

A Minor Project Proposal on

VisionCraft: Career Counseling and Resume Optimizer

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ABSTRACT

The purpose of VisionCraft: Career Counseling and Resume-Optimizer Web Application is to help graduates, job seekers and students advance their career prospects easily. This site caters to anyone looking for professional advice on skill development, job paths and creating industry-standard resumes. It can also be used by hiring agencies and educational institutions to offer efficient and expandable career assistance. The website's primary features include personality tests, job-matching recommendations, automatic resume optimizer, AI-powered career counseling and access to a professional resource library. In addition to receiving skill gap assessments and ATS-optimized resumes, users can interact with career advisors for personalized guidance. To power AI capabilities, the system will use machine learning models such as decision trees, K-Nearest Neighbor (KNN) and Term Frequency-Inverse Document Frequency(TF-IDF) to map user responses to pre-defined career categories, resume analysis and collaborative filtering for individualized job recommendations. AI development can be done using technologies such as Python's scikit-learn library and more, while the web interface can be built with HTML, Tailwind CSS and Javascript on the frontend and Laravel on the back-end. After completing career quizzes and entering their resumes, users can access customized resume templates and individualized career recommendations. It also makes it easier to apply for jobs directly. The platform acts as a centralized, user-centric solution to rectify issues such as inadequate career counseling, poor resume construction and a mismatch between personal goals and market demands.

Keywords: Career counseling, Resume optimizer, AI-driven, Job matching, ATS optimization, Skill-gap analysis, User-friendly, Scalable

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1. INTRODUCTION

This project aims to make career guidance more accessible for students as well as graduates. It accommodates its users by helping them determine their strengths and showcase their abilities using the AI-powered resume optimizer. In this introduction, we will explore problems and motivation, objectives, project scope and limitations.

1.1 PROBLEM STATEMENT

Many students and graduates struggle to select a professional path owing to a lack of direction and the difficulty of matching their interests, talents or hobbies with relevant possibilities. Another problem is developing professional resumes since most people fail to adequately portray their skills. Existing career counseling services and resume tools sometimes fall short by providing general guidance or one-size-fits-all templates that do not address individual requirements. To fill this need, we intend to create an AI-powered platform that personalizes career coaching. The program will employ quizzes and assessment exams to examine user's talents and interests and make specific job suggestions. An AI-powered CV optimizer analyzes user's existing resume, identifies areas for improvement and provides suggestions to highlight key skills effectively. Our objective is to make career counseling easily available, personalized and stress-free so that students can properly evaluate their skills and be ready to take new opportunities.

1.2 PROJECT OBJECTIVES

The primary objective of this project is to provide students and recent graduates with a platform that facilitates their path and helps them better understand their job alternatives. With the help of our online application, we hope to close the career advisory gap that many students lack. Some of the main objectives are as follows:

- Career recommendations: To develop a system that uses assessments and tests to determine a user's abilities, passions, interests and character attributes before offering professional possibilities that align with those characteristics.

- Resume Optimizer: Development of a CV optimizer to analyze resumes, provide feedback, enhance content and ensure alignment with industry standards.

1.3 SIGNIFICANCE OF THE STUDY

The significance of this project is rooted in its capacity to deliver accessible and tailored career counseling to students through AI-driven tools. By providing career advice that takes into account individual interests, skills, and assessments, along with a resume optimizer and job-related resources, the platform seeks to fill the void left by traditional career counseling services. This initiative is particularly beneficial for students who may not have access to individualized guidance or are unsure about their future career options. Moreover, the main points highlight the significance of this project are:

- This platform assists students in clarifying their career paths by offering personalized counseling based on their unique skills, interests and hobbies, enabling them to make informed decisions about their futures.
- The integrated resume optimizer helps users to polish their resumes efficiently. This feature streamlines the often intricate process of writing resumes, allowing students to differentiate themselves in competitive job environments.
- The platform offers a variety of tools, including quizzes, assessment tests and skill enhancement resources, enabling students to evaluate their potential, recognize their strengths and investigate growth opportunities in their selected fields.
- The platform features portfolio creation tools and job-matching functionalities that provide users with essential resources to showcase their abilities and improve their job search efficiency.
- The project tackles the divide between academic instruction and practical job opportunities by steering students toward appropriate career options.
- The platform promotes exploration of emerging industries and up-skilling in high-demand areas, helping students secure their careers in a constantly evolving job landscape.
- Through the utilization of online resources and tools, the project fosters digital literacy and familiarity with the technologies involved in job searching and career advancement

1.4 SCOPE AND LIMITATIONS

The objective of this project is to create a comprehensive platform that aids students and graduates in successfully navigating their career paths. By integrating key features like career counseling tools, resume optimizer, job matching and up-skilling resources, this platform will deliver a well-rounded solution for career advancement.

