

Software Test Plan (STP) - Resume Parsing & Validation Service

Project: Resume Parsing & Validation Service

Version: 1.0

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1. Introduction

Purpose: This document defines the test plan for the Resume Parsing & Validation Service v1.0. It outlines objectives, scope, strategy, resources, schedule, and responsibilities for testing.

Scope: Testing covers resume upload, section extraction (Education, Skills, Experience, Projects), keyword/job-requirement matching, gap analysis, anonymization of data, batch processing, feedback/reporting, deletion of sensitive data, and all relevant security and performance aspects. Features not in current release (e.g., full ATS integration, advanced NLP) are excluded.

References:

- SRS: Dynamic Resume Analyzer v1.0
- Design Specifications v1.0
- Data Protection/GDPR Standards

Definitions:

- SRS: Software Requirements Specification
- NLP: Natural Language Processing
- ATS: Applicant Tracking System
- MFA: Multi-factor Authentication
- RTM: Requirements Traceability Matrix
- WCAG: Web Content Accessibility Guidelines
- SQL: Structured Query Language

- XSS: Cross-Site Scripting
- TLS: Transport Layer Security

2. Test Items

- Resume Upload & Validation module
- Section Extraction & Mapping module
- Job Requirement Parsing & Matching module
- Feedback & Report Generation module
- Data Anonymization & Privacy Handling
- Security (MFA, session, encryption)
- Admin/Monitoring Interface

3. Features to be Tested

Features mapped to SRS requirement IDs:

- RPRS-F-001: Resume upload & supported file validation
- RPRS-F-003: Standard section identification (Education, Skills, Experience, Projects)
- RPRS-F-006: Detect inconsistent date formats/missing contact info
- RPRS-F-007: Flagging of missing sections (e.g., Skills, Education)
- RPRS-F-010: Resume length calculation/validation

4. Features Not to be Tested

- Advanced semantic or context-aware matching (future scope).
- ATS or third-party recruiting platform integration.
- Full multi-language support (English-only in current scope).
- Manual resume editing UI.
- Vendor-supplied document conversion tools.

5. Test Approach / Strategy

Levels of Testing

- Unit Testing:
 - Test file validation logic for supported/unsupported formats.
 - Test parsing functions for section extraction and word count calculation.
 - Test validation logic for date formats and contact info.

- Integration Testing:
 - Validate interaction between the parsing engine and feedback generator.
 - Ensure missing sections/incorrect data flags are properly passed to the report generator.
- System Testing:
 - End-to-end workflow: upload resume → validate format → extract sections → detect inconsistencies/missing info → calculate length → generate report.
- User Acceptance Testing (UAT):
 - Recruiters/HR teams confirm that flagged issues, missing sections, and resume length validation are accurate and reports are easy to understand.

Types of Testing

- Functional Testing: Verify correct implementation of the 5 selected features (file validation, section extraction, contact/date validation, missing sections, resume length check).
- Regression Testing: Ensure bug fixes don't affect previously working functions among these 5.
- Performance Testing: Validate resume processing $\leq 10s$ for up to 3-page resumes and support for ≥ 50 concurrent requests.
- Usability Testing: Confirm error messages (unsupported file, missing section, invalid date) are clear, and reports avoid cognitive overload.
- Security Testing: Verify TLS 1.2+, admin MFA, session timeout, resume auto-deletion, and input validation against SQL injection and Cross-Site Scripting (XSS).

Entry Criteria

- Stable build with the 5 core features delivered.
- Test environment with parsing libraries (PyPDF2, python-docx) ready.
- Sample resumes and job descriptions available.

Exit Criteria

- All planned test cases for the 5 functions executed.
- No Critical/High severity defects open.
- At least 95% functional test pass rate.
- UAT sign-off by Product Owner.

5.1 Security Validation

TLS 1.2+ / HTTPS Verification:

Ensure all communications between client and server are encrypted using TLS 1.2 or higher.

Data Privacy & Deletion:

Verify that uploaded resumes are automatically deleted from storage after analysis (per NFR-002 & SR-004).

Session Timeout:

Validate automatic logout after 15 minutes of inactivity.

Fuzzing & Input Validation:

Perform input fuzzing on resume uploads and job description fields to detect injection vulnerabilities (e.g., SQLi, XSS).

