Bardia Shahbaz

SENIOR FUNCTION & CONCEPT ENGINEER · PRODUCT OWNER

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Senior engineer with 15 years of experience in function development and systems architecture for highly automated driving. Expert in safety-critical systems (Vehicle Motion Management / ESC) with deep expertise in ISO 26262, ASPICE, and MBSE (Matlab/Simulink). Experienced in virtual validation (vECUs), SiL/HiL methods, and agile requirements management in a large OEM environment.

EXPERIENCE

03.2025 – present
Ingolstadt / Hybrid

Senior Function & Concept Engineer
CARIAD SE

- Project lead and successful series launch of safety-critical modules (hold & standstill management, FailSafeStop) within a global platform software.
- Concept and design of the logical and technical system architecture for highly automated driving functions.
- End-to-end process ownership (requirements-to-release) to safeguard functional requirements and safety standards.
- Primary point of contact for change and stakeholder management to align technical requirements.
- Systematic root-cause analysis and lasting problem resolution to safeguard software quality and system stability.

07.2022 – 02.2025
Ingolstadt / Hybrid

Senior Function & Concept Engineer
CARIAD SE

- Strategic introduction of continuous, development-integrated SiL testing to accelerate release cycles through early defect detection.
- Continued series support for deceleration management until the successor system was in the field, including analysis and resolution of customer complaints.
- End-to-end validation of complex driving functions using vECUs and vehicle tests to reduce hardware dependencies.
- Technical integration of ~70 sub-modules into the overall VMM software, ensuring runtime on the platform.
- Technical alignment of requirements between module developers and the overarching architecture.
- Responsible for build management, configuration, and deployment of software releases.

01.2017 – 06.2022
Ingolstadt

Function Owner, Motion Management, with continuing series support for Deceleration Management
AUDI AG

- Development of the logical and technical function architecture for Vehicle Motion Management (VMM) in automated driving.
- Series support for deceleration management continued in parallel as the system scope grew to motion management.
- Design and build-out of a simulation-based development environment in Matlab/Simulink for VMM.
- Development of automated evaluation and validation tools for measurement data from testing, plus prototype implementation and validation of driving functions in vehicle testing.

10.2014 – 12.2016
Ingolstadt

Calibration Owner, later Function Owner, Deceleration Management
AUDI AG

- Calibration, commissioning, and validation of deceleration management in vehicle testing across multiple vehicle platforms.
- Grew out of calibration ownership into the function design itself, through to function ownership and series release of the module.
- Directed requirements, change, and defect processes in close coordination with system suppliers and specialist departments.
- Ensuring homologation readiness and release quality in strict compliance with ISO 26262 and market-specific quality standards.

08.2011 – 09.2014
Ingolstadt

Function Integration / Calibration, Deceleration Management
EFS GmbH / Wotech GmbH (for AUDI AG)

- Commissioning, calibration, validation, and series release of the deceleration-management module within the electronic stability control (ESC).
- Defect and change management to ensure stable function development.

09.2009 – 05.2011
Oberpfaffenhofen

Student Assistant
DLR – Institute of Robotics and Mechatronics

- Diploma thesis: development of a haptic feedback device for the human foot.
- Internship: concept study for a haptic feedback device on the foot.

08.2007 – 08.2009
Dresden

Student Assistant
Fraunhofer IZFP-D

- Behavioral simulation of piezo materials for non-destructive testing methods.

APPLIED AI

2023 – present
Remote / Germany

Independent AI Architect & Engineer
Independent

- **DOCUMENT PIPELINE**
  - Stage 1: LLM classification of incoming mail (10–15 letters a week) by addressee and subject, with deterministic routing into filing, tasks, or the financial stage.
  - Stage 2: extraction of ~15 financial documents a day into typed schemas behind a multi-provider fallback (Mistral OCR, Landing AI, Pydantic).
  - Provider selection across four generations (Nanonets, GPT-4o, Landing AI, Mistral OCR), assessed at line-item level and made comparable by an adapter onto a single internal contract.
  - Unattended operation via a schema- and prompt-versioned extraction cache, content-fingerprint dedup, and quarantine for validation failures.
- **CONTENT PIPELINE**
  - Copywriter and critic as separate roles, bound to hard brand and identity anchors against invented products and health claims.
  - The most recent critic findings are fed back from a deduplicated store into the next prompt.
  - Image generation onto a deterministically rendered layout: the model may only fill placeholder anchors with icons, without altering text or layout.
  - Daily posting since July 2026 with weekly batched approval, and no publishing credentials held by the generator.
- **OPERATIONS SYSTEM**
  - Scheduling, inventory, and supplier ordering (React Native, Expo, Supabase), in daily use since 2025.
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Price comparison across six B2B suppliers with fuzzy-matched product normalization over three differently shaped sources.

EDUCATION & CERTIFICATIONS

09.2005 – 05.2011
Dresden

Mechatronics (Dipl.-Ing.)
Technische Universität Dresden

- Focus areas: robotics, hydraulics / pneumatics.

2026
Udacity

AI / ML Nanodegrees
Udacity

- AI Programming with Python; ML DevOps Engineer.

2017
Coursera

Deep Learning Specialization
DeepLearning.AI

SKILLS

AI & MACHINE LEARNING

- Deep Learning
- Neural Networks
- MLOps / ML DevOps
- LLM application engineering (RAG, agents)
- Prompt engineering & evals
- Agentic development workflows (Claude Code)
- Agent orchestration with approval gates
- PyTorch
- MLflow
- Weights & Biases
- DVC
- FastAPI
- NumPy / pandas
- Matplotlib
- Jupyter
- pytest
- Model monitoring

SAFETY-CRITICAL SYSTEMS & ARCHITECTURE

- ISO 26262 (functional safety)
- ASPICE
- MBSE (Matlab/Simulink)
- System & function architecture
- Vehicle Motion Management
- Virtual validation (vECUs, SiL/HiL)
- Requirements engineering

PROGRAMMING

- Python
- C / C++
- HTML / CSS

TOOLS & PLATFORMS

- Matlab/Simulink
- CarMaker
- IBM DOORS
- CANoe / CANape
- Silver (Synopsys)
- dSpace TargetLink
- CodeBeamer
- Supabase
- Docker
- n8n
- GitHub Actions / CI-CD
- Jira

LANGUAGES

German	C2	English	C1
Spanish	A1	Persian	Native