tools & Process: PTC Windchill Integrity · GitLab · Git Extensions · C · Embedded C · MATLAB Scripting · V-Model · Agile / Scrum

PROFESSIONAL EXPERIENCE

Software Engineer — Model-Based Development

KPIT Technologies · Client: Cummins Inc. · Bengaluru, India | **Sept 2023 — Present**

- Own end-to-end V-model delivery of Implementation & Verification Change Requests for the **Air Handling & Combustion Controls** (AHCC) family — sensors, actuators, controllers, virtual sensors, and diagnostics — across **four** active vehicle programs spanning diesel and gasoline.
- Design and modify AUTOSAR-based Simulink/Stateflow models per MAAB guidelines and ASPICE SWE.3/SWE.4 requirement engineering; coordinate ARXML port and calibration changes with the PREEvision team for architecture integration.
- Run Polyspace Code Prover & Bug Finder on every delivery for **zero critical findings** and full MISRA-C / CERT-C compliance; supported the team's MISRA-C rollout by clearing check backlogs and improving MC/DC coverage during MIL/SIL validation.
- Present design and verification changes at the customer **Design Review Board** to a global Cummins forum across India, US, China & the UK — maintaining a **zero-DRB-failure** track record across all submitted CRs.
- Perform composition- and bench-level testing via remote access to Cummins' US infrastructure (Test Levels L2/L3); report coverage across decision, condition, execution, and MC/DC criteria for MIL and SIL stages.
- Migrated legacy **Core2 AUTOSAR** software components to **CSAR** architecture, improving modularity and enabling integration with next-generation platform software stacks.
- Delivered a structured **Composition Testing** training program to **17** engineers (archived to KPIT's training library); act as primary onboarding trainer with sessions on OBD diagnostics and verification testing.
- Proposed restructuring the 22-member team into focused sub-teams with sub-leads — adopted by management and now operational; built a MATLAB script to auto-extract calibration table names and maintain a shared issue/resolution knowledge base.

Intern — Model-Based Development

KPIT Technologies · Pune & Bengaluru, India | **Jan 2023 — Sept 2023**

- Developed and validated Simulink/Stateflow models for automotive control algorithms with complete requirement traceability across the software development lifecycle.
- Conducted ECU verification and validation using CAN protocol and bench-testing; identified edge-case failures and supported MIL/SIL validation of model-based changes.
- Authored requirement specifications for logic updates and performed ECU diagnostics, supporting cross-functional teams in root-cause analysis and documentation.

Intern — Embedded Systems & Vehicle Integration

Volvo / Martial Motors · Bengaluru, India | [Sept 2021](#)

- Supported engine assembly, ECU tuning, and system-level testing across vehicle platforms; gained hands-on exposure to sensor-ECU integration and real-time DTC monitoring.
- Worked with a specialized body-work and vehicle-service team, which provided insight into the premium-vehicle service workflow.

MODEL-BASED DESIGN PROJECTS

Boost-Pressure Control Model · [In Progress](#)

Simulink · Stateflow · Embedded Coder

Closed-loop turbocharger air-path controller built the full MBD way — PI + feed-forward + anti-windup, turbo-lag model, ECO/SPORT/RACE modes, Stateflow supervisor, MISRA-style generated C; MIL/SIL with MC/DC coverage planned.

Sensor Diagnostic Monitor · [In Progress](#)

Stateflow · OBD · MISRA-C · AUTOSAR

Model-based OBD diagnostic monitor for a redundant sensor pair — range / rate / correlation rationality, debounced fault confirmation, DTC + freeze-frame + MIL, and healing — with an AUTOSAR Classic SWC and headless requirement checks (REQ-DIAG-001...010).

EDUCATION & CERTIFICATIONS

B.E. Automobile Engineering | [2019 — 2023](#)

New Horizon College of Engineering, Bengaluru

Relevant coursework: Embedded Systems · Control Systems · Automotive Electronics · Digital Signal Processing

AUTOSAR Fundamentals | [Certification](#)

Udemy (via KPIT Udemy Business)

INTELLECTUAL PROPERTY

Design Patent — Cropped Delta Wing for VTOL Drone | [Co-inventor](#)

Design No. 382551-001 · Patent Office of India, Class 12-07 · Registered 30 Mar 2023 · Certificate issued 31 Jan 2024 · New Horizon College of Engineering