Tapas Kumar Patra

Automation Engineer | Backend Development & Test Automation

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PROFESSIONAL Summary

Software Engineer with 4 years of experience specializing in backend development and test automation architecture for Ford's automotive platforms. Developed 6+ production tools using Python, FastAPI, Django, and PySide that reduced manual testing efforts by 60% across 15+ engineering teams. Authored 500+ automated test scripts and built AI-powered applications (RAG, Mistral AI), REST APIs, and real-time WebSocket systems. Recognized with 17 performance awards for technical innovation, team leadership, and delivering scalable solutions. Currently completing M.Tech in Software Systems while driving engineering excellence in Agile environments.

Technical Skills

- **Programming & Scripting:** Python (3.7, 3.9), JavaScript, SQL
- **Backend & Web Frameworks:** FastAPI, Django, REST API, WebSockets
- **Frontend & Desktop Development:** PySide2, PySide6, HTML/CSS, JavaScript
- **Automation & Testing:** Selenium 3.x, Appium, Pytest, Slash Framework, Data-Driven Testing (DDT)
- **Databases:** PostgreSQL, Redis, Supabase
- **AI & Machine Learning:** Retrieval-Augmented Generation (RAG), Mistral AI, Semantic Search, Vector Embeddings
- **Testing Methodologies:** STLC, Defect Life Cycle (DLC), Functional/Regression/Integration Testing, Test Case Optimization
- **Automotive Technologies:** Android Automotive OS, QNX, CAN Protocol, AUTOSAR, ECU Testing
- **Tools & Platforms:** Git, Jira, TestRail, YAML, JSON
- **Methodologies:** Agile/Scrum, Sprint Planning, Code Reviews

PROFESSIONAL EXPERIENCE

AUTOMATION ENGINEER → SENIOR AUTOMATION ENGINEER (Promotion: December 2025)

Wipro Technologies | Bengaluru, India | **Oct 2021 – Present**

Automation Framework Engineering:

- **Architected** end-to-end Python automation framework from scratch for Android Automotive infotainment systems, achieving 60% reduction in manual testing and 35% improvement in test coverage across 6 modules (Audio, Media, Radio, Connectivity, Settings, Wi-Fi).
- **Authored 1000+ automated test scripts** using Selenium, Appium, and Slash Framework, implementing Data-Driven Testing (DDT) with YAML configurations to validate functional, regression, and integration requirements.
- **Engineered UI-Autogen**, a PySide6 desktop tool that parses Android XML layouts to auto-generate 300-500 UI properties and unit tests across 15-20 modules, accelerating automation bootstrapping by 40%.
- **Spearheaded code quality** as module owner, conducting peer reviews for 50+ automation scripts monthly to enforce best practices, design patterns, and maintainability standards.

Backend & Full-Stack Tool Development:

- **Delivered TestRail Insight**, a Django web application with REST API and PostgreSQL backend that aggregates 8,000+ test runs (bypassing TestRail's 100-run limit), enabling real-time quality dashboards for stakeholder decision-making.
- **Built RTM Helper Tool** (PySide2) to automate backward traceability, linking 6,000+ test cases to Jira requirements across 12 modules and eliminating 100% of manual Requirements Traceability Matrix (RTM) effort.

- **Implemented Rail-Bridge**, a Python migration utility that transferred 4,000-5,000 test cases between TestRail instances, resolving server configuration incompatibilities during project transitions.
- **Launched Test-Crafter** to enable bulk creation of test runs, plans, and milestones via TestRail API, saving QA teams 1-2 hours daily across multiple projects.

Technical Leadership & Collaboration:

- **Led cross-functional teams** of 16-20 engineers during team lead absences, managing sprint planning, daily stand-ups, and release deliverables for Android Automotive and QNX-based SYNC 4 platforms.
- **Mentored 6 junior engineers** through structured knowledge transfer sessions, onboarding them to automation frameworks, test strategies, and codebase ownership.
- **Orchestrated end-to-end Defect Life Cycle (DLC)** in Jira, collaborating with development teams to track, triage, and resolve 200+ high-priority defects per quarter, ensuring on-time releases.

PERSONAL PROJECTS

AI-Powered Portfolio Chatbot | FastAPI, Mistral AI, Supabase, RAG

- Designed and deployed an AI assistant using Retrieval-Augmented Generation (RAG) to answer recruiter queries interactively via semantic search.
- Generated vector embeddings via Mistral AI API and stored them in Supabase vector database for real-time retrieval.
- Live at: tapas-patra.github.io – enabling real-time interaction with recruiters.

Pocket Pad | FastAPI, WebSockets, JavaScript

- Created a real-time web application enabling smartphone-to-PC remote control over the internet using WebSocket bi-directional communication.
- **Deployed on Render** with low-latency, bi-directional data transfer for dynamic functionality.

Education and Certification

MASTER OF TECHNOLOGY (M. TECH) IN SOFTWARE SYSTEMS

Birla Institute of Technology and Science (BITS), Pilani | Expected December 2025

Work Integrated Learning Program (WILP) – Completed alongside full-time employment

Bachelor of Computer Applications (BCA)

N.C. College | Sept 2021

AWARDS & RECOGNITION

- **17 Performance Awards** (2021–2025): Extraordinaire, Inspiring Performance, Victory League, Beyond the Call of Duty, Habit Flagbearer – Demonstrating Stewardship, and others.
- **Received two consecutive 5/5 Outstanding Performance** Ratings for exceptional contributions to automation, backend tool development, and team leadership.