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Research Paper

AI-POWERED CAREER INTELLIGENCE AND JOB RECOMMENDATION PLATFORM

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Abstract

The AI-Powered Career Intelligence and Job Recommendation Platform is an intelligent system developed to assist students and job seekers in making informed career decisions and identifying suitable employment opportunities. The platform analyzes various aspects of a user's professional profile, including educational qualifications, technical and soft skills, interests, experience, and career goals. By applying Artificial Intelligence and Machine Learning techniques, the system generates personalized career recommendations based on the user's profile, strengths, preferences, and industry requirements.

The platform provides intelligent job recommendations by matching the user's skills and qualifications with the requirements of available job roles. It also identifies skill gaps by comparing the user's existing capabilities with the skills expected for their desired career. Based on these gaps, the system recommends relevant courses, certifications, projects, and learning resources that can help users improve their knowledge and employability.

The proposed system aims to provide personalized, data-driven, and user-friendly career guidance through a centralized platform. It reduces the difficulty of manually searching for suitable career paths and job opportunities by providing recommendations based on individual profiles. The platform can also analyze changing job-market trends and industry skill requirements to help users remain aligned with current employment demands.

I. Introduction

Choosing the right career path has become increasingly challenging for students and job seekers due to the rapid growth of industries, changing skill requirements, and the large number of available career and job opportunities. Many individuals find it difficult to identify suitable career options based on their education, skills, interests, experience, and personal goals. Traditional career guidance methods often depend on general recommendations and may not provide personalized information according to an individual's specific profile.

The AI-Powered Career Intelligence and Job Recommendation Platform is designed to address these challenges by providing intelligent and personalized career guidance.

The platform collects information about a user's educational background, technical skills, soft skills, interests, experience, and career preferences. Artificial Intelligence and Machine Learning techniques are then used to analyze this information and generate suitable career recommendations based on the user's profile and current industry requirements.

In addition to career recommendations, the platform helps users discover relevant job opportunities by matching their skills and qualifications with job requirements. It can also identify skill gaps that may prevent users from achieving their desired career goals. Based on the identified gaps, the system can recommend courses, certifications, projects, and learning resources that help users develop the required skills.

II. Literature Survey

Several existing studies have explored the use of Artificial Intelligence and Machine Learning for improving career guidance and job recommendation systems. Traditional career guidance mainly depends on counselors, general aptitude assessments, and predefined career suggestions. However, these approaches may not fully consider an individual's education, skills, interests, experience, and career goals. AI-based systems can analyze multiple user attributes and provide more personalized recommendations. Machine Learning techniques can identify patterns in user profiles and map them to suitable career paths and job roles. Such systems can help students and job seekers understand their strengths and make better career decisions.

Job recommendation systems have also been developed to match candidates with suitable employment opportunities. These systems commonly analyze candidate profiles, resumes, skills, qualifications, and job descriptions to determine the similarity between a candidate and available job roles. Natural Language Processing can be used to extract important information from resumes and job descriptions, while recommendation algorithms can rank relevant opportunities. Although these systems can improve job discovery, some existing approaches mainly focus on matching candidates with jobs and provide limited guidance about missing skills or the steps required to reach a desired career.

Recent research has focused on skill-gap analysis and personalized learning recommendations to improve employability. These systems compare the skills possessed by a user with the skills required for a particular job or career path. Based on the identified gaps, users can be recommended relevant courses, certifications, projects, and other learning resources. This approach provides a more complete career-development process rather than simply recommending jobs. However, many systems are limited to career or job recommendations and do not provide broader professional or business opportunities based on the user's interests, capabilities, and available resources.

AI and data analytics have also been applied to business recommendation and opportunity identification. Such systems can analyze market information, user interests, business requirements, and industry trends to suggest potential business ideas. Machine Learning and data-driven techniques can help identify patterns in market demand and provide recommendations based on available information. However, existing business recommendation approaches may not sufficiently

integrate an individual's career profile, skills, experience, and professional goals. Therefore, the proposed AI-Powered Career Intelligence and Business Recommendation Platform aims to combine career recommendation, job matching, skill-gap analysis, learning recommendations, and business opportunity suggestions within a single intelligent platform. This integrated approach can provide users with personalized, data-driven guidance for both career development and professional or entrepreneurial opportunities.

