# Project Design Document: ATS & JD Match Analyzer

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## 1. Executive Summary

The **ATS & JD Match Analyzer** is a web-based tool designed to help software developers optimize their resumes for specific job applications. In a competitive job market, most companies use Applicant Tracking Systems (ATS) to filter candidates before a human recruiter ever sees an application. This tool addresses the critical need for resumes to be both ATS-friendly and highly tailored to the target job description (JD). By uploading their resume and the relevant JD, users will receive an instant analysis, a match score, and actionable suggestions for improvement, significantly increasing their chances of securing an interview.

## 2. The Problem

The modern job application process for software developers is broken. Many highly qualified candidates are rejected by automated systems due to simple formatting issues or a lack of specific keywords. The key challenges are:

- **The ATS "Black Box":** Applicants are often unaware of the formatting rules and keyword requirements that ATS platforms use for scoring and ranking.
- **Time-Consuming Tailoring:** Manually customizing a resume for every single job application is tedious, repetitive, and inefficient.
- **Uncertainty:** Developers have no easy way to know how well their resume matches a job's requirements before they apply, leading to wasted effort and missed opportunities.

## 3. The Solution

Our solution is a user-friendly web application that acts as a personal resume optimization assistant. The workflow is simple:

1. **Input:** The user pastes the text of a job description and uploads their resume in PDF or DOCX format.
2. **Analysis:** The backend service performs a two-part analysis:
    a. **ATS Compatibility Check:** Scans the resume for common structural problems (e.g., columns, images, incorrect headings) that can confuse parsing software.
    b. **JD Match Analysis:** Extracts key skills, technologies, and qualifications from the JD and cross-references them with the resume's content.
3. **Output:** The user is presented with a clear, actionable report that includes:
    a. A quantitative **Match Score** (e.g., "Your resume is a 78% match for this role").
    b. A list of crucial **Missing Keywords** and skills.
    c. Concrete **Suggestions** on how to incorporate these keywords and improve the resume's alignment with the role.

## 4. Core Features (Functional Requirements)

***Phase 1: Minimum Viable Product (MVP)***

This is the core functionality achievable in a weekend project.

- **FE-1:** A clean UI allowing users to paste text for the Job Description.
- **FE-2:** A file upload component for the user's resume (supports .pdf and .docx).
- **BE-1:** A file-parsing module to reliably extract raw text from uploaded resumes.
- **BE-2:** An **ATS Friendliness Module** that checks for:

    - Presence of columns.
    - Use of non-standard fonts or symbols.
    - Absence of clear section headings (e.g., "Experience," "Skills").
- **BE-3:** A **Keyword Matching Engine** that:
    - Identifies and extracts key technical skills and qualifications from the JD.
    - Compares the extracted keywords against the resume content.
- **BE-4:** An API endpoint that returns a JSON object containing the full analysis report.
- **FE-3:** A results page that clearly displays the match score, ATS feedback, and a list of missing keywords.

***Phase 2: Future Enhancements***

- **AI-Powered Suggestions:** Use an LLM to suggest rephrased bullet points that naturally include missing keywords.
- **User Accounts:** Allow users to create accounts to track their application history and save different versions of their resumes.
- **Interactive Highlighting:** Display the resume and JD side-by-side, visually highlighting matched and missing terms.
- **Action Verb Analysis:** Suggest stronger, more impactful action verbs (e.g., "Architected," "Engineered," "Led" instead of "Worked on").

## 5. Success Metrics

The success of this project will be measured by:

- **Completion:** A fully functional MVP is deployed and accessible via a public URL.
- **User Feedback:** Positive informal feedback from peers who use the tool to improve their resumes.
- **Portfolio Impact:** The project serves as a strong, practical example of backend development and problem-solving skills in my personal portfolio.