UE22CS341A: Software Engineering
Case Study

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A Software Requirements Specification (SRS) document for an **Automated Skill Matching and Gap Analysis Tool using Agile.**

1. Introduction

1.1 Purpose

This document provides a detailed description of software requirements for the Automated Skill Matching and Gap Analysis Tool. This tool's purpose is to match individual and organizational skills to match job descriptions and analyze skill gaps to facilitate targeted training and development of the individual.

1.2 Scope

The Automated Skill Matching Tool will be a web application that will allow users to input their resume and compare them against the job description. The tool will provide detailed analysis of skill matches and gaps, along with recommendations for skill development.

1.3 Definitions, Acronyms, and Abbreviations

- SRS: Software Requirements Specification
- UI: User Interface
- API: Application Programming Interface
- JD: Job Descriptions
- LLM: Large Language Model

1.4 References

IEEE Standard for Software Requirements Specifications (IEEE Std 830 1998)

1.5 Overview

The document is structured into sections detailing the functional and non functional requirements, system features, external interface requirements, and and other attributes necessary to develop the Automated Skill Matching and Gap Analysis Tool.

2. Overall Description

2.1 Product Perspective

The Automated Skill Matching and Gap Analysis Tool is a web application aimed at helping individuals assess their preparedness for targeted job roles. It offers tailored insights into skill gaps and recommends resources to help bridge those gaps.

2.2 Product Functions

Skill Input: Individuals can input their resume.

Job Description Input: Users can upload job descriptions they are interested in.

Skill Matching: The tool will match the user's skills with the job description requirements.

Gap Analysis: The tool will identify gaps between the user's skills and the job requirements.

Learning Recommendations: The tool will suggest learning resources to bridge the skill gaps.

2.3 User Classes and Characteristics

Students: Individuals preparing to enter the job market.

Job Seekers: Individuals actively looking for new job opportunities.

Professionals: Individuals seeking to advance in their current careers or pivot to new roles.

2.4 Operating Environment

Software: Web application that can run on Windows.

2.5 Design and Implementation Constraints

The tool must ensure user data privacy and security.

It should be scalable to support a growing number of users.

2.6 Assumptions and Dependencies
Users will have access to accurate and up-to-date job descriptions.

3. External Interface Requirements

3.1 User Interfaces

Login Screen: Secure user authentication to access personalized features.

Skill Input Interface: A form or drag-and-drop interface for users to upload their resume.

JD Input Interface: A simple interface for uploading job descriptions.

Dashboard: Displays matching results, skill gaps, and recommendations.

3.2 Hardware Interfaces

No special hardware is required beyond standard devices with internet access.

3.3 Software Interfaces

API access to third-party learning platforms for course recommendations.

3.4 Communication Interfaces

Secure communication using HTTPS for all data transmissions.

4. System Features

4.1 Resume Upload

4.1.1 Description: Allows users to upload their resumes.

Inputs: Resume files in PDF format

Outputs: Parsed resume data for skill matching.

4.1.2 Functional Requirements:

  FR1: The system shall allow users to upload their resumes in PDF format.

  FR2: The system shall parse and extract skills from the uploaded resume.

4.2 Job Description Upload

4.2.1 Description: Users can upload descriptions.

Inputs: Job description files (PDF, DOCX) format or plain text.

Outputs: Parsed job description data for skill matching.

4.2.2 Functional Requirements:

    FR1: The system shall allow users to upload job descriptions in PDF or DOCX format.

    FR2: The system shall parse and extract required skills from the job description.

4.3 Skill Matching and Gap Analysis

4.3.1 Description: Matches skills from resume with job description and identifies any gaps.

Inputs: Parsed resume and job description data.

Outputs: Skill matching results and gap analysis report.

4.3.2 Functional Requirements:

    FR1: The system shall compare the skills listed in the resume with the job description requirements.

    FR2: The system shall provide a detailed analysis of skill gaps between the resume and the job description.

4.4 Resource and Course Recommendations

4.4.1 Description: Uses API to suggest similar resources and courses based on the identified skill gaps.

Inputs: Identified skill gaps.

Outputs: List of recommended resources and courses.

4.4.2 Functional Requirements:

    FR1: The system shall use LLMs to generate recommendations for resources and courses that can help address skill gaps through API's

5. Non Functional Requirements

5.1 Performance Requirements

PR1: The system shall process skill matching and gap analysis within 5 seconds for an average-sized resume and job description (e.g., up to 2 pages each).

PR2: The system shall have an uptime of 99.9%, ensuring high availability for users.

PR3: The response time for the dashboard to load after resume and job description upload should not exceed 2 seconds.