The scopes of this project are:

- VisionCraft provides a platform that will feature personalized career advice based on user inputs, including skills, interests and hobbies, through interactive quiz assessments.
- VisionCraft AI-assisted resume optimization tools will enable users to quickly produce professional and customized resumes.
- The platform will provide job matching feature that links users to appropriate job openings based on their skills and career preferences.
- This platform offers users access to upskilling materials such as online courses, tutorials and workshops, which enhance their qualifications in their chosen fields.

The limitations of this project are:

- Users must have basic digital skills to navigate the platform effectively.
- The accuracy of recommendations depends on the quality of the user input in quizzes and assessments.
- This project works under a Wi-Fi coverage area so users are required to have a reliable internet connection to access the platform.

2. LITERATURE REVIEW

In this section, we have reviewed some of the existing platforms providing services similar to what we aim to provide. Some that are currently in use are discussed below: The first one we reviewed was EduSanjal.com. It is a comprehensive database of schools, colleges, events and courses related to education in Nepal. Once the user navigates to its website, one can search for schools, colleges or universities in Nepal by location, level of education or type of institution. From the list of institutions that match your search criteria, more details can be explored such as address, contact information and courses offered [1]. However, this platform does not incorporate the functionality of assessing the user and giving them useful career advice and resume-optimizer. Secondly, we reviewed CareerExplorer.com which is a free online platform that helps individuals discover the most suitable career for them by analyzing their personality traits, interests and skills [2]. After answering a series of questions, it gives a personalized list of recommended careers and a summary of the user's strengths, weaknesses and interests. A career plan can be made by comparing different careers and researching each one in-depth using the provided resources and links. Its main drawback is that the test is quite time-consuming. Also, the platform does not include any resume-optimizing technology. Then, we reviewed novoresume.com. It is a website that offers resume-optimizing services. The platform provides a range of templates, design features and optimization tools to create a professional-looking resume [3]. One has to create an account first to get started with the platform. We can browse through the available free templates and then select and edit the one that suits the user's needs. That said, Novoresume's AI capabilities are limited and some users may find that the AI suggestions are not helpful or relevant to their needs. Finally, we reviewed Career Path Suggestion using String Matching and Decision Trees technology. Their model offers real world results for basic and intermediate queries of the students [4] but it can be made more efficient to handle other advanced and complex searches. Further, this was used as the basis to suggest the most appropriate career path for the person given his/her current educational status. The main drawback of the system is that the dataset is from 2015 which might be insufficient and irrelevant at the moment.

3. METHODOLOGY

We have chosen the following methodologies to effectively apply our expertise, skills and techniques, ensuring precise alignment with project requirements.

3.1 SOFTWARE DEVELOPMENT LIFE CYCLE

For the software development process of our project, we've opted for the Incremental Model, which involves building the system incrementally over multiple iterations. Each iteration encompasses the Analysis, Design, Coding and Testing phases.

In the first iteration, we will focus on the core product development by gathering datasets using Google Forms, designed to collect essential data. The foundational structure of the machine learning model will be designed and implemented, with initial testing conducted on small datasets. Additionally, a career assessment quiz will be integrated. These core components lay the foundation of our platform's functionality.

Subsequent iterations will introduce additional features such as including user authorization and authentication and create a basic UI design and dashboard where users can view their profiles and profile suggestions and optimize the resume. The following subsection briefly describes various phases in the incremental model of SDLC that will be applied in the development of the system:

