Alexandru P.
Senior Senior Test Automation / SDET Engineer

SUMMARY

- Senior Test Automation Engineer with 11 years in embedded systems, HW/SW integration, and Python-based test frameworks.
- Expertise in Python, pytest, Playwright, FastAPI, PostgreSQL, Redis, Docker, and CI/CD pipelines.
- Developed reusable frameworks for distributed systems and IoT platforms with advanced fault injection and recovery testing.
- Background in REST API, asynchronous processing, and end-to-end system validation across API, backend, and UI layers.
- Skilled in embedded testing tools including CAPL, CANoe, dSPACE, and diagnostic protocols (CAN, LIN, UDS, XCP).

TECHNICAL SKILLS

Main Technical Skills	Python, pytest, Playwright, FastAPI, PostgreSQL
Programming Languages	Python
Python Frameworks	FastAPI
Python Libraries and Tools	pytest
Databases & Management Systems / ORM	PostgreSQL, Redis
UI Frameworks, Libraries, and Browsers	UI
Amazon Web Services	AWS WorkSpaces
Azure Cloud Services	Azure log analytics, Front Door
Google Cloud Platform	Google Data Studio
Industry Domain Experience	Embedded
SDK / API and Integrations	API, FastAPI, RESTful API
Collaboration, Task & Issue Tracking	Atlassian Confluence, Jira
QA, Test Automation, Security	Automated testing, Debugging, HIL / SITL, Integration testing, Integration Tests, Manual Testing, Playwright, pytest, Test Cases, TestRail, UI testing

Hardware	CAN, ECU
Deployment, CI/CD & Administration	CI/CD, Jenkins
Virtualization, Containers and Orchestration	Docker, Docker Compose
Version Control	Git, Github Actions
Platforms	IOT
Third Party Tools / IDEs / SDK / Services	Labview, NI LabView
Operating Systems	Linux
Methodologies, Paradigms and Patterns	REST, Root-cause
Other Technical Skills	CANoe, CAPL, istqb, Jama, Lauterbach, LIN, OBD, SIL, Suites, UDS, XCP

WORK EXPERIENCE

Diagnostic Test Lead/Software Test Architect, Spyrosoft

Duration: Jun. 2023 - Present

Software Test Architect, Embedded HW/SW Integration and Diagnostics Validation

Duration: Feb. 2025 - Present

Summary: This project involves designing and maintaining automated validation solutions for embedded hardware and software systems, focusing on system and integration testing, fault injection, and diagnostics automation in automotive and embedded environments.

Responsibilities:

- Designed and maintained automated validation solutions using Python, CAPL, CANoe, and HIL environments.
- Performed system and integration testing across embedded HW/SW components, interfaces, and diagnostics.
- Designed fault-injection, robustness, and recovery scenarios covering communication failures, invalid states, and boundary conditions.
- Investigated failures using logs, communication traces, measurements, and internal system state to perform root-cause analysis.
- Built regression workflows integrated with Jenkins, Git, and requirements/test-management environments.
- Created requirements-based test cases with traceability and managed defects through Jira/Jama.
- Defined diagnostic automation across CAN, LIN, UDS and XCP interfaces.

Technologies: Python, CAPL, CANoe, HIL, Jenkins, Git, Jira, Jama, CAN, LIN, UDS, XCP.

Diagnostic Test Lead, Magna (ADAS ECU Diagnostic Validation)

Duration: Jun. 2023 - Feb. 2025

Summary: Development of automated diagnostic validation suites for Advanced Driver-Assistance Systems (ADAS) Electronic Control Units (ECUs), focusing on UDS and OBD protocols to ensure robust diagnostic service functionality and fault memory management.

Responsibilities:

- Developed automated UDS and OBD validation suites for ADAS ECUs using CAPL and vTESTstudio.
- Built reusable regression components covering diagnostic services, DTC behaviour, flashing, and fault memory.
- Analyzed software requirements and maintained traceability between specifications, test cases, and results.
- Coordinated defect analysis and technical clarification with software and system engineering teams.

Technologies: CAPL, vTESTstudio, UDS, OBD, diagnostic services.

Software Test Engineer, Wipro (HIL Testing for PM Sensor & MIU)

Duration: Jul. 2022 - Jun. 2023

Summary: Led Hardware-in-the-Loop (HIL) test setups and automated testing for PM Sensor and MIU systems, ensuring system reliability and performance through detailed test reporting and defect tracking.

