



Tribhuvan University

Institute Of Science and Technology

A Final Year Project Proposal

**WORK CONNECT: A FULL-STACK LOCAL WORK MARKETPLACE WEB
APPLICATION WITH PROFILE-BASED WORKER VERIFICATION**

Submitted to

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TABLE OF CONTENTS

1. Introduction	3
2. Problem Statement	3
3. Objective	5
4. Scope and Limitation	5
5. Methodology	8
6. 5.1 Requirement Identification	8
7. 5.2 Feasibility Study	9
8. 5.3 Tools	10
9. High Level Design of Proposed System	11
10. Gantt Chart to Show the Projected Time Planning	12
11. Expected Outcome	13

1. INTRODUCTION

In today's economic landscape, unemployment and underemployment remain significant challenges, particularly in developing countries like Nepal. Many skilled individuals struggle to find stable employment, while others seek additional income through part-time work. Simultaneously, households and businesses often need help with various tasks but lack an efficient way to connect with reliable workers.

Work Connect is a comprehensive web application that addresses this dual challenge by creating a secure marketplace where users can post work opportunities and unemployed or part-time job seekers can find suitable employment. The platform focuses on local services such as tutoring, household cleaning, security services, maintenance work, and other essential tasks that form the backbone of community economics.

The application implements a robust profile-based verification system that ensures user safety and trust. Every worker maintains a detailed profile showcasing their skills, experience, and performance history through a comprehensive feedback and rating system. This transparency helps employers make informed decisions while enabling workers to build credible professional reputations.

Built using the modern MERN stack (MongoDB, Express.js, React, Node.js), Work Connect offers real-time job posting, application tracking, secure communication channels, and integrated payment management. The platform includes advanced features like identity verification through citizenship card validation, family background checks, and a point-based reputation system that rewards consistent, quality work performance.

The application serves diverse user groups including unemployed individuals seeking income opportunities, students looking for part-time work, professionals offering specialized services, and households or businesses needing reliable assistance for various tasks.

2. PROBLEM STATEMENT

Nepal faces significant employment challenges, with youth unemployment rates reaching concerning levels and many skilled individuals unable to find work matching their capabilities. According to recent studies, over 60% of young people in Nepal struggle to find suitable employment opportunities, leading to economic hardship and social problems.

On the other side of this equation, households and small businesses frequently need help with various tasks but lack reliable channels to find trustworthy workers. Traditional methods of finding help—through word of mouth, local advertisements, or informal networks—are often inefficient, unreliable, and lack proper verification mechanisms.

Existing online job platforms primarily focus on formal employment or high-skill professional roles, leaving a significant gap in the market for local, task-based work opportunities. Most platforms also lack comprehensive worker verification systems, making it difficult for employers to assess worker reliability and trustworthiness before hiring.

Current challenges include:

For Job Seekers:

- Limited access to part-time and task-based work opportunities
- Difficulty in showcasing skills and building professional credibility
- Lack of platforms specifically designed for local service provision
- No systematic way to build a professional reputation for informal work

For Employers:

- Difficulty finding reliable workers for household and business tasks
- Lack of verification systems to ensure worker trustworthiness
- No centralized platform for posting and managing various work requirements
- Absence of feedback mechanisms to evaluate worker performance

System-wide Issues:

- No secure, verified marketplace for local work connections
- Lack of integrated communication and payment systems
- Limited protection against fraud or unreliable service providers

Work Connect addresses these challenges by creating a comprehensive, secure platform that bridges the gap between work seekers and work providers, ensuring safety, reliability, and economic opportunity for all participants.

3. OBJECTIVE

3.1 Primary Objective

The primary objective of this project is to develop a comprehensive full-stack web application called "Work Connect" that creates a secure, verified marketplace connecting unemployed individuals and part-time job seekers with local work opportunities, while implementing robust profile verification and reputation management systems to ensure trust, safety, and quality service delivery.

3.2 Specific Objectives

- **Develop a comprehensive work posting system** that allows users to create detailed job listings with descriptions, requirements, payment terms, deadlines, and specific skill requirements for various types of local work including household services, tutoring, maintenance, and security
- **Implement a robust worker verification system** that requires comprehensive identity documentation including citizenship cards, personal photographs, address verification, family details, and background information to ensure platform security and user trust
- **Create a dynamic profile management system** for workers that showcases their skills, experience, completed work history, customer feedback, ratings, and accumulated reputation points, enabling employers to make informed hiring decisions
- **Design an integrated application and hiring workflow** that streamlines the process of job application, employer review, worker selection, task assignment, progress tracking, completion verification, and payment processing
- **Establish a comprehensive feedback and rating system** that allows employers to rate worker performance, provide detailed reviews, and award reputation points, while enabling workers to build credible professional profiles and demonstrate their reliability and work quality

4. SCOPE AND LIMITATION

4.1 Scope

Functional Scope:

The Work Connect application will provide comprehensive functionality for both work seekers and work providers. The work posting system will support detailed job creation with titles, descriptions, required skills, payment amounts, work duration, location details, and special requirements. Users will be able to categorize work into various types such as household services (cleaning, cooking, gardening), educational services (tutoring, training), maintenance work (plumbing, electrical, carpentry), security services, and general labor.

