Job Portal System Project Document

# SCD-W3

# Project participants

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# 1. Introduction

The Job Portal System is designed to connect job seekers with employers efficiently. It aims to simplify job searches and application processes for users while providing recruitment tools for employers. The system emphasizes scalability, security, and user-friendly design.

# 2. Project Overview

The Job Portal System will serve as a platform where job seekers can find suitable job opportunities and employers can post job openings. The system will include features for user registration, job postings, application tracking, and AI-driven recommendations.

# 3. Features

## User Registration and Authentication

* Secure login and registration for job seekers and employers.
* Profile management for both job seekers and employers.

## User Profiles

* Job seekers can create profiles with personal details, education, work experience, key skills, and upload resumes.
* Employers can register with company details and manage their profiles.

## Job Postings

* Employers can post job vacancies with detailed information (job title, qualifications, salary range, job type, location, responsibilities).
* Employers can modify or delete job postings as needed.

## Job Search and Filtering

* Enhanced by search optimization techniques and keyword matching algorithms to ensure relevant results. NLP assists in understanding and expanding search intent.
* Job seekers can search for jobs using filters such as category, location, salary range, and experience level.

## Job Applications

* Includes intelligent resume-job matching using NLP models (spaCy) to extract key qualifications and compare them against job requirements. Each application is assigned a compatibility score to assist employers in shortlisting.
* Job seekers can apply for jobs directly using their profiles or custom resumes.
* Application tracking for job seekers to monitor their application status (applied, shortlisted, rejected).

## Machine Learning-Based Recommendation Engine

* Utilizes machine learning algorithms to suggest personalized job opportunities to job seekers by analyzing their profiles, preferences, and behavior patterns.
* Utilizes advanced machine learning algorithms (Scikit-learn or TensorFlow) to provide real-time, personalized job and candidate recommendations. These models analyze user profile data, behavior patterns, and historical job interactions. The system also uses feedback loops to continuously improve recommendation accuracy over time.
* Provides intelligent candidate recommendations to employers by learning from job requirements, past hiring data, and candidate performance trends.

## Messaging and Notifications

* Employers can send direct messages to job seekers for clarifications or interview invitations.
* Notifications for application updates, new job postings, and other relevant activities.

## Administrative Functions

* Admins can monitor user activities, manage job postings, and verify accounts.
* Admins can address disputes and handle feedback from users.

## Wishlist and Watchlist Management

* Job seekers can save job postings to a wishlist for future reference.
* Employers can maintain a watchlist of promising candidates.

## Feedback and Support

* A dedicated mechanism for users to submit feedback, inquiries, or complaints.
* Includes an NLP-driven chatbot (planned enhancement) for handling FAQs, feedback submission, and user queries automatically.
* Admins can respond to feedback to improve functionality.

## Data Privacy and Account Management

* Users can delete their accounts along with all associated data.
* Secure storage for user details and sensitive information.

## Multi-Language Support

* The system should support multiple languages to cater to a diverse user base.

## Mobile Responsiveness

* The platform should be accessible on mobile devices for job seekers and employers.

## Compliance and Security

* Ensure compliance with data protection regulations (e.g., GDPR).
* Implement strong security measures to protect user data.

# 4. Architecture

Frontend:  
- HTML, CSS, JavaScript (React or Vue.js for a dynamic user interface).

Backend:  
- Flask or Django for handling requests, business logic, and API endpoints.

Database:  
- PostgreSQL or MySQL for storing user profiles, job postings, applications, and other relevant data.

AI/ML Integration:  
- Use Scikit-learn or TensorFlow for implementing the recommendation engine and resume screening features.

Deployment:  
- Host the application on platforms like Heroku, AWS, or DigitalOcean.

# 5. Technologies

Frontend:  
- React.js or Vue.js for a responsive and interactive user interface.  
- Bootstrap or Material-UI for styling and layout.  
- React.js for building dynamic interfaces, with optional use of Tailwind CSS for utility-first responsive design.

Backend:  
- Flask or Django for the server-side logic and RESTful API development.

Database:  
- PostgreSQL or MySQL for data storage and management.

AI/ML:  
- Scikit-learn or TensorFlow for implementing machine learning features.  
Scikit-learn for recommendation models, TensorFlow for deep learning use cases, and spaCy for resume parsing and NLP tasks.

Authentication:  
- Use JWT (JSON Web Tokens) for secure user sessions and authentication.

# 6. Development Plan

Phase 1: Requirement Gathering and Planning (1-2 weeks)  
- Finalize requirements and create a project plan.

Phase 2: Design (2 weeks)  
- Create wireframes and design the database schema.

Phase 3: Development (4-6 weeks)  
- Implement frontend and backend features iteratively.  
- Integrate AI/ML components.

Phase 4: Testing (2 weeks)  
- Conduct unit testing, integration testing, and user acceptance testing.

Phase 5: Deployment (1 week)  
- Deploy the application and conduct final checks.

Phase 6: Maintenance and Updates (Ongoing)  
- Monitor the system, fix bugs, and implement user feedback.

# 7. Conclusion

The Job Portal System aims to provide a comprehensive platform for job seekers and employers, facilitating efficient job searches and recruitment processes. With a focus on user experience, security, and scalability, this project will serve as a valuable tool in the job market.