Audit & Logging: Ensure secure audit logs are generated for uploads, downloads, and admin actions, and test that they cannot be tampered with.

6. Test Environment

Hardware

- Server: 4 CPU cores, 8GB RAM, 100GB storage.
- Clients: Standard desktop/laptop browsers, mobile browsers.

Software

- Application under test: Dynamic Resume Analyzer v1.0.
- Database: PostgreSQL 12+.
- Libraries: PyPDF2/pdfplumber, python-docx.
- OS: Linux (Ubuntu 22.04 or equivalent).

Tools

- Unit Testing: PyTest/Unittest.
- API Testing: Postman.
- Performance: JMeter.
- Defect Tracking: Jira.
- Version Control: GitHub.

Test Data

- Valid Resumes: 10–20 resumes with varied formats (.pdf, .docx, .txt).
- Invalid Files: Unsupported formats (e.g., .jpg, .png).
- Edge Cases: Empty resumes, resumes missing sections, resumes with inconsistent dates, resumes too short/long (for length validation).

7. Test Schedule

Milestones:

- Test case design: 22 Oct 2025
- Environment setup: 23 Oct 2025
- Test execution start: 24 Oct 2025
- Test execution end: 18 Nov 2025
- UAT: 19 Nov 2025

8. Test Deliverables

- Test Plan (this document)
- Test Cases (manual & automated)
- Test Scripts
- Test Data
- Defect Reports
- Test Summary Report

9. Roles and Responsibilities

Role	Name	Responsibility
QA Lead	Vishwambhara R H	Prepare plan, coordinate execution
Test Engineer	Vrishank N A	Design & execute test cases, log defects
Developer	Prerana M P	Support defect fixes and triage
Product Owner	Vineet Anil Sharma	Approve test results, sign-off readiness

10. Risks and Mitigation

Risk	Mitigation
Delay in stable build delivery	Request early smoke builds from dev team
Test environment downtime	Maintain backup environment on cloud VM

Parsing failures due to varied resume formats	Prepare diverse sample resumes, including edge cases; log errors and continuously refine parsing rules.
Data privacy/security breaches	Implement and verify TLS 1.2+, MFA, session timeout, secure deletion policies; perform security/fuzz testing.
Incomplete or unavailable test data (resumes or job descriptions)	Maintain a repository of sample resumes/JDs covering formats, domains, and edge cases.
Requirement changes mid-testing	Track requirement updates via RTM; prioritize regression testing; maintain communication with Product Owner.

11. Assumptions & Dependencies

- Stable build of Dynamic Resume Analyzer v1.0 will be available before testing starts.
- Test resumes and job descriptions are representative of real-world scenarios.
- Network connectivity and server resources will remain stable during test execution.

12. Suspension & Resumption Criteria

Suspension Criteria

The QA Lead will suspend all or part of the test execution if any of the following conditions are met:

- **Unstable Build:** The deployed build of the **Dynamic Resume Analyzer v1.0** is found to be unstable, causing failures that block the execution of more than 30% of the planned test cases.
- **Environment Unavailability:** The test environment, including the **Linux server** or **PostgreSQL database**, is unavailable for a continuous period of more than four hours.
- **Critical Functionality Failure:** A critical defect is identified in a core module, such as the **Resume Upload & Validation module**, which prevents further end-to-end system testing.

12.2 Resumption Criteria

Testing activities will resume once the issues causing the suspension have been fully addressed:

- **Blocking Defects Resolved:** All critical or blocking defects that led to the suspension have been fixed by the development team, deployed to the test environment, and verified by the QA team.
- **Environment Stabilized:** The test environment has been restored and is confirmed to be stable and accessible for testing.
- **Successful Smoke Test:** A new, stable build has been deployed, and it successfully passes a set of smoke tests to ensure the core functionalities are working and the previous blocking issue is resolved.