5.2 Security Requirements

SR1: All user data, including resumes and job descriptions, shall be encrypted at rest and in transit using industry-standard encryption algorithms.

SR2: The system shall implement secure authentication mechanisms.

SR3: User sessions shall automatically time out after 20 minutes of inactivity to prevent unauthorized access.

5.3 Usability Requirements

UR1: The user interface shall be intuitive and easy to navigate, allowing users to upload their resumes and job descriptions without requiring technical knowledge.

UR2: The system shall provide clear, actionable insights and recommendations, with explanations that are easy for non-technical users to understand.

5.4 Reliability Requirements

RR2: The system shall maintain a comprehensive log of all user activities and system operations for auditing and troubleshooting purposes.

RR3: The system shall have an uptime of 99.9%, ensuring high availability for users.

6. Requirements Traceability Matrix (RTM)

ID	Requirement	Functional/ Non-Functional	Priority	Related Feature	Verification Method
FR1	Allow users to upload resumes in PDF format.	Functional	High	Resume Upload	System Testing
FR2	Parse and extract skills from the uploaded resume.	Functional	High	Resume Upload	System Testing, Validation
FR3	Allow users to upload job descriptions in PDF or DOCX format.	Functional	High	Job Description Upload	System Testing
FR4	Parse and extract required skills from job descriptions.	Functional	High	Job Description Upload	System Testing, Validation
FR5	Compare the skills in the resume with job description requirements.	Functional	High	Skill Matching and Gap Analysis	Integration Testing
FR6	Provide detailed analysis of skill gaps between the resume and job description.	Functional	High	Skill Matching and Gap Analysis	System Testing, User Testing
FR7	Generate recommendations for learning resources using APIs.	Functional	Medium	Resource and Course Recommendations	API Testing, User Testing
PR1	Process skill matching and gap analysis within 5 seconds for average-sized resumes and job descriptions.	Non-Functional	High	Performance Requirement	Performance Testing
PR2	Uptime of 99.9% to ensure high availability.	Non-Functional	High	System Uptime	Monitoring, Load Testing
SR1	Encrypt all user data at rest and in transit.	Non-Functional	High	Security Requirement	Security Audit
SR2	Implement secure authentication mechanisms.	Non-Functional	High	Security Requirement	Penetration Testing
UR1	User interface shall be intuitive and easy to navigate.	Non-Functional	Medium	Usability Requirement	User Acceptance Testing
RR1	Maintain a comprehensive log of user activities.	Non-Functional	Medium	Reliability Requirement	Log Review, System Audit
RR2	Uptime of 99.9% for high availability.	Non-Functional	High	Reliability Requirement	Monitoring

<div align="center">**PROJECT SYNOPSIS**</div>

Project Title: Automated Skill Matching and Gap Analysis Tool

Overview:
The Automated Skill Matching and Gap Analysis Tool is an innovative web application aimed at helping individuals align their skills with the requirements of specific job roles. In today's dynamic job market, continuous skill development is crucial to remain competitive. This tool provides a solution by allowing users to assess their existing skills against job descriptions, identify skill gaps, and receive personalized recommendations for targeted learning and upskilling.

Problem Statement:
Professionals, job seekers, and students often struggle to evaluate how well their skills align with job requirements. Traditional methods of skill assessment are manual, time-consuming, and lack tailored insights. As the need for continuous skill development increases, there is a growing demand for an automated system that can efficiently analyze skill gaps and recommend relevant learning resources.

Objective:
The primary goal of the tool is to enable users to take control of their career development by providing actionable insights into their skill sets. It empowers individuals by automatically analyzing their resumes against job descriptions, identifying areas where their skills meet or fall short of requirements, and suggesting learning resources to close those gaps.

Key Features:

1. **Resume and Job Description Parsing**: Users can upload their resumes and job descriptions of interest, and the tool will extract relevant skills from both.
2. **Skill Matching and Gap Analysis**: The tool compares the user's skillset with the job requirements, performing a comprehensive analysis to highlight both matched and missing skills.
3. **Learning Recommendations**: By integrating with various learning platforms, the system provides targeted recommendations for courses and tutorials to help users bridge their skill gaps.
4. **User-Friendly Interface**: The tool offers an intuitive interface with drag-and-drop functionality for document uploads, making it accessible to a wide range of users, including students, job seekers, and professionals.
5. **Dashboard and Visualizations**: Results are displayed through a dashboard, featuring clear visual representations of skill gaps and personalized learning paths.

Conclusion:
The Automated Skill Matching and Gap Analysis Tool equips individuals with the insights they need to enhance their skills and stay competitive in the evolving job market. By

automating the skill evaluation process and offering tailored learning recommendations, the tool significantly reduces the effort required for skill assessment and personal development.