AI-Powered Resume & Job Application Analyzer

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Summary

The project proposes the development of an AI-Powered Resume & Job Application Analyzer, a web-based system designed to help job seekers especially students and fresh graduates in improving their chances of passing the Applicant Tracking Systems (ATS) and securing interviews. The system will parse resumes and compare them against specific job descriptions, generating a compatibility score and personalized feedback. Unlike existing tools, this project emphasizes deeper content analysis, ATS-awareness, and actionable recommendations rather than generic formatting tips. The expected outcome is a functional prototype that can provide tailored insights, highlight missing skills and keywords, and suggest improvements, thereby bridging the gap between job seekers and modern recruitment systems.

1. Introduction

The job market has become increasingly competitive, especially for fresh graduates. Research shows that average recruiter spends less than 7 seconds reviewing a resume, and many organizations use Applicant Tracking System (ATS) to filter candidates before human recruiters even view the applications.

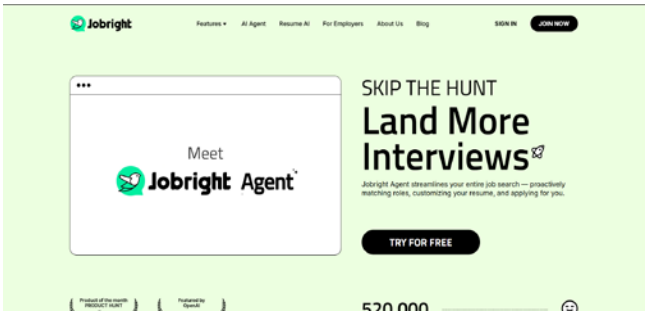
Job seekers often struggle to tailor their resumes to specific job descriptions, identifying missing skills or keywords that employers expect. They also struggling to optimize their resumes for ATS parsing.

While tools such as Jobright and ResumAI exist, they have limitations. They are often generic and offering one-size-fits-all feedback. Also, many focus primarily on formatting instead of deeper content analysis.

2. Background Studies

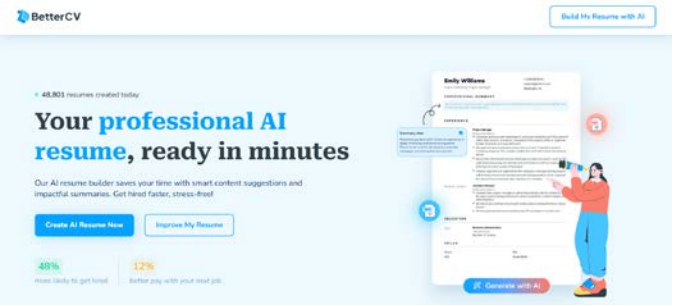
Several services currently exist in the market, such as Jobright and ResumAI which provide resume analysis and optimization features. However, they present certain limitations.

2.1 Jobright



Jobright focuses on AI-driven job matching but lacks deep resume-to-job description comparison,

2.2 ResumAI



ResumAI generates quick resume drafts but does not give detailed improvement suggestions based on specific job postings.

While these tools demonstrate the value of AI in the job application process, they do not fully address the **personalized, content-focused,**

ATS-aware feedback that applicants need. This project aims to fill that gap by developing an **AI-Powered Resume & Job Application Analyzer** that provides tailored insights and actionable improvements based on specific job descriptions.

3. Problem Statement

Many job seekers especially students and fresh graduates, fail to pass the initial screening phase due to poorly made resumes and job applications. They often lack on knowledge of ATS systems and keyword optimization, guidance on highlighting relevant experience and skills and automated feedback to refine their applications quickly. Without such support, applicants face a significant disadvantage in the hiring process.

4. Objectives

The project aims to develop a web-based AI-Powered Resume & Job Application Analyzer that will:

i. Parse resumes (PDF/DOCX) and extract relevant information (skills, education, experience)
ii. Compare the resume against a given job description
iii. Generate compatibility score
iv. Identify missing skills, keywords or sections
v. Suggest improvement in phrasing, formatting and content

5. Methodology/System Design

5.1 System Flow

I. User uploads resume + job description
II. Use NLP libraries (spaCy, PyPDF2, docx2txt) for text extraction
III. Extract skills from job description and compare with resume contents
IV. Generate overall match score (0-100)
V. Highlight missing keywords and suggest action verbs, measurable achievements, ATS-friendly formatting.
VI. Interactive dashboard + downloadable report

5.2 Tools & Framework

- Language: Python (backend), Javascript (frontend)
- Libraries: spaCy, Hugging Face Transformers, scikit-learn
- Frameworks: Django / Flask for backend, React for frontend
- Database: SQLite/ PostgreSQL for storing parsed resumes

6. Expected Outcomes

1. A functional web application that accepts resumes and other documents with a job description, producing detailed analysis and compatibility score
2. A feedback system highlighting missing keywords and improvements
3. A demo dataset of resumes and job postings for testing

7. Project Timeline

Week	Task	Deliverable
2-3	Literature review & Requirements gathering	Research notes & unique solution ideas
4-5	Resume parsing module	Prototype parser
6-7	Job description analysis & scoring system	Matching engine for backend
8-9	Feedback & Improvement suggestion engine	AI-based recommendations
10-12	Web integration & UI development	Functional web app
13-14	Testing & Deployment	Prototype system
15	Final report & Presentation	Final submission