13. Test Case Management & Traceability

Trace test cases to requirements (RTM):

- RPRS-F-001 (File Upload Validation) → TC-UP-01, TC-UP-02
- RPRS-F-002 (Section Detection & Feedback) → TC-FB-01, TC-FB-02
- RPRS-F-003 (Skill Extraction & Parsing) → TC-PA-01, TC-PA-02
- RPRS-F-004 (Validation of Contact & Dates) → TC-VAL-01
- RPRS-F-005 (Report Generation / Summary) → TC-RP-01
- RPRS-F-006 (Data Anonymization) → TC-RP-02
- RPRS-F-007 (Completeness & Grammar Check) → TC-QA-01, TC-QA-02
- RPRS-F-008 (Resume Scoring) → TC-QA-03
- RPRS-F-009 (Job-fit Analysis) → TC-JF-01, TC-JF-02
- RPRS-F-010 (Action Verb Suggestions) → TC-JF-03

14. Test Metrics & Reporting

Metrics:

- % of test cases executed
- % passed/failed
- Defect density
- Requirement coverage

Reports:

- Daily status
- Final Summary Report

15. Approvals

Role	Name	Signature / 31-10-2025
QA Lead	Vishwambhara R H	PES1UG23CS700
Test Engineer	Vrishank N A	PES1UG23CS705
Developer	Prerana M P	PES1UG23CS903
Product Owner	Vineet Anil Sharma	PES1UG23CS690

16. Test Cases

This section provides sample test cases for the ATM System. Each test case includes a unique identifier, description, preconditions, input data, expected results, and postconditions.

16.1 Sprint 1 – Functional Test Cases

Test Case ID	Test Scenario / Description	Preconditions	Test Steps / Input Data	Expected Result	Postconditions / Remarks
TC-UP-01	Validate resume upload for supported formats (.pdf, .docx, .txt)	Application running; user logged in	1. Upload a .pdf resume 2. Upload a .docx resume 3. Upload a .txt resume	All valid files accepted and parsed	File temporarily stored
TC-UP-02	Validate rejection of unsupported formats	Application running	1. Upload .jpg file	Error: "Unsupported file format"	File not stored
TC-PA-01	Parse and extract key skills and related keywords	Valid resume uploaded	1. Upload resume with technical skills 2. Parse file	Extracted skills displayed correctly	Parsed data stored
TC-PA-02	Detect duplicate or redundant sections	Resume contains repeated "Experience" sections	1. Upload resume 2. Parse content	Duplicate sections merged	Clean data generated

TC-FB-01	Detect missing resume sections (e.g., Skills, Education)	Valid resume uploaded	1. Upload resume missing "Skills" section	Missing section highlighted	Feedback displayed
TC-FB-02	Flag incomplete or partial sections	Valid resume uploaded	1. Upload resume with incomplete Education info	Section flagged incomplete	Feedback stored
TC-VAL-01	Validate email, phone, and date formats	Resume uploaded	1. Upload resume with invalid email or phone 2. Parse file	Invalid entries flagged	Validation results logged
TC-RP-01	Generate structured summary and PDF report	Parsing completed	1. Click "Generate Report"	Report generated in PDF with extracted details	PDF ready for download

16.2 Sprint 2 – Functional Test Cases

Test Case ID	Test Scenario / Description	Preconditions	Test Steps / Input Data	Expected Result	Postconditions / Remarks
TC-RP-02	Anonymize sensitive information (email, phone) in report	Parsed data available	1. Enable "Anonymize" option 2. Generate report	Sensitive details masked in report	Masked data exported
TC-QA-01	Perform grammar and spell check	Resume uploaded	1. Upload resume with grammar mistakes	Grammar issues highlighted	Suggestions displayed

TC-QA-02	Compute completeness score for resume	Resume parsed successfully	1. Upload multiple resumes 2. Compare feedback	Score displayed based on completeness	Score visible on dashboard
TC-QA-03	Detect employment gaps (>6 months)	Resume uploaded	1. Upload resume with experience dates	Gaps identified and flagged	Feedback logged
TC-JF-01	Suggest industry-specific resume templates	Resume uploaded	1. Upload IT domain resume	Suggests suitable industry template	Template shown to user
TC-JF-02	Compare resume with uploaded job description	Resume and JD uploaded	1. Upload resume 2. Upload job description	Job-fit % displayed	Comparison report generated
TC-JF-03	Suggest action verbs and improvements	Resume uploaded	1. Upload resume 2. Generate feedback	Suggests stronger action verbs	Suggestions displayed in UI