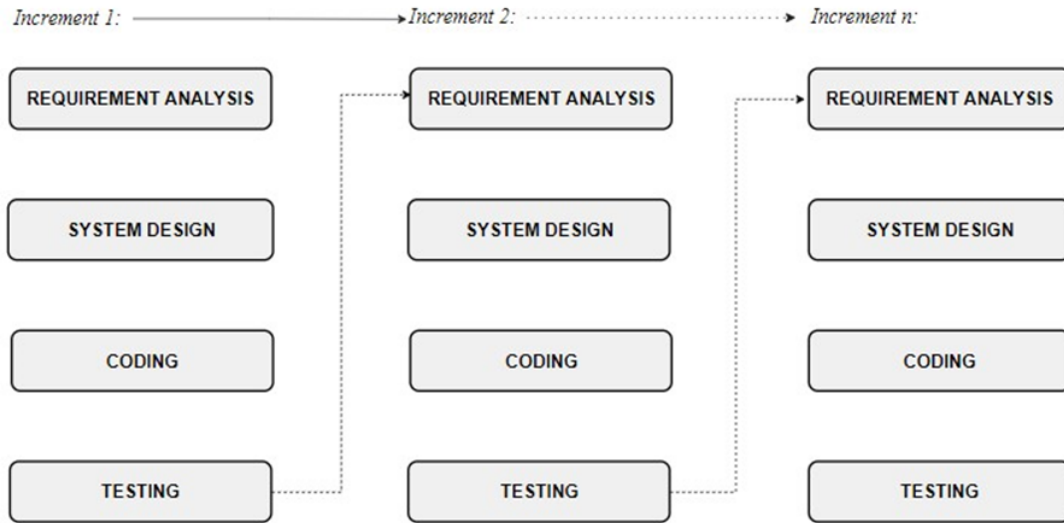


Figure 1: Incremental Model Of Software Engineering

3.1.1 REQUIREMENT ANALYSIS

In the Requirement Analysis phase, we will collect data from a sample of people through Google Forms and OPNs such as LinkedIn APIs to analyze and understand their opinions, behaviors or characteristics to develop our Machine Learning model. The outcome of this phase would be a detailed System Requirement Specification (SRS) document, serving as the guiding light for subsequent development stages [5].

3.1.2 SYSTEM DESIGN

In the Design phase, the SRS would be translated into the system design. An appropriate use case diagram will be developed. The technical architecture of the system, outlining how the client-side, server-side and database components will interact with Machine Learning Model will be developed. Simultaneously, user-friendly interfaces that are accessible across different devices for students and graduates and a database is designed.

3.1.3 CODING

In the coding phase, the vision outlined in the SRS and the design begin to materialize into functional code. PHP is utilized for server-side scripting and HTML, CSS, and JavaScript for

client-side development. Python and its libraries like Scikit are used for Machine Learning model development.

3.1.4 TESTING AND EVALUATION

The system undergoes rigorous scrutiny in the Testing and Evaluation phase. Individual modules are examined thoroughly and corrections are applied to the developed system until a satisfying system is achieved. In this way, the software would be delivered as a successive increment ensuring harmonious functionality within the broader system.

3.1.5 MAINTAINENCE

We plan to implement periodic updates and enhancements to address emerging needs, improve functionality, and integrate user feedback effectively.

3.2 TECHNOLOGIES TO BE USED

1. HTML:

- HTML stands for Hypertext Mark-up Language. It is a standard mark-up language that defines the structure of a webpage. It consists of tags that wrap the content based on the content displayed on the webpage. We used HTML as a mark-up language for the project.

2. CSS:

- CSS stands for Cascading Stylesheets. It is a stylesheet language that is used to style the components of a webpage. Tailwind CSS is a utility-first CSS framework that streamlines web development by providing a comprehensive set of pre-designed, low-level utility classes for building responsive user interfaces directly in the markup. This framework was used to work easily with CSS.

3. JavaScript:

- JavaScript is a client-side scripting language used to write client-side logic and validations. JavaScript is used for front-end development.

4. PHP :

- PHP stands for “PHP: Hypertext Preprocessor”. It is a server-side scripting language used to write server-side logic and generate dynamic content. We will be using PHP as a scripting language for the backend of the project.

5. Laravel:

- Laravel is a PHP web application framework that provides a streamlined and expressive syntax for developers, along with powerful tools and features. This framework was used to work easily with PHP.

6. MySQL:

- We used SQL (Structured Query Language) as a query language to interact with the database. MySQL will be used as a Relational Database Management System (RDBMS) for the project.

7. Git and Github :

- Git is a distributed version control system that will be used in this project to manage different versions of the project and to collaborate with each other.
- GitHub is a platform that uses Git for version control. We used GitHub to host the project repository, to track changes, and manage different versions of the project.

8. VS Code:

- VS Code is a code editor that we used as a primary code editor for development tasks.

9. XAMPP:

- XAMPP is an open-source software package that provides a local server environment for running dynamic web applications on a personal computer. We will be using it for building and testing our web application.

10. Python:

- Python is a high-level, versatile programming language used in web development, automation, data science, and more. Python syntax allows a programmer to express the desired concept in fewer lines of code than other languages. One of the main reasons for using the Python language for our project is to develop machine learning systems, such as Python's sci-kit library for building decision trees.

11. Google Forms:

- Google Forms is an online form application that is used to create online forms and surveys with multiple question types. For this project, detailed research is needed to gather an accurate and contemporary dataset. Thus, we will use Google Forms for our AI model development and to analyze results in real-time.

4. SYSTEM DESIGN

This section provides a comprehensive overview of the proposed system's architecture, focusing on a key diagram: Use Case diagram.