III. System Analysis

System analysis is an important phase in the development of the AI-Powered Career Intelligence and Business Recommendation Platform. The analysis focuses on understanding the difficulties faced by students, job seekers, professionals, and aspiring entrepreneurs. Users need personalized guidance based on their education, skills, interests, experience, and career goals. The system analyzes these user attributes to understand their professional profile and preferences. It also considers job requirements, industry trends, and available career opportunities. Artificial Intelligence and Machine Learning techniques can be used to generate suitable career and job recommendations. Natural Language Processing can help extract relevant skills and information from resumes and job descriptions. The system can identify differences between existing user skills and the skills required for selected career paths. It can then recommend suitable courses, certifications, projects, and learning resources. For business recommendations, the system can analyze user interests and professional capabilities to suggest relevant business opportunities. The overall analysis helps define the functional and technical requirements needed to develop an effective recommendation platform.

Existing System

Existing career guidance and job-search systems generally provide users with job listings, career information, or general recommendations. Many platforms allow users to search for jobs using keywords, job titles, locations, qualifications, or experience. Some career guidance systems use aptitude tests and predefined rules to suggest possible career paths. However, these systems may not provide comprehensive recommendations based on the complete profile of an individual. Users often need to manually compare their skills with job requirements and identify the skills they need to improve. Existing job portals mainly focus on displaying available vacancies rather than providing a complete career development path. Similarly, business opportunity platforms may provide general business ideas without considering the user's skills, experience, interests, and resources. Information about changing industry trends may also be scattered across different sources. As a result, users may need to use multiple platforms for career guidance, job searching, skill development, and business research. These limitations create a need for a centralized and intelligent recommendation platform.

Disadvantages of Existing System

- Provides mostly generalized career recommendations.
- Limited personalization based on individual user profiles.
- Users may need to manually search and compare job opportunities.

- Skill gaps are not always clearly identified.
- Limited recommendations for courses and certifications.
- Job recommendations may not consider the complete user profile.
- Career guidance and job searching are often available on separate platforms.
- Business recommendations may not match the user's skills and interests.
- Industry trends may not be effectively integrated.
- Users may find it difficult to create a structured career-development plan.
- Manual comparison of skills and job requirements can be time-consuming.

Proposed System

The proposed AI-Powered Career Intelligence and Business Recommendation Platform is an intelligent system designed to provide personalized career and professional guidance. The platform collects information about the user's education, skills, interests, experience, and career goals. Artificial Intelligence and Machine Learning techniques analyze this information to create a detailed user profile. The system recommends suitable career paths and job roles based on the user's capabilities and preferences. Natural Language Processing can be used to analyze resumes and job descriptions and extract relevant skills and qualifications. The system compares user skills with job requirements to identify skill gaps. Based on these gaps, it recommends relevant courses, certifications, projects, and learning resources. The platform can also analyze user interests and capabilities to suggest suitable business ideas and professional opportunities. Industry trends and job-market requirements can be considered to improve the relevance of recommendations. By combining career guidance, job matching, skill-gap analysis, learning recommendations, and business suggestions, the system provides multiple services through a single platform. The proposed system aims to help users make informed career and professional decisions.

Advantages of Proposed System

- Provides personalized career recommendations.
- Recommends suitable job roles based on user profiles.
- Uses AI and ML for intelligent recommendations.
- Identifies individual skill gaps.
- Suggests relevant courses and certifications.
- Helps users understand industry skill requirements.
- Uses NLP to analyze resumes and job descriptions.
- Provides personalized business opportunity recommendations.
- Combines career, job, learning, and business recommendations in one platform.
- Reduces the time required for manual job and career research.
- Supports data-driven career decision-making.
- Helps users improve their employability and professional development.

