

Ifrahuddin Azmi

Automation Test Engineer | Embedded, Industrial (OT) & AI Automation

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Summary

Automation Test Engineer with **5+ years** of experience architecting and owning **Python automation frameworks** across embedded instruments, industrial (OT) networks, wireless medical devices, and web/desktop applications. Currently building **Robot Framework + Python** automation for **SCPI-controlled precision pressure controllers (Druck PACE6000)** and validating an **AI-driven OT cybersecurity appliance** running on **NVIDIA edge compute**. Track record of replacing manual regression with reusable, **CI-triggered frameworks** (Robot Framework, Selenium, Squish BDD, PyTest), validating **BLE and Wi-Fi** stacks down to packet level with Wireshark and Scapy, and applying **LLMs** (local models, Gemini, Azure AI Foundry) to test-case generation, anomaly detection and automated root cause analysis. Comfortable owning delivery end to end – framework architecture, keyword libraries, CI integration, reporting and defect triage with firmware teams.

Technical Skills

- **Languages & Frameworks:** Python, Robot Framework, PyTest, Selenium, Squish BDD, Shell Scripting, Yaml Scripting
- **Instrument & Embedded Automation:** SCPI over LAN/RS-232/USB, Druck PACE6000 / PACE6000E pressure controllers, firmware validation, sensor & DAQ verification, Toradex Linux
- **Wireless & Protocols:** BLE (GATT, bleak, pygatt), Wi-Fi 802.11, TCP/IP, sockets, MQTT (TLS/PEM), switching, VLAN & firewall policy
- **AI & GenAI:** local LLM agents, Gemini API, Azure AI Foundry, Vercel AI SDK, AI test-case generation, anomaly detection, automated RCA
- **Network & Security Testing:** Wireshark, Scapy, deauthentication & MITM simulation, rogue AP, BLE spoofing, OT/ICS threat validation
- **Platforms & DevOps:** Linux (Ubuntu, Kali), NVIDIA edge compute, OpenWrt, Docker, Jenkins, Git, Bitbucket, JIRA, TestRail, AWS, GCP
- **Data & Applications:** PostgreSQL, MySQL, Prisma, Pandas, Matplotlib, Streamlit

Education

Bachelor of Engineering in Computer Science Engineering

July 2016 – Jan 2021

Visvesvaraya Technological University, Belagavi, India

Professional Experience

Automation Test Engineer (Grade 2)

Jan 2026 – Present | BLR

Utthunga Technologies Pvt. Ltd. | Client: Belden

Client Project — Baker Hughes | Druck PACE6000 Pressure Controller Automation

- Designed and built the **Robot Framework + Python** automation framework for the **Druck PACE6000 / PACE6000E** modular pressure controller, replacing manual bench verification with repeatable one-command regression runs.
- Implemented the **SCPI communication layer** (LAN/Ethernet, RS-232, USB) with session handling, command/response parsing, timeout and error recovery, exposed as reusable **Robot keywords** for the wider test team.
- Automated setpoint accuracy, pressure ramp/slew, control-mode switching, range and unit configuration, leak test and self-test verification against calibration tolerances with automatic pass/fail evaluation.
- Added structured logging, CSV/HTML result capture and trend plots (**Pandas, Matplotlib**) so measurement drift and intermittent failures are traceable across builds.
- Integrated the suites into **Jenkins** for nightly execution and triaged failures with firmware and hardware teams, cutting a ~2-day manual regression cycle to under 4 hours.

Client Project — Belden | AI-Based OT Network Security Appliance

- Validating an **AI-driven industrial cybersecurity appliance** that detects and blocks malicious activity targeting OT assets, built from a network module, managed switch, firewall and an **NVIDIA edge compute** unit running inference.

- Built test scenarios generating benign and malicious industrial traffic to exercise the **AI anomaly-detection pipeline**, verifying detection accuracy, alert latency and false-positive behaviour.
- Verified **asset discovery**, network segmentation and firewall policy enforcement, plus end-to-end alert delivery to the dashboard and notification path when intrusion attempts or anomalies are detected.
- Executed throughput, stability and long-duration soak testing across the switch – firewall – edge-compute chain, and automated repeatable checks in Python to shorten every validation cycle.

Embedded & Automation Test Engineer

Sep/2025 – Jan/2025 | BLR

Gems Setra | Tektronix India Pvt. Ltd.

- Designed end-to-end automation for embedded devices, **WebUI** and **QT desktop applications** using **Robot Framework + Selenium** and **Squish BDD**, lifting regression coverage while removing repetitive manual effort.
- Executed embedded firmware validation on **Toradex Linux** platforms and automated device configuration workflows.
- Built a real-time **Streamlit + MQTT (TLS/PEM)** telemetry dashboard for sensor devices, used for device simulation and secure publishing across multiple users.
- Delivered an **AI-powered test-case generation** solution on **Azure AI Foundry**, cutting manual test design effort by ~40% and reducing specification-to-test turnaround.

Embedded & Automation Test Engineer

Mar/2022 – Oct/2025 | BLR

LifeSignals India Pvt. Ltd.

