Project Proposal Career Path Navigator & Future-Ready Skill Analyzer

September 19, 2024

1 Objective

The primary objective of this project is to develop a comprehensive dataset and machine learning models to assist users in making informed career decisions. The system will evaluate users' existing skills, identify potential areas of improvement, and provide recommendations for popular occupations within the current job market.

2 Core Features

2.1 Resume Optimization

Functionality:

- Acquire and create a corpus of resumes from which key attributes such as job titles, skills, education, and working experience will be extracted.
- Develop a model that detects missing or underserved keywords in resumes and recommends improvements to make the resume more aligned with job market requirements.

2.2 Skill Gap Analysis

Functionality:

- Collect a sample of skills needed for various positions, fields of work, and career stages.
- Develop a machine learning algorithm that compares user skills to the skills required for target roles, while identifying areas where users need to improve.

2.3 Job Market Data Collection

Functionality:

- Scrape job posting websites to gather data on job descriptions, demanded skills, and estimated salaries to create a database of the current job market and projected trends.
- Develop a model to forecast trends in demand for certain skills or specific jobs.

2.4 Career Path Recommendations

Functionality:

- Develop an AI-based recommendation system that suggests career options, employment opportunities, and required skills in various fields of study using datasets of job profiles, skill gaps, and market trends.
- Provide suggestions for certifications, courses, and other learning tools to address identified skill gaps.

3 Team Responsibilities

3.1 Problem Understanding and Data Collection

Team Members: Samad, Saad , Shaheer

The team is responsible for defining the project objectives and collecting relevant data from sources. This includes gathering resumes, job market data, and required skills from various sources such as online job portals.

3.2 Data Preprocessing

Team Members: Laiba, Abdullah, Wassay

This team focuses on cleaning, transforming, and preparing the data for analysis. Tasks include handling missing values, normalizing the data, and feature extraction to make the dataset suitable for model training.

3.3 Exploratory Data Analysis (EDA)

Team Members: Sheryar, Abrar, Suliman

The EDA team analyzes the dataset to discover patterns, correlations, and insights that help understand the data better. Visualizations and statistical summaries will be created to identify trends and outliers in the data.

3.4 Model Building

Team Members: Ayyan, Sher, Mohaiman

This team is responsible for developing machine learning models that will perform resume optimization, skill gap analysis, and job market prediction. Various machine learning algorithms will be tested and trained to achieve optimal performance.

3.5 Model Evaluation and Validation

Team Members: Afshan, Fatima

The model evaluation team ensures that the models developed are properly validated. They will assess the performance using metrics such as accuracy, precision, recall, and F1-score. They will also tune hyperparameters to improve model accuracy.

4 Conclusion

This project aims to build a powerful and comprehensive tool for career guidance and skill assessment. By integrating machine learning and real-time market data, the system will empower users to make informed decisions about their career paths, skill development, and employment opportunities.