# ITE 3962 – Final Year Project

# Project Proposal

## Smart Job Recruitment Platform

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| Abbreviation | Description |
| --- | --- |
| SME | Small and medium sized enterprises |
| ATS | Application Tracking System |
| UI | User Interface |
| API | Application Programming Interface |
| PDF | Portable Documentation Format |
| AI | Artificial Intelligence |
| JWT | JSON Web Token |

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## 1. Introduction

In today's changing world, finding jobs and hiring the right people has become a big challenge. Job seekers often deal with issues like having to fill out the same information repeatedly, looking at generic job listings, and spending time manually changing their resumes for each job. Not only job seekers but also recruiters face difficulties like going through too many unrelated applications, slow communication and not having enough tools to properly evaluate candidates.

For these problems, this proposed smart web-based recruitment platform makes the entire hiring process smoother and more personalized. Job seekers will get features like profile-based resume generation, AI-powered job recommendations and one-click application submission based on their skills and preferences.

Recruiters will have a smart dashboard where they can post job openings, see matched applicants based on relevance and easily communicate with the best candidates.

By using  tools like matching algorithms and user profiling, this platform aims to speed up the hiring process, keep candidates more involved and improve the whole recruitment system. This introduction gives a starting point for a deeper look into the solution and how it can change the future of recruitment by focusing on efficiency, intelligence and personalization.

## 2. Background & Motivation

Current job portals such as LinkedIn, Indeed, and Glassdoor are designed primarily for global audiences and large scale corporate recruitment. While these platforms offer substantial features, their complexity often results in inefficiencies for local businesses, startups, and educational institutions seeking entry level talent. Recruiters can be overwhelmed by a high volume of irrelevant applications due to limited filtering options and generalized job recommendations [1].

Moreover, platform accessibility remains inconsistent across regions. For example, Indeed's official presence does not extend to Sri Lanka in the same way it does to larger markets, thereby limiting access for Sri Lankan job seekers and employers. This gap further excludes users from developing countries and reinforces disparities in recruitment access.

On the candidate side, users frequently endure repetitive, manual entry of similar application details for each job posting. Most platforms also lack robust tools to help candidates tailor resumes to specific roles. This deficit is particularly acute for recent graduates and inexperienced users, many of whom find these platforms hard to navigate and consequently miss out on opportunities [2], [3].

The motivation for this project stems from firsthand observations and dialogues with HR professionals, students, and peers in the job market. There is a pronounced demand for a recruitment platform that is simpler, smarter, and more targeted. The proposed platform offers a clean, intuitive interface, automatic resume creation, and intelligent job-to-candidate matching based on relevance to job descriptions [4].

Furthermore, the system reduces recruiter workload through automated ranking of candidates by skill relevance. It also enhances candidate visibility with tailored profile features and facilitates secure, streamlined communication between recruiters and applicants to support better collaboration and decision-making [5].

By leveraging modern web technologies and intelligent filtering mechanisms, this platform offers a purpose-built solution tailored to SMEs, academic institutions, and job seekers in localized markets. It promotes efficient hiring, more relevant matches, and a better user experience for all stakeholders [6].

### 3. Problem you address in brief

The modern recruitment system is broken, especially for small and medium-sized enterprises (SMEs) and fresh graduates, who are often sidelined in favor of high-budget, large-scale hiring ecosystems. Traditional job portals and Applicant Tracking Systems (ATS) are designed with corporate-scale recruitment in mind and are poorly suited for localized hiring or early-career talent [7], [8].

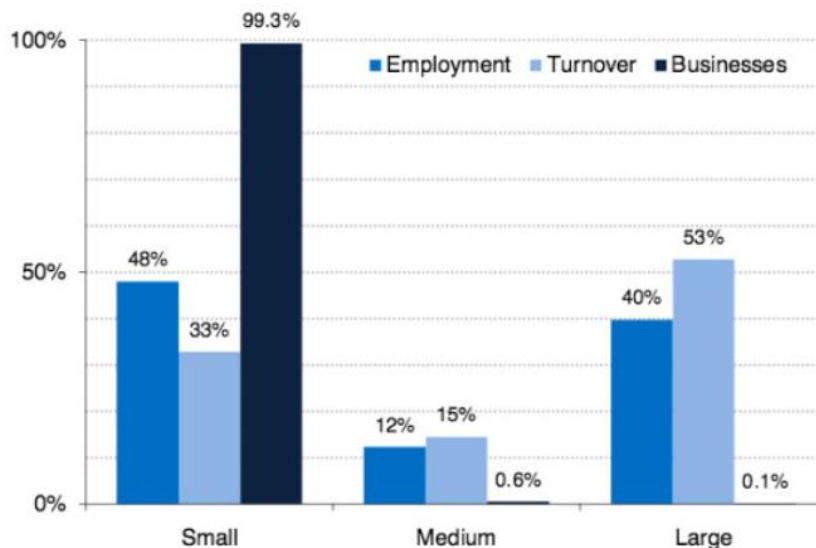*Source: Department for Business, Innovation & Skills*



