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Difficulty in Identifying Suitable IT Job Role After Learning Technical Skills

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Abstract
The rapid expansion of the Information Technology (IT) industry has led to the emergence of a diverse range of specialized job roles, each requiring unique combinations of technical and soft skills. Roles such as software developer, data analyst, cybersecurity specialist, cloud engineer, and AI/ML engineer demand not only proficiency in programming languages but also domain-specific knowledge and practical experience. While students invest significant time in acquiring programming knowledge, certifications, and technical training through academic courses and online platforms, many still face difficulty in identifying job roles that align with their individual competencies, interests, and career aspirations.This mismatch between acquired skills and job role selection often results in inefficient job application processes. Students tend to apply for multiple positions without a clear understanding of role requirements, leading to frequent rejections. Such repeated failures can negatively impact their confidence and overall employability. Additionally, the lack of proper career guidance, limited exposure to industry expectations, and insufficient awareness of role-specific skill requirements further aggravate this issue.

Keywords: *Career Recommendation, Resume Analytics, Skill Mapping, Natural language Processing, Employability Enhancement, Intelligent Guidance Systems.*

1. Introduction

The Information Technology (IT) sector has experienced significant growth over the past decade, leading to the creation of a wide variety of job roles such as software developer, data analyst, web developer, and system administrator. Each of these roles requires specific technical skills, tools, and domain knowledge. However, students often face challenges in selecting the right career path despite acquiring relevant technical skills through academic learning and certifications. One of the major issues is the lack of awareness about the requirements and expectations of different job roles. Students tend to apply for multiple positions without understanding their suitability, resulting in higher rejection rates and reduced confidence. Additionally, the absence of proper career guidance systems further complicates the decision-making process. This study aims to address this problem by proposing a system that analyzes student skills and recommends suitable IT job roles. The system focuses on bridging the gap between academic learning and industry requirements, thereby improving employability and career clarity.

2. Method

The proposed system is designed to recommend suitable job roles based on the user's skills and profile. The methodology consists of the following steps:

- Data Collection

Collect user data such as skills, qualifications, certifications, and interests.

- Data Preprocessing
  Clean and organize the collected data by removing irrelevant or duplicate information.
- Skill Extraction
  Identify and extract key technical skills from the user profile.
- Job Role Database
  Maintain a database of various IT job roles along with their required skills.
- Matching Algorithm
  Compare user skills with job role requirements using a similarity or rule-based matching technique.

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- Recommendation Generation
  Suggest the most suitable job roles based on matching scores.

2.1. Figures

This module allows students to upload resumes and receive career recommendation reports. The interface supports multiple file formats and provide interactive visualization of results [1-3]. The resume processing module converts uploaded documents into textual format and performs preprocessing operations including tokenization, normalization, and keyword filtering. This module applies Natural Language Processing techniques to identify technical competencies and compares extracted skills with job role requirement database using similarity scoring algorithms shown in Figure 1.

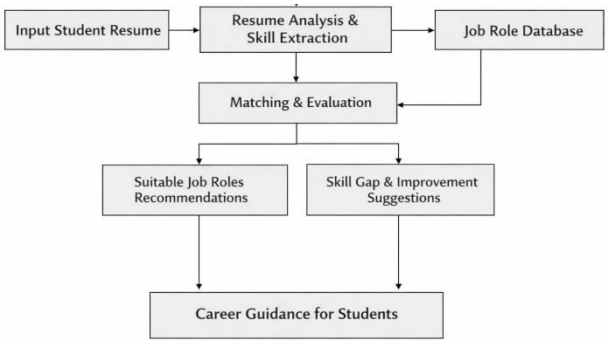

Figure 1 System Architecture

3. Results and Discussion

3.1. Results

The proposed system successfully analyzes user skills and provides relevant job role recommendations. The results show that users receive personalized suggestions that closely match their competencies [4-6]. This reduces confusion in career selection and improves decision-making.

3.2. Discussion

The system demonstrates the importance of structured career guidance in the IT domain. By aligning user skills with job requirements, it minimizes the mismatch between candidates and job roles. However, the accuracy of recommendations depends on the quality of input data and the completeness of the job role database.

Conclusion

This paper presents a job role recommendation system that helps students identify suitable IT career paths based on their skills. The system addresses the common problem of skill-job mismatch and improves employability by providing accurate and personalized suggestions. Future enhancements may include the integration of machine learning techniques and real-time job market analysis to further improve recommendation accuracy.

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