- Developed and maintained **Python + Robot Framework** automation for **biosensor firmware validation**, building reusable libraries that shortened every release validation cycle.
- Owned **BLE and Wi-Fi module testing** – GATT services, connection stability, throughput and protocol compliance across multi-device streaming scenarios.
- Automated data-integrity validation of streamed physiological data, handling corrupt, duplicate and null packets to prove uninterrupted device operation.
- Performed deep **packet analysis with Wireshark** and built **Scapy**-based wireless security tests (deauthentication, rogue access point, BLE spoofing) that hardened device firmware.
- Partnered with firmware and cloud teams on defect triage, root cause analysis and regression sign-off for production releases.

QA Engineer (Manual Testing – Biomedical Devices)

Mar/2021 – Feb/2022 | BLR

Transcaal Eng. India Pvt. Ltd.

- Tested and validated **ECG and patient monitoring devices** against regulatory and quality standards, covering functional, usability and reliability verification.
- Authored test cases and defect reports for biomedical device functionality, ensuring measurement accuracy and reliable release sign-off.

Key Projects

Biosensor BLE & Wi-Fi Automation Framework — LifeSignals

Designed and developed the complete BLE and Wi-Fi automation suite for wearable biosensors, covering connectivity, streaming integrity and wireless security.

- Built the **BLE automation layer** in Python (**bleak, pygatt**): device scanning, pairing and bonding, GATT service and characteristic discovery, notification subscription and continuous data-stream capture.
- Automated connection-stability scenarios – reconnect after link loss, concurrent multi-device streaming and long-duration soak runs – exposing intermittent firmware defects that manual testing missed.
- Developed the **Wi-Fi streaming validation** path with socket-based capture, packet sequencing and payload integrity checks, including graceful handling of corrupt, duplicate and null packets.
- Created wireless security simulations (**BLE spoofing**, deauthentication, rogue AP) using **Scapy** and analysed BLE/Wi-Fi traffic in **Wireshark** to confirm firmware fixes.
- Packaged everything as **Robot Framework** keywords with structured logs and HTML reports, making the suite runnable by the whole QA team and ready for CI execution.

CEMS Telemetry Dashboard (Streamlit + MQTT) — Gems Setra

Web-based IoT telemetry dashboard to configure, simulate, validate and securely publish device telemetry.

- Built a **Streamlit WebUI** for configuring and simulating IoT telemetry with global and per-device parameters, add/remove device workflows and readiness checks.
- Implemented **multi-user authentication** with isolated sessions, persistent configuration storage, and export/import with safe reset to prevent misconfiguration and data loss.
- Integrated secure **MQTT publishing over TLS/PEM** with real-time connection and publish status monitoring.
- Containerised the application with **Docker** for consistent, cloud-ready deployment.

Sentinel: Autonomous AI Site Reliability Engineering (SRE) Agent — Independent Project

Autonomous AI agent for incident response, root cause analysis and auto-healing on Linux infrastructure.

- Architected an autonomous **AI SRE agent** using **local LLMs (via OmniRoute)** to automate incident response, conduct **root cause analysis** and execute auto-healing runbooks, significantly reducing **MTTR**.
- Engineered a **ChatOps interface** over Telegram plus a custom **React** web console for real-time, AI-assisted infrastructure management, log analysis and anomaly detection.
- Implemented a deterministic **sudo command guard** that blocks destructive actions while still allowing AI-driven remediation, enabling hands-off operation with zero manual intervention.
- Kept inference fully **on-premise** with locally hosted models, so system logs and infrastructure telemetry never leave the host – no per-token cost and no external data exposure.

AI-Powered Expense Tracker | PostgreSQL, Vercel AI SDK, Gemini — Independent Project

Zero-touch personal finance pipeline that turns bank alert emails into categorised, queryable transactions.

- Engineered an automated data pipeline that monitors **Gmail** for bank alerts and categorises transactions automatically, eliminating manual data entry.
- Integrated the **Gemini LLM** through the **Vercel AI SDK** to parse unstructured email text, with strict **Zod** schema validation guaranteeing database-safe, consistently formatted output.
- Built a high-performance dashboard on **Next.js 16 (App Router)** and Tailwind CSS over **PostgreSQL** managed with **Prisma**, with category-wise and month-on-month spend views.
- Deployed on **Vercel** with idempotent ingestion, so re-processed emails never create duplicate transactions.

Wireless & OT Security Expertise

- **Wi-Fi security assessment (Python):** deauthentication attacks, rogue access points, man-in-the-middle simulation and traffic sniffing with **Scapy** to measure network resilience against unauthorised access.
- **BLE security testing:** spoofing, unauthorised connection attempts and GATT-level data exposure checks on wearable devices.
- **Analysis & OT validation:** packet-level inspection in **Wireshark** to isolate protocol violations, plus firewall policy, segmentation and intrusion-alert validation on industrial OT networks.

Personal Info:

Father's Name	: Mohd Salahuddin
DOB	: 03/02/1999
Nationality	: Indian
Hobbies	: Cricket, Playing PC Game, Badminton, Cooking.
Languages:	: Hindi (Read, write, speak), English (Read, write, speak), Urdu (Read, write, speak), Arabic(read)

Declaration:

I authorize the company or organization to verify the details mentioned in this resume and any other information provided during the recruitment process. I also understand that the data submitted in this resume will be used solely for the purpose of evaluating my suitability for the position I am applying for.

Place: Bengaluru/Karnataka