
Automatic Portfolio Website Builder: A Web-Based System for Automated Portfolio Generation and Skilled- Based Job Recommendation

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Abstract

Modern recruitment systems still face challenges in creating professional portfolios and identifying suitable jobs based on users' skills. This paper proposes an integrated system that automatically generates dynamic portfolio websites and recommends skill-based jobs through a simple web interface. The recommendation module uses TF-IDF and cosine similarity to match skills with relevant job titles. Experimental results demonstrate a response time of approximately 1–2 seconds and effective job recommendations. The proposed system provides a practical and accessible solution for students and job seekers without requiring technical expertise.

Keywords. Online Portfolio, Skill-Based Job Recommendation, Resume Parsing, Natural Language Processing, Web Application

1. INTRODUCTION

The growth of online portfolios has enabled employers to evaluate candidates based on their qualifications, skills, and professional experience. However, creating a professional portfolio remains challenging for users without web development expertise. Existing job recommendation systems also struggle to accurately match users' skills with job requirements and often lack comprehensive candidate profiles. The separation between portfolio generation and job recommendation further limits the effectiveness of digital recruitment platforms. To address these limitations, this study proposes an integrated online system that automatically generates professional portfolios and recommends suitable jobs based on users' skills. The system provides a user-friendly interface and applies techniques such as Term Frequency-Inverse Document Frequency (TF-IDF) and cosine similarity to match skills with relevant job opportunities, supporting efficient career development and employment guidance.

2. RELATED WORK

Research on portfolio generation and job recommendation has evolved from basic resume builders toward automated and convenient solutions. Early studies explored resume generation and web-based profiles [4]. Template-based portfolio generation was proposed to simplify website creation for non-expert users [2], [5], but these approaches primarily focused on content organization rather than intelligent recommendations. Later studies introduced dynamic template generation to improve flexibility, information presentation, and user experience [3]. Job recommendation systems have also employed skill-matching using similarity-based methods [6] and AI-based approaches [7]. Some studies integrated profile building with recommendation functionality in a single system [1]. However, existing solutions generally treat portfolio generation and job recommendation as separate or loosely connected tasks, limiting the use of structured portfolio information for accurate skill-based recommendations. The proposed system integrates portfolio creation, hosting, management, and job recommendation using TF-IDF and cosine similarity, improving usability, accessibility, recommendation quality, and career opportunities.

3. PROPOSED SYSTEM

The proposed web-based system integrates frontend, backend, database, portfolio generation, recommendation, and deployment modules to support portfolio management and skill-based job recommendations. The backend uses Node.js and Express.js for authentication, validation, and application services, while MySQL stores user profiles, skills, and job information. The portfolio module converts user inputs into a predefined structure and generates customizable portfolio websites that users can preview and edit.

The job recommendation module evaluates user skills and compares them with the skills required for different jobs available in the database. The importance of skills is calculated by using the TF-IDF model:

$$TF - IDF(t, d) = TF(t, d) \times \log(N / DF(t)) \quad (1)$$

The similarity between user skills and job requirements is calculated using cosine similarity:

$$Cos(\theta) = (A \cdot B) / (||A|| \times ||B||) \quad (2)$$

Here, A = User skill vector B = Job skill vector, respectively. Job posting is ranked based on the scores and top results are given to the user.

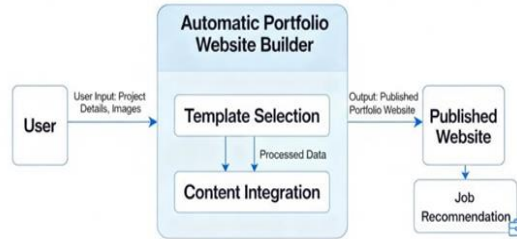


Figure 1. Proposed System Architecture

After portfolio generation, users can choose to publish their portfolio as a live website. The system hosts the portfolio and generates a public link, allowing users to control when it becomes publicly accessible. Figure 1 illustrates the proposed architecture, comprising frontend, backend, database, portfolio generation, and recommendation modules. Users provide profile and project information, after which the system selects a suitable template and generates the portfolio. The recommendation module then suggests relevant job positions based on the user's skills and portfolio information.

4. RESULTS AND DISCUSSION

The system was evaluated using response time, recommendation accuracy, and usability. Response times ranged from 1–2 seconds, indicating efficient operation. TF-IDF with cosine similarity outperformed rule-based and frequency-based methods in Precision, Recall, and F1-score. Recommendation relevance was measured using the proportion of required job skills matched by the user profile. For example, matching three of four required skills produces a 75% matching score, indicating strong job relevance. Usability was assessed through portfolio completion, representing the percentage of completed sections. Completing three of four sections results in a 75% completion rate. Testing showed that the system handled multiple simultaneous requests, updated recommendations immediately after skill changes, and provided a user-friendly interface suitable for both technical and non-technical users.

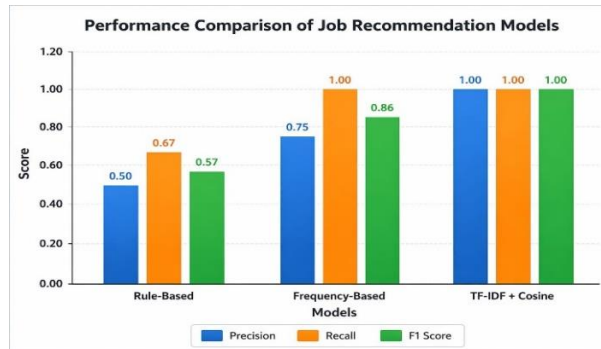


Figure 5.1. Grouped Bar Chart showing performance comparison of recommendation models

5. CONCLUSION

The proposed system enables efficient portfolio creation through a responsive, user-friendly dashboard without requiring technical knowledge. Its job-matching module provides skill-based career recommendations, reducing the effort required to identify suitable opportunities. However, recommendation accuracy depends on user-provided skill data and may be affected by semantic differences. Future work will incorporate advanced machine learning and NLP techniques, along with real-time job data, to improve recommendation accuracy and overall performance. Overall, the system integrates portfolio creation, management, and job recommendations into a centralized platform, saving time and improving accessibility for less technically skilled users.

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Biographies



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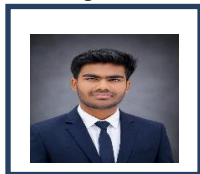
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