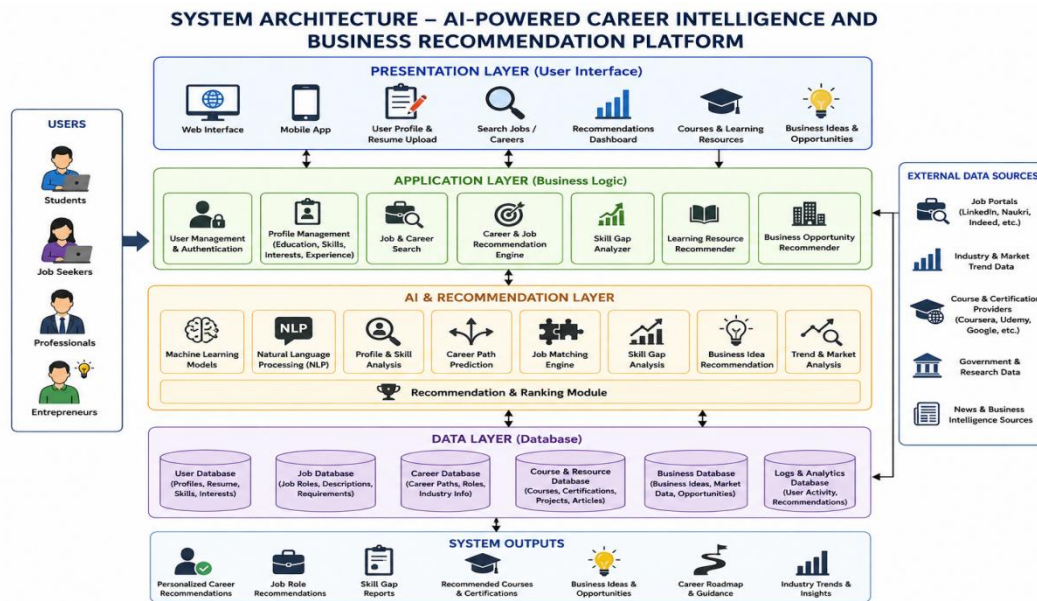
IV. Methodology

The methodology describes the systematic process followed for developing the AI-Powered Career Intelligence and Business Recommendation Platform. The development begins with collecting information about the user's education, skills, interests, experience, and career objectives. The collected information is processed

and transformed into a structured user profile. Relevant job descriptions, career information, skill requirements, and business-related data are then collected for recommendation purposes. Natural Language Processing techniques can be applied to extract important skills and keywords from resumes and job descriptions. Machine Learning and recommendation techniques are used to compare user profiles with career and job requirements. The system calculates suitable matches and ranks recommendations according to their relevance. Skill-gap analysis is performed by comparing existing user skills with the requirements of selected career paths or jobs. Based on the identified gaps, appropriate courses, certifications, projects, and learning resources are recommended. The system can also generate business opportunities based on the user's interests, skills, and professional background. The developed modules are tested individually and then integrated to verify their combined functionality. Finally, the complete system is evaluated for accuracy, usability, reliability, and performance.