The worker profile system will maintain comprehensive user profiles including personal information, skills inventory, work experience, portfolio of completed tasks, customer reviews, ratings, and reputation scores. The verification system will process and store citizenship card details, address verification, family information, emergency contacts, and professional references.

The application workflow will handle job posting, worker application, employer review and selection, task assignment, progress tracking, completion confirmation, payment processing, and feedback submission. Real-time notifications will keep users informed of application status, job assignments, messages, and payment confirmations.

The platform will include secure messaging between employers, payment tracking, work history maintenance, and comprehensive search to help users find relevant opportunities.

Technical Scope:

Work Connect will be developed as a modern full-stack web application using the MERN technology stack. The frontend will utilize React for building an intuitive, responsive user interface with component-based architecture. The backend will be powered by Node.js and Express.js to handle API requests, business logic, and data processing.

MongoDB will serve as the primary database for storing user profiles, job postings, applications, reviews, and transaction records. The application will implement JWT-based authentication for secure user sessions and crypt for password encryption.

For file management, the system will integrate Multer for handling document uploads and Cloudinary for secure storage of identity documents, profile photos, and work-related images. The platform will support real-time features using Socket.io for instant messaging and notifications.

The application will be designed with responsive web principles, ensuring optimal performance across desktop and mobile devices. Cloud deployment will be implemented for scalability and reliability.

4.2 Limitations

Technical Limitations:

Work Connect is developed as a web-based platform and does not include native mobile applications for Android or iOS systems. The application requires a stable internet connection for all functionalities; no offline capabilities are provided for job browsing, application submission, or profile management.

Geographic Limitations:

The initial version focuses on local work opportunities within specific geographic regions. The platform does not support remote work arrangements or cross-border employment opportunities. Location-based services are limited to predefined service areas.

Payment Limitations:

The application provides payment tracking and management but does not include integrated payment processing through banking systems or digital wallets. Payment transactions occur outside the platform with the system maintaining records for tracking and dispute resolution purposes.

Verification Limitations:

While the system requires comprehensive documentation for worker verification, it relies on user-submitted documents and does not integrate with government databases for real-time identity verification.

Scale Limitations:

The current architecture is designed for moderate user loads. Significant scaling for thousands of concurrent users may require infrastructure improvements and optimization of database queries and real-time features.

5. METHODOLOGY

5.1 Requirement Identification

Study of Existing Systems:

A comprehensive analysis of existing freelance and local service platforms will be conducted to understand current market offerings and identify gaps. This includes studying platforms like TaskRabbit, Upwork, Fiverr, and local equivalents to analyze their features, user experience, verification processes, and limitations.

The study will focus on understanding how existing platforms handle worker verification, payment systems, dispute resolution, and user safety measures. Special attention will be paid to platforms serving developing markets to understand challenges specific to regions with similar economic conditions to Nepal.

User behavior analysis from productivity and gig economy research will inform the design of features that encourage reliable work completion and maintain platform quality. The analysis will also examine common failure points in similar platforms to avoid potential issues.

Requirement Collection:

Primary requirements will be gathered through comprehensive market research including surveys of potential users (both job seekers and work providers), interviews with unemployed individuals, part-time workers, and households needing services.

Focus groups will be conducted with different user segments including students seeking part-time work, skilled workers looking for opportunities, and families needing household assistance. Requirements will be categorized into essential features, desirable enhancements, and future expansion possibilities.

The requirement analysis will address both functional needs (what the system should do) and non-functional requirements (security, performance, usability, scalability). Special emphasis will be placed on security requirements given the sensitive nature of personal information and financial transactions.

5.2 Feasibility Study

Technical Feasibility:

The MERN stack provides a robust foundation for developing Work Connect. React offers excellent capabilities for building dynamic, responsive user interfaces with strong community support and extensive component libraries. Node.js and Express.js provide scalable backend architecture suitable for handling multiple concurrent users and real-time features.

MongoDB's flexible document structure is ideal for storing diverse user profiles, job postings, and application data. The chosen technologies have extensive documentation, active communities, and proven track records in similar applications, ensuring development feasibility and long-term maintainability.

Operational Feasibility:

The application addresses genuine market needs identified through preliminary research. The user interface will be designed for simplicity and accessibility, considering that many users may have limited technical experience. The platform's focus on local services ensures relevance to the target market.

The system design emphasizes trust and security, which are critical factors for user adoption in a marketplace involving personal services and financial transactions. The comprehensive verification system and reputation management features are designed to build user confidence and encourage platform usage.

Economic Feasibility:

Development costs are minimized through the use of open-source technologies and frameworks. Cloud hosting solutions provide scalable infrastructure with pay-as-you-grow pricing models, reducing initial investment requirements. The platform has multiple potential revenue streams including service fees, premium memberships for enhanced profiles, and advertising opportunities for service providers. The economic model is sustainable with relatively low operational costs once the platform is established.