Responsibilities:

- Led HIL test setups for PM Sensor & MIU.
- Automated HIL testing using dSPACE and CANalyzer.
- Created detailed test reports and defect tracking in Jira, ensuring clear communication with development teams.

Technologies: dSPACE, CANalyzer, HIL, Jira.

Embedded Test Engineer, Alten (SIL Testbench and Motor Setup Automation)

Duration: Oct. 2021 - Jul. 2022

Summary: Developed Software-in-the-Loop (SIL) testbench and designed custom motor setups for automated validation of embedded systems, enhancing test automation and system validation efficiency.

Responsibilities:

- Built SIL testbench using Python + CANoe.
- Designed custom motor setups for automated validation.

Technologies: Python, CANoe, SIL.

Integration & Software Tester, Huf Group (Software-Hardware Signal Integrity and Subsystem Testing)

Duration: May 2020 - Oct. 2021

Summary: Validated software-hardware signal integrity and developed automated subsystem test scripts to improve testing efficiency and reduce manual testing efforts.

Responsibilities:

- Validated software-hardware signal integrity using CAPL, Lauterbach, and oscilloscopes.
- Developed automated subsystem test scripts, reducing manual test time by 30%.

Technologies: CAPL, Lauterbach, oscilloscopes.

System & Component Test Engineer, Honeywell (Component Validation and Test Framework Development)

Duration: Oct. 2016 - May 2020

Summary: Built test frameworks and automated component validation to simulate complex scenarios and reduce test time, while mentoring junior engineers on automation best practices.

Responsibilities:

- Built a Python + LabVIEW test framework using NI DAQ for complex scenario simulation.
- Automated component validation, reducing test time by 25%.
- Mentored 2 junior test engineers on automation best practices.

Technologies: Python, LabVIEW, NI DAQ.

Test Engineer, TT Electronics IMS (ICT Test Solutions for Production PCBs)

Duration: Sep. 2015 - Oct. 2016

Summary: Designed In-Circuit Test (ICT) solutions for production printed circuit boards (PCBs), focusing on debugging failures and improving manufacturing yield.

Responsibilities:

- Designed ICT test solutions for production PCBs.
- Debugged failures and improved yield.
- Reduced false failure rates by 15% through test program optimization.

Technologies: ICT testing.

Senior Test Automation/SDET Engineer, Distributed System Test Automation Framework

Summary: Developed a reusable Python/pytest framework for API, database, queue, and asynchronous worker validation, including integration, resilience, and recovery tests to ensure system robustness and traceability.

Responsibilities:

- Built a reusable Python/pytest framework for API, database, queue, and asynchronous worker validation.
- Implemented integration, resilience, and recovery tests covering service outages, worker failures, and restart scenarios.
- Added idempotency and correlation-ID validation for end-to-end execution tracing.

- Integrated automated tests with Docker Compose and GitHub Actions CI.

Technologies: Python, pytest, FastAPI, PostgreSQL, Redis, Docker, GitHub Actions.

Senior Test Automation/SDET Engineer, ThingsBoard IoT System Test Framework

Summary: Built an end-to-end system test framework for the containerized ThingsBoard IoT platform, automating REST API validation, telemetry integration, and UI testing to ensure data flow and device lifecycle management.

Responsibilities:

- Built an end-to-end system test framework for a containerized ThingsBoard IoT platform.
- Automated REST API validation for device creation, retrieval, deletion, and lifecycle management.
- Implemented telemetry integration tests validating data flow from simulated devices into the platform.
- Added Playwright-based UI tests to verify that API-created devices are correctly reflected in the web application.
- Developed reusable fixtures and cleanup utilities for isolated, repeatable test execution.
- Validated behaviour across API, backend persistence, telemetry flow, and UI layers in a Docker-based environment.

Technologies: Python, pytest, Playwright, REST APIs, Docker, PostgreSQL, IoT.

EDUCATION

- **M.Sc. Electronics & Telecom**
  Polytechnic University of Timișoara
- **B.Sc. Info Systems Tech**
  Polytechnic University of Timișoara

CERTIFICATION

- **ISTQB Certified Tester – Foundation Level**
- **DFSS Green Belt Certified**
- **IREB Certified Requirements Engineer**