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Smart Labor–Contractor Job Matching Platform Using Web-Based Technologies

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Abstract
The informal nature of labor hiring in developing economies continues to create inefficiencies for both workers and contractors, despite the widespread adoption of digital technologies. Daily wage laborers often lack consistent access to employment opportunities, while contractors struggle to source skilled workers within constrained timelines. Labor Connect is a web-based job matching platform designed to formalize and streamline the labor hiring process through skill-based digital matching.
The system enables contractors to publish structured job requirements and allows laborers to maintain detailed skill profiles, facilitating efficient and transparent hiring. By eliminating intermediary dependence and introducing a centralized data-driven approach, the platform improves job visibility, hiring accuracy, and wage transparency. Implemented using modern web technologies with a MySQL-backed database, Labor Connect demonstrates how scalable digital solutions can address workforce coordination challenges in the informal labor sector.

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I. INTRODUCTION

A significant portion of the workforce in developing regions relies on short-term and daily wage employment, where hiring practices remain largely informal and decentralized. Traditional job discovery mechanisms such as physical labor markets and personal referrals offer limited reach, lack reliability, and provide no structured evaluation of worker skills. As a result, laborers face employment uncertainty, while contractors encounter delays and inefficiencies during recruitment.

Wage-related disputes and lack of employment transparency further exacerbate these challenges. Informal agreements, absence of documentation, and limited accountability often lead to unfair compensation and inconsistent work availability. Contractors, meanwhile, lack access to verified labor profiles, making it difficult to assess skill suitability and workforce reliability.

With increasing penetration of internet- based systems, there is an opportunity to introduce structured digital platforms that can formalize labor hiring without increasing complexity. Labor Connect is proposed as a centralized web-based system that enables skill-oriented job matching between laborers and contractors. The platform aims to improve efficiency, reduce exploitation, and introduce transparency into the labor hiring ecosystem.

II. METHODOLOGY

The development of Labor Connect follows a structured system design methodology focused on scalability, role- based access control, and efficient data handling.

A. User Registration and Authentication

The system supports role-based registration for laborers and contractors. Secure authentication mechanisms ensure controlled access to platform functionalities based on user roles.

B. Laborer Profile Management

Laborers maintain profiles containing skill sets, experience details, and availability status. These structured

profiles serve as input for the job matching process.

C. Job Requirement Specification

Contractors publish job postings by defining skill requirements, work duration, and other relevant parameters. Each job entry is stored and indexed within the database for efficient retrieval.

D. Skill-Based Matching Algorithm

The system performs comparative analysis between job requirements and laborer profiles to identify suitable matches. Matched results are presented to contractors, enabling faster and more accurate hiring decisions.

E. Data Persistence and Security

All system data is managed using a relational MySQL database, ensuring data integrity, consistency, and controlled access across platform modules.

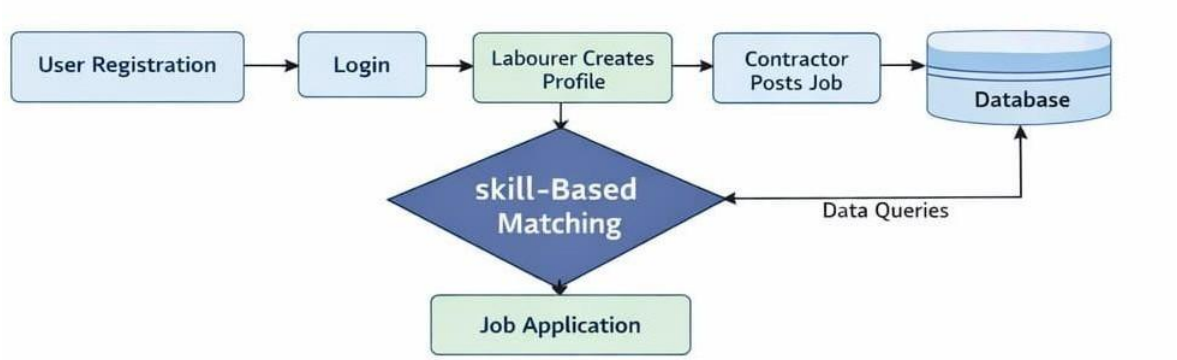

Figure 2: *Workflow of Labour–Contractor Job Matching System*

II. IMPLEMENTATION

Labor Connect is implemented using a modular web application architecture to support maintainability and future scalability.

A. Frontend Layer

The frontend is developed using React and JavaScript, providing a responsive interface with role-specific dashboards for laborers and contractors. User interactions are handled through dynamic components to enhance usability.

B. Backend Layer

The backend is implemented using Java and manages application logic, authentication workflows, job processing, and communication with the database layer through structured APIs.

C. Functional Modules

The system is organized into core modules including user management, job posting, job application handling, and matching logic. Modular separation ensures efficient debugging and independent feature expansion.

D. Operational Workflow

Contractors publish job listings that are automatically filtered and displayed to relevant laborers. Laborers can apply for jobs aligned with their skills, after which contractors review applications and finalize hiring decisions.

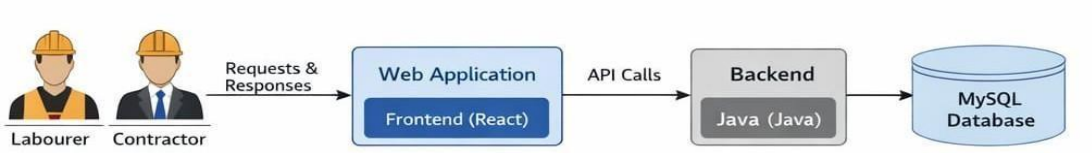

Figure 1: *System Architecture of Labour Connect Platform*

III. RESULTS AND DISCUSSION

The system was tested using sample labor profiles and job postings created during development. While the dataset was limited, it was sufficient to observe the behavior of the matching logic and user workflow. Contractors were able to identify suitable laborers with fewer steps compared to traditional hiring practices.

One noticeable improvement was the reduction in manual effort required to search for workers. Since the system filters laborers based on skills entered during profile creation, irrelevant matches were minimized. Although the platform does not eliminate all hiring challenges, it provides a more structured approach than existing informal methods.

IV. CONCLUSION

Labor Connect provides a scalable and practical digital framework for addressing inefficiencies in informal labor hiring. By enabling structured job postings, skill- based matching, and centralized data management, the platform enhances transparency and operational efficiency for both laborers and contractors. The system demonstrates how web-based technologies can be effectively applied to real-world workforce challenges, contributing toward the gradual formalization of labor recruitment processes.

V. FUTURE ENHANCEMENTS

Future enhancements may include real- time messaging, multilingual interfaces to improve inclusivity, and mobile application support. Advanced features such as location-aware job recommendations, worker rating systems, and secure digital payment integration and can further strengthen platform reliability And adoption

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