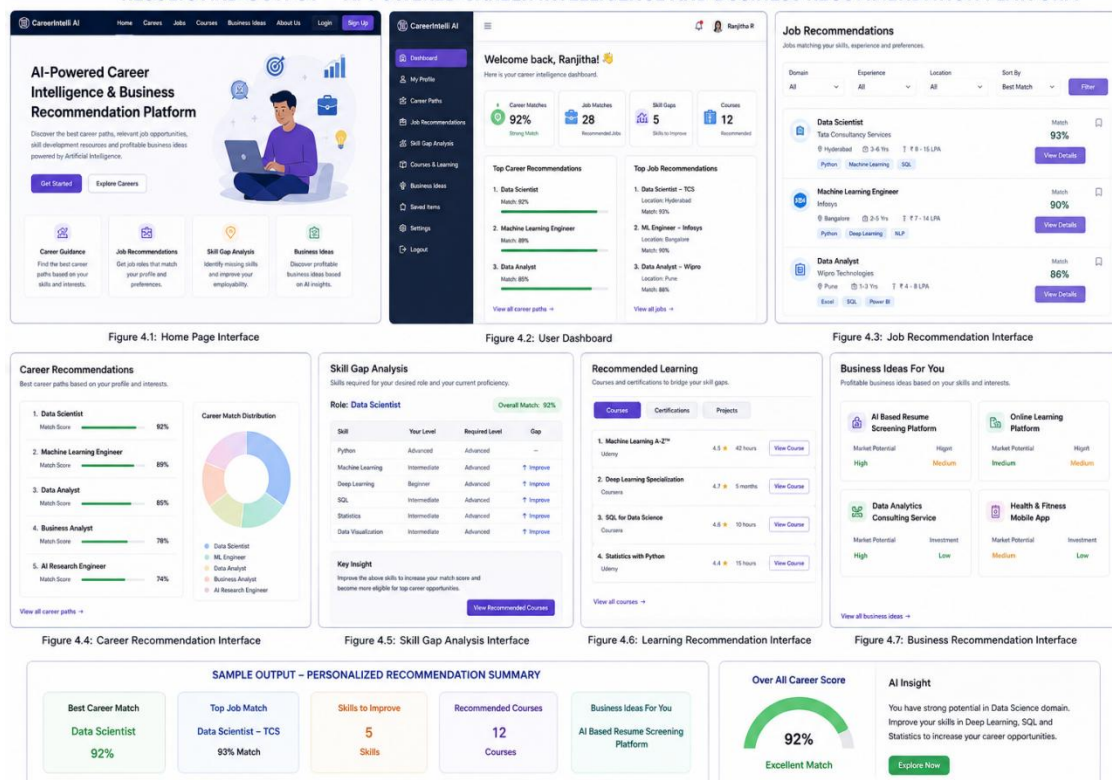
System Architecture

The system architecture defines the major components and flow of information within the AI-Powered Career Intelligence and Business Recommendation Platform. The system can follow a layered architecture consisting of the presentation layer, application layer, AI and recommendation layer, data layer, and external data sources. The presentation layer provides interfaces through which users can register, create profiles, upload resumes, and view recommendations. The application layer manages user accounts, profile information, job searches, career preferences, and system requests. The AI and recommendation layer analyzes user information using Machine Learning, Natural Language Processing, and recommendation algorithms. This layer performs career prediction, job matching, skill-gap analysis, learning recommendations, and business opportunity recommendations. The data layer stores user profiles, skills, job information, career data, learning resources, and recommendation records. External data sources can provide updated job-market information, industry trends, and relevant opportunity data. The system processes the collected information and generates personalized recommendations for each user. Authentication and authorization mechanisms help protect user information and control access to system features.



V. Result and Output

RESULTS AND OUTPUT – AI-POWERED CAREER INTELLIGENCE AND BUSINESS RECOMMENDATION PLATFORM



VI. Conclusion

The AI-Powered Career Intelligence and Business Recommendation Platform successfully demonstrates the use of Artificial Intelligence, Machine Learning, Natural Language Processing, and data analysis to provide personalized career and professional guidance. The system analyzes user information such as education, skills, interests, experience, and career goals to generate suitable career paths and job

recommendations. It also identifies skill gaps and suggests relevant courses, certifications, and projects to help users improve their employability. The business recommendation feature provides potential business ideas based on the user's skills and interests. Functional testing confirms that the major modules, including user profile management, resume processing, job matching, career recommendation, skill-gap analysis, learning recommendations, and business recommendations, perform as expected. The platform reduces the effort required to search for career opportunities across multiple sources and provides information through a centralized system. In the future, the platform can be enhanced with real-time job-market data, advanced recommendation models, salary prediction, interview preparation, and direct job application features.

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