*Figure 1: Contribution of different sized businesses to total population, employment and turnover, at start of 2015*

Recruiters face a flood of irrelevant applications due to generic filtering tools and poor personalization. This results in wasted time, delayed decisions, and rising hiring costs. On the other hand, candidates are stuck in a loop of repetitive form-filling, uncustomizable resumes, and mismatched job recommendations, ultimately leading to job search fatigue, lost motivation, and missed opportunities [9].

Beyond inefficiency, the recruitment experience has become deeply impersonal and fragmented. Communication between candidates and recruiters is scattered across emails, spreadsheets, and third-party platforms. Many candidates never hear back after applying. This lack of transparency and consistency fuels frustration and distrust in the entire hiring process [10].

This is more than a logistical problem. It's a crisis of connection and lost potential. Capable graduates remain unemployed. Growing companies struggle to build teams. An outdated recruitment infrastructure is holding back economies, innovation, and careers.

## 4. Aim & Objectives

Aim:

To develop a smart web-based recruitment system that improves job matching, automates resume creation, and simplifies communication between recruiters and job seekers.

Objective

- To Develop a secure registration and login system for both user types.
- To Enable recruiters to post jobs and seekers to apply.
- To Generate downloadable resumes automatically from profile data.
- To Implement a sorting algorithm to rank applicants by job relevance.

## 5. Proposed Solution

To address the significant inefficiencies in current recruitment systems especially for small to medium enterprises (SMEs) and job seekers in underrepresented regions like Sri Lanka this project introduces a smart, web-based recruitment platform tailored to streamline job matching, communication, and application processes. The system aims to overcome limitations found in global platforms such as Indeed and LinkedIn.

The proposed platform supports two primary user groups, recruiters and job seekers. For job seekers, it facilitates the creation of a digital profile, from which a structured, professional resume which can generated. This not only reduces the repetitive burden of manual resume preparation but also ensures consistency and completeness of applications. .

Recruiters can create job listings that are intelligently displayed to the most relevant candidates. This scoring considers profile skills, education and experience. It significantly reduces the time that recruiters spend scanning irrelevant resumes and helps in identifying best-fit applicants quickly.

Communication within the platform is simplified through integrated messaging and job offer systems, allowing recruiters to connect with applicants directly. Real-time notifications keep users informed of new messages or application updates, avoiding delays typically encountered in traditional recruitment methods.

The backend infrastructure ensures secure data handling, role based authentication, and robust performance, while the frontend is designed for accessibility across devices. By providing a locally accessible, automated, and intelligent recruitment workflow, this solution addresses both the candidate experience breakdown and recruiter burden highlighted in recent studies.

**System Architecture and Technology Stack**

The frontend will be implemented using the React.js framework to ensure responsible and modern user experience across desktop and mobile platforms.

The backend will implement Node.js with Express.js, providing a lightweight and scalable server-side environment to handle API logic and database communication.  MongoDB, a NoSQL database suited for handling dynamic user-generated content.

Authentication and authorization will be handled using JWT (JSON Web Tokens) to ensure secure user session management.

The architecture is designed to support future enhancements, including integration with features like intelligent candidate recommendations, resume parsing, and automated matching algorithms.

**Core Functionality and Features**

- Job Seeker Functionalities:
    - Profile creation and resume auto-generation
    - Job search and application submission


- Recruiter Functionalities:
    - Job posting with role-based access control
    - Viewing applicants ranked by
    - Communication module for contacting shortlisted candidates


- Shared Functionalities:
    - Real-time notifications
    - Intelligent filtering and sorting of job
    - Resume download

**References and Citations**

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**Appendix A - Plan of Action**


Phase 1 :

- Literature review and requirement analysis
- Project structure planning and design
- UI wireframe design
- database schema design


 Phase 2 :

- Implementation of core modules
- Resume builder integration
- Application ranking logic
- Recruiter management panel.
- Implementation of notifications, resume export functionality
- Basic recommendation logics


 Phase 3 :

- Comprehensive testing and debugging
- Performance optimization and security hardening
- Documentation final validation and project completion


| Months | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Project phases | 1 | | | 2 | | | | | 3 | |
| Analysis | | | | | | | | | | |
| Design | | | | | | | | | | |
| Coding | | | | | | | | | | |
| Testing | | | | | | | | | | |
| Delivery | | | | | | | | | | |

*Table 1: Project Timeline*