5.3 Tools

Analysis and Design Tools:

Figma will be the primary tool for user interface design and prototyping, enabling collaborative design development and user feedback collection. The platform's capabilities for creating interactive prototypes will facilitate user testing and interface refinement.

System architecture and database design will be documented using Draw.io for creating clear technical diagrams including system flow charts, database entity-relationship diagrams, and user journey maps. These visual tools will ensure clear communication of system design across development phases.

Requirements documentation will utilize structured templates including user stories, acceptance criteria, and technical specifications. Use case diagrams will map out different user interactions with the system.

Implementation Tools:

Frontend Development: • React: Core framework for building component-based user interfaces • Tailwind CSS: Utility-first CSS framework for consistent, responsive styling • React Router: Client-side routing for single-page application navigation • Axios: HTTP client for API communication and request handling • React Hook Form: Form handling and validation library

Backend Development: • Node.js: JavaScript runtime for scalable server-side development • Express.js: Web framework for building RESTful APIs and handling HTTP requests • MongoDB: NoSQL database for flexible data storage and retrieval • Mongoose: ODM library for MongoDB with schema validation and query building • Socket.io: Real-time communication for messaging and notifications

Authentication and Security: • JSON Web Tokens (JWT): Token-based authentication system • bcrypt: Password hashing and encryption library • multer: File upload middleware for document and image handling • helmet: Security middleware for Express applications

Development and Deployment Tools: • Visual Studio Code: Primary IDE with extensive plugin ecosystem • Git: Version control system for code management • npm: Package manager for dependency

management • Postman: API development and testing tool • MongoDB Compass: Database management and visualization tool

Cloud Services: • Cloudinary: Cloud-based image and document storage • Heroku/Netlify: Cloud deployment platforms • MongoDB Atlas: Cloud database hosting service

6. HIGH LEVEL DESIGN OF PROPOSED SYSTEM

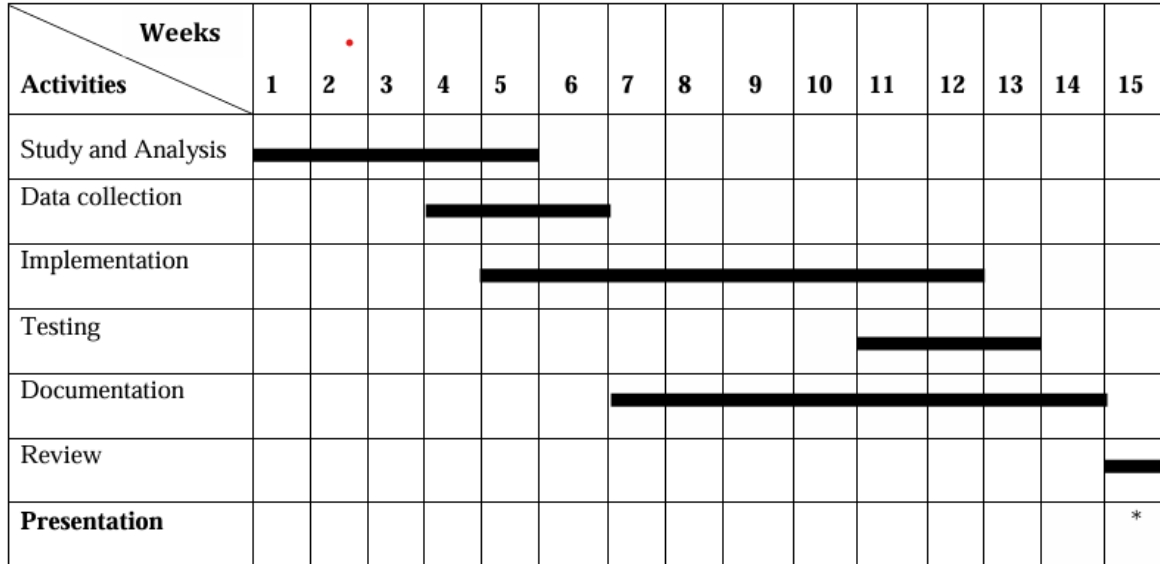
System Architecture Overview

Work Connect follows a three-tier architecture pattern with a React-based frontend, Express.js API layer, and MongoDB database. The system implements a microservices approach with distinct modules for user management, job posting, application processing, messaging, and payment tracking.

Database Design

Figure: ER-Diagram

7. GANTT CHART TO SHOW THE PROJECTED TIME PLANNING



8. EXPECTED OUTCOME

8.1 Primary Deliverables

Upon successful completion of the Work Connect project, the primary deliverable will be a fully functional, secure web application that effectively connects job seekers with local work opportunities while maintaining high standards of user verification and safety.

The application will demonstrate professional-grade security measures, including comprehensive user verification, secure document storage, and encrypted data transmission. The platform will support concurrent users with real-time messaging, instant notifications, and dynamic job matching capabilities.

Users will experience an intuitive, responsive interface that works seamlessly across desktop and mobile devices. The comprehensive profile system will enable workers to build credible professional reputations while giving employers confidence in their hiring decisions.

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