**Free ATS Resume Scanner Project Report**

**Project Title: Free ATS Resume Scanner**

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**1. Project Overview**

The Free ATS Resume Scanner is a web application developed to assist job seekers and recruiters in evaluating resumes against job descriptions. The application provides two main functionalities:

* Keyword Extraction: Extracts key skills and keywords from a job description.
* Resume Matching: Compares a resume with a job description to calculate and display a match percentage, indicating how well the resume aligns with job requirements.

The application enhances the recruitment process by offering clear, visual insights and downloadable reports to aid decision-making.

**2. Objectives**

The primary objectives of the Free ATS Resume Scanner project are:

* To Extract Keywords: Allow users to upload a job description and receive a list of key skills and keywords that are crucial for the job role.
* To Match Resumes: Enable users to upload a resume along with a job description to compute a match percentage. This feature helps in evaluating how well a resume meets the job criteria.
* To Provide Result Visualization: Present the results in an easy-to-understand format using a donut chart for visual representation of the match percentage. Additionally, users can download the results as a PDF file for offline review.

**3. Features**

The application includes the following key features:

* **Keyword Extraction:**
  + Upload job description files in PDF, DOC, or DOCX format.
  + Extract and display key skills and keywords in a user-friendly grid layout.
* **Resume Matching:**
  + Upload both a job description and a resume file.
  + Calculate the match percentage between the job description and resume.
  + Display the match percentage using a donut chart with color-coded results (Red for 0-30%, Yellow for 31-75%, Green for 76-100%).
  + Show matched keywords in columns.
* **Downloadable Results:**
  + Generate and provide a downloadable PDF report that includes the match percentage and the list of matched keywords.

**4. Technology Stack**

The technology stack used in this project includes:

* Backend: Python with Flask
* Frontend: HTML, CSS, JavaScript
* PDF Generation: ReportLab
* Libraries:
  + Flask: Web framework for building the application.
  + ReportLab: Library for creating PDF files.
  + PyPDF2 (or PdfReader): Library for extracting text from PDF files.

**5. Setup and Installation**

To set up and run the application, follow these steps:

1. Clone the Repository:

Copy code

git clone https://github.com/your-username/free-ats-resume-scanner.git

cd free-ats-resume-scanner

1. Install Dependencies: Create a virtual environment and install the required packages:

Copy code

python -m venv venv

source venv/bin/activate # On Windows use `venv\Scripts\activate`

pip install -r requirements.txt

1. Run the Application: Start the Flask application by executing:

Copy code

python app.py

The application will be accessible at <http://127.0.0.1:5000>.

**6. Usage**

1. Homepage:
   * On the homepage, users are presented with two options: "Extract Keywords" and "Resume Matching".
2. Extract Keywords:
   * Upload a job description file in PDF, DOC, or DOCX format.
   * The application will process the file and display the extracted keywords in a grid layout.
3. Resume Matching:
   * Upload both a job description and a resume file.
   * The application calculates the match percentage and displays it using a donut chart.
   * View the matched keywords listed in columns.
   * Download the results as a PDF file using the provided button.

**7. Results**

The results of the resume matching process are visually represented as follows:

* Donut Chart: Shows the match percentage with color-coded segments:
  + Red: 0-30% match
  + Yellow: 31-75% match
  + Green: 76-100% match
* Matched Keywords: Displayed in columns, showing which keywords from the job description are present in the resume.
* PDF Report: Includes the match percentage and a list of matched keywords, available for download.

**8. Conclusion**

The Free ATS Resume Scanner provides a valuable tool for both job seekers and recruiters by enabling efficient resume evaluation against job descriptions. The application’s keyword extraction and resume matching functionalities, along with its visual and downloadable results, offer a comprehensive solution for improving job application processes.

**9. Future Scope**

The Free ATS Resume Scanner can be expanded and enhanced in several ways:

1. Support for Additional File Formats:
   * Extend functionality to handle additional file formats such as RTF (Rich Text Format) or ODT (OpenDocument Text) for greater flexibility in document uploads.
2. Enhanced Keyword Extraction:
   * Integrate advanced natural language processing (NLP) techniques to improve the accuracy of keyword extraction. This could include recognizing synonyms, related terms, and contextual meanings.
3. Machine Learning Integration:
   * Implement machine learning algorithms to enhance resume matching. This could involve training models on historical data to provide more accurate match percentages and insights.
4. User Authentication:
   * Add user authentication features to allow users to create accounts, save their job descriptions and resumes, and manage their submissions securely.
5. Multi-language Support:
   * Enable the application to process job descriptions and resumes in multiple languages to cater to a global audience.
6. API Integration:
   * Develop an API for integrating the resume scanning functionality with other platforms, such as job boards or HR management systems, for seamless use in various workflows.
7. Improved Visualization:
   * Enhance the visual representation of results with interactive charts and graphs. This could include features like hover effects, tooltips, and more detailed breakdowns of match statistics.

**10. Acknowledgments**

Special thanks to:

* Flask: For offering a powerful yet lightweight framework to build the web application.
* ReportLab: For providing the tools necessary to create and manipulate PDF files.
* PyPDF2: For handling PDF file operations, enabling text extraction for resume analysis.