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| **PROJECT OVERVIEW STATEMENT** | **Project Name:** Building a Comprehensive Job Recommendation System: Skill Matching and Trend Analysis for Enhanced Job Seeker Success | | **Student Name:**  Srimanth Madira | |
| **Problem/Opportunity:** | | | | |
| In today’s fast-changing job market, job seekers often find it difficult to locate positions that match their skills, preferences, and locations. At the same time, employers struggle to effectively connect with candidates whose qualifications align with their job requirements. This disconnect leads to inefficiencies on both sides, resulting in missed job placement opportunities. There’s a clear need for a system that can assist job seekers in finding relevant roles based on their skills and preferences. | | | | |
| **Goal:** | | | | |
| The goal of this project is to develop a recommendation system that effectively matches job seekers with relevant job postings by taking user input regarding desired skills and preferred locations. By analyzing job type, location, shift preferences, and the content of job descriptions, the system will provide personalized job recommendations. We will utilize data from job listings and implement content-based filtering to enhance the accuracy of these recommendations. The project is expected to be completed within three months. | | | | |
| **Objectives:** | | | | |
| 1. **Outcome 1:** Comprehensive Exploratory Data Analysis (EDA)  * Description: Gain insights into job listings and user preferences through detailed visualizations and statistical analysis, helping to inform the subsequent development of the recommendation system after data cleaning. * Time Frame: 2 weeks from project initiation. * Measure: A clear EDA report featuring visualizations such as skill distributions, job type trends, and location heatmaps, along with insights into user input patterns.  1. **Outcome 2:** Enhanced Feature Set Development  * **Description:** Create a set of significant features that will improve the accuracy and effectiveness of the recommendation system. * **Time Frame:** 1 week following the completion of the EDA. * **Measure:** A feature set that, when tested, results in at least a 10% improvement in recommendation accuracy over baseline models.  1. **Outcome 3:** Effective Recommendation Algorithm Design  * **Description:** Develop and select the most suitable recommendation algorithms that connect job seekers with relevant job postings based on their skills and preferences. * **Time Frame:** 2 weeks after feature set development. * **Measure:** Achieve a minimum of 80% accuracy in recommendations on a validation dataset, utilizing metrics like precision, recall, and F1-score.  1. **Outcome 4:** Model Training and Performance Evaluation  * **Description:** Fine-tune the chosen recommendation model and assess its performance on unseen data to ensure its reliability and generalizability. * **Time Frame:** 2 weeks after algorithm design. * **Measure:** Ensure the model maintains at least 80% accuracy on the test dataset and performs well across all evaluation metrics.  1. **Outcome 5:** Insightful Data Visualization and Reporting  * **Description:** Produce visualizations and reports that effectively communicate insights gained from the analysis and the performance of the recommendation system. * **Time Frame:** 1 week after model evaluation. * **Measure:** Successfully create visualizations and a final report highlighting key findings and actionable recommendations for users and stakeholders. | | | | |
| **Success Criteria:** | | | | |
| * The recommendation system achieves at least 80% accuracy on the validation dataset. * Key trends and patterns in job postings related to user skills and preferences are effectively identified. * The project is completed within the 9-week timeframe, with all outcomes met on schedule and regular updates provided. * Demonstration of skills in collecting, cleaning, analyzing, visualizing, and modeling job data using learned techniques. * Adherence to ethical guidelines and data privacy regulations, ensuring compliance with all relevant legal requirements. * Completion of all deliverables, including the recommendation system, source code, presentations, and a final project report, contributing to a better understanding of job matching based on skills. | | | | |
| **Assumptions, Risks, Obstacles:** | | | | |
| **Assumptions:** It’s assumed that the dataset provided is comprehensive and accurate regarding job titles, descriptions, skills, and locations. We also assume that we can build the recommendation system using the available tools and resources (Python and machine learning libraries).  **Risks:**   * The dataset may not include enough variety in job titles or skills, potentially limiting the effectiveness of the recommendation engine. * Inconsistencies in how job descriptions or skills are listed could require extra time for data cleaning. * Time constraints might hinder our ability to fully optimize the recommendation algorithm.   **Obstacles:**   * Technical challenges in implementing an effective recommendation algorithm or unforeseen data quality issues could delay the project timeline. Additionally, potential delays in acquiring any necessary supplementary data could impact progress. | | | | |
| **Prepared By** | **Date** | **Approved By** | | **Date** |
| Srimanth Madira | 09/23/2024 |  | |  |