4.1 USE CASE DIAGRAM

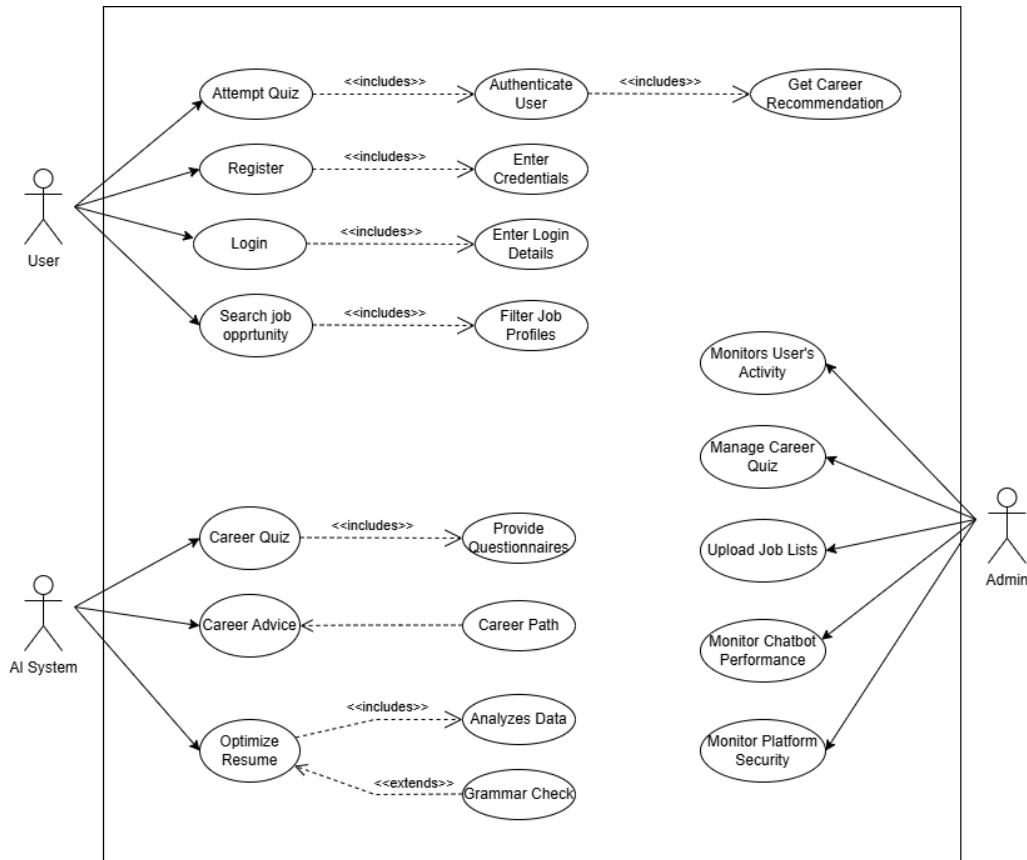


Figure 2: Use-Case Diagram

5. PROPOSED DELIVERABLES

The proposed VisionCraft: Career Counseling and Resume Optimizer will provide the following deliverables and outputs:

1. **Interactive User Interface:** A responsive online resource for resume enhancement, career advice and quizzes.
2. **AI-Powered Career Suggestions:** Tailored career trajectories derived from professional profiles and user input.
3. **Resume Optimizer:** AI-powered recommendations to enhance current resumes with an emphasis on content improvement and ATS compatibility.
4. **OPN Integration:** Skill and experience extraction and analysis from sites such as LinkedIn.
5. **Database and Reports:** Centralized user data storage featuring downloadable insights for resume enhancement and career assessment.

6. TASK AND TIME SCHEDULE

The project schedule has been designed as per the requirements and constraints involved. The project is estimated to be completed in about 12-13 weeks. Research and requirement analysis is to be done first and is also crucial for overall working of the project explaining the lengthy time requirements. The project will be well documented on both the iterations reporting the working of the project at each time. Debugging and testing are to be done prior to the completion of the project.

TASK	APPROX DURATION IN DAYS
Requirement Analysis and Specification	41
System Design	11
Coding and Implementation	20
Testing and Debugging each Module	19
Documentation	60

Table 1: Time Schedule

6.1 GANTT CHART

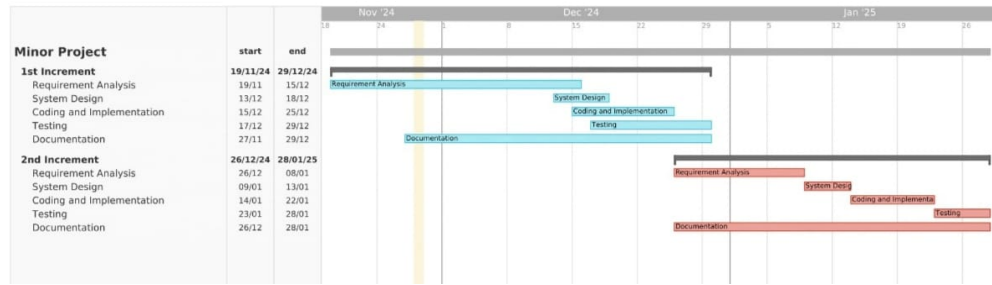


Figure 3: Gantt Chart

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