SHWETALI MULAY

SENIOR AUTOMOTIVE SOFTWARE ENGINEER | BOOTLOADER & EMBEDDED CYBERSECURITY

SECURE BOOT & FLASH | HSM | OTA UPDATES | AUTOSAR | UWB & KEYLESS ENTRY

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PROFESSIONAL SUMMARY

Senior Automotive Software Engineer with 9+ years of experience across bootloader configuration and integration, secure boot and flashing, HSM-backed security, partitioned update flows, AUTOSAR integration, and system-level debugging. Works from requirements through implementation, application integration, on-target validation, customer discussions, vendor issue resolution, team coordination, and technical training. Combines embedded depth with clear stakeholder communication and is advancing toward automotive cybersecurity leadership across ISO/SAE 21434, TARA, SecOC, secure OTA, and software-defined vehicle architectures.

SELECTED IMPACT

- Delivered bootloader and updater/flasher work across requirements, configuration, implementation, application integration, and on-board validation for production automotive programs, including time-critical near-launch and field issue resolution.
- Implemented security-sensitive capabilities including secure boot, encrypted and compressed flashing, AES-128 and RSA-3072 integration, HSM-related functionality, and partition-aware update flows.
- Resolved cross-layer integration issues with customers and technology suppliers; reproduced defects with NXP and Vector engineers, isolated root causes, evaluated workarounds, and proposed concrete corrections in supplied software stacks.

CORE EXPERTISE

Bootloader & Update: Bootloader configuration and integration, updater/flasher, diagnostic flashing, secure flash, partitioned OTA updates, application integration, on-board validation

Embedded Security: Secure boot, HSM integration, encrypted and compressed flashing, AES-128, RSA-3072, UWB and keyless-entry security contexts

AUTOSAR & Embedded: AUTOSAR Classic, BSW, AUTOSAR OS porting and integration, embedded C, ARM-based NXP S32K microcontrollers, multi-core multi-partition integration

Debugging & Toolchain: Vector CANoe, DaVinci Configurator, vFlash, Trace32, winIDEA, GENy, ASN.1, yEd; deep troubleshooting across bootloader, application, MCU, and stack boundaries

Delivery & Leadership: Customer requirements, vendor coordination, development test plans and reports, team collaboration, technical training, SAFe Agile, IBM DOORS, Jira, SVN, Dimensions, R-Plan

PROFESSIONAL EXPERIENCE

Senior Software Developer | Huf India Private Limited

Jan 2024 - Present | Pune, India

- Integrate bootloader updater/flasher and OTA update capabilities for automotive embedded platforms, including secure flash and partition-aware update flows.
- Work on security-sensitive platform topics spanning HSM integration, secure boot, multi-core multi-partition architecture, and UWB/keyless-entry systems.
- Diagnose complex issues at bootloader, application, microcontroller, and supplier-stack boundaries using on-target debugging and automotive validation toolchains.
- Engage directly with NXP and Vector engineers to reproduce integration defects, isolate root causes, assess workarounds, and recommend concrete fixes in supplied stacks.
- Support time-critical near-launch and field issue resolution, turning traces and reproducible behavior into coordinated fixes across internal, customer, and supplier teams.
- Coordinate with customers and distributed stakeholders while supporting team execution, knowledge transfer, and technical training.

EARLIER EXPERIENCE

Senior Software Engineer | Marquardt India Pvt. Ltd.
Sep 2018 - Jan 2024 | Pune, India

- Owned end-to-end execution of bootloader projects for production automotive programs, from customer requirements and implementation through application integration, on-board testing, and release issue closure using the Vector stack.
- Configured and integrated secure bootloader capabilities for automotive cybersecurity requirements, including secure boot, encrypted flashing, compressed flashing, AES-128, and RSA-3072.
- Developed and debugged on ARM-based NXP S32K microcontrollers using CANoe, DaVinci Configurator, Trace32, winIDEA, vFlash, GENy, ASN.1, and related engineering tools.
- Worked directly with customers to clarify requirements and coordinated with technology vendors on change requests and defects in supplied stacks.
- Prepared development test plans and reports and maintained traceability through IBM DOORS, Jira, SVN, Dimensions, and R-Plan.
- Trained colleagues on bootloader concepts, configuration, integration, and debugging practices.

Trainee | KPIT Technologies
Jun 2016 - Sep 2017 | Pune, India

- Completed structured training in automotive electronics, AUTOSAR layered architecture, embedded C, and basic software concepts.
- Supported AUTOSAR OS porting, integration, and testing across multiple automotive customer engagements.

TRAINING & PROFESSIONAL DEVELOPMENT

Vector-led AUTOSAR Training: In-person, in-depth training on AUTOSAR Classic architecture, configuration, and BSW integration

SAFe Agile: Hands-on delivery experience in SAFe-aligned teams and cross-functional planning environments

AUTOMOTIVE CYBERSECURITY TRAJECTORY

Applied Foundation: Secure boot, secure flash and update, HSM integration, AES/RSA, bootloader security, and security-sensitive UWB/keyless-entry systems

Current Development: ISO/SAE 21434, TARA, UNECE R155/R156, SecOC, secure OTA and Uptane, automotive Ethernet and SOME/IP security

Forward Direction: Cybersecurity engineering for software-defined vehicles, zonal and central compute, connected-vehicle platforms, and evolving vehicle architectures

LEADERSHIP & COLLABORATION

- Translate customer requirements into implementable software and integration decisions across distributed automotive teams.
- Partner with silicon and software-stack vendors on root-cause analysis, change requests, practical workarounds, and proposed stack fixes.
- Strengthen team capability through technical training, knowledge sharing, coordination, and structured stakeholder communication.

EDUCATION

Bachelor's Degree, Electronics and Communications Engineering | KK Wagh Institute of Engineering Education | 2012 - 2016