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Recommendation System using Multi-Regression Technique

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Abstract: ***Artificial intelligence (AI) and Machine Learning (ML) is one of today's compelling and promising technologies that profoundly affects nearly all areas of business while continuously transforming people's lives. Workforce management is not an exception to the concept, since AI is advantageously indiscriminately thriving in all industries. By recommending programmes to users based on their preferences and needs, app recommendation systems play a crucial role in this regard. The objective of this project was to create an Android app recommendation system based on machine learning for skill matching. Recommender systems are efficient tools for filtering online information, which is widespread owing to the changing habits of computer users, personalization trends, and emerging access to the internet. Time, effort, and tedious everyday duties will be automated, freeing up human attention for more crucial issues related to improving performance and development. It would be possible for systems to function similarly to the human brain in terms of data analysis and the capacity to build an effective systematic engagement to process the data in a fair, efficient, and quick manner if they acquired automation, cognitive insights, and cognitive engagement during the recruitment process.***

Keywords: Artificial Intelligence, Machine Learning, Recommendation system, Skill matching

I. INTRODUCTION

The recent advancements in technology along with the prevalence of online services has offered more abilities for accessing a huge amount of online information in a faster manner. Machine Learning is a remarkable breakthrough in technology proliferation. Technologies have long been acknowledged as having a function in recruitment management. For firms to maintain a competitive edge and adapt to quick environmental changes, innovation in recruitment methods is inevitable and becoming increasingly important. Companies nowadays must undergo a digital transformation and rely on tools like ML to deal with the vast amounts of data and information available. This is why ML and AI have increasingly become mainstream in business management, completely altering not only how people work but also how businesses operate. Recommendation system is an emerging area of research that is concerned with using user data and intent to come up with relevant recommendations for the users using the similar strategy. The goal is to provide suggestions that are in line with the tastes and preferences of the consumers.

Although there has been a lot of work done in the field of recommendation systems, the idea of using machine learning algorithms to improve the outcomes is still relatively new. Making autonomous models that can learn from available data and automate operations is at the heart of machine learning. Similar outcomes are anticipated when applied for content suggestion purposes.

Recommendation systems are known to improve both the process as well as the quality of decision making. This project is based on the utilization of machine learning algorithms for the sake of app recommendation for the users.

II. LITERATURE SURVEY

A. Research Paper No-1:- Machine Learning Based Recommendation System for Android Apps

Abstract: When looking for android app, the user has a particular goal in mind and wishes to find an app that can truly meet their needs and expectations. App recommendation systems play a vital role in this regard by recommending apps to users based on their preference and requirements. The goal of this project was to develop a machine learning based app recommendation system to recommend Android Apps to the users.

B. Research Paper No-2:- A systematic review and research perspective on recommendation system

Abstract: Recommender systems are efficient tools for filtering online information, This paper aims to undergo a systematic review on various recent contributions in the domain of recommender systems, focusing on diverse applications like books, movies, products, etc. This review provides a much-needed overview of the current state of research in this field and points out the existing gaps and challenges to help posterity in developing an efficient recommender system.

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C. Research Paper No-3:- A Survey on Applications of Recommendation System

Abstract: Recommendation system is a successful application area in various fields. This paper is concerned with its application in four main fields. One of the main problems faced by users in various fields is "decision making" Hence recommendation systems act as a gateway for users to be suggested as to what decision would be right and predict the future post decision. This paper gives the overview of its application in four areas along with the data mining techniques used together with the algorithms.

D. Research Paper No-4:- Artificial Intelligence Impact on the Recruitment Process

Abstract: A systematic review was adopted in which academic papers, magazine articles as well as high rated websites with related fields were checked. This study's findings should contribute to the general understanding of AI's impact on the HRM recruitment process. It was impossible to track and cover all topics related to the subject.Acquiring automation and cognitive insights as well as cognitive engagement in the recruitment process would make it possible.

E. Research Paper No-5:- Recommender Systems: An Overview

Abstract: Recommender systems are tools for interacting with large and complex information spaces. They provide a personalized view of such spaces, prioritizing items likely to be of interest to the user.The purpose of this special issue is to take stock of the current landscape of recommender systems research and identify directions the field is now taking. This article provides an overview of the current state of the field and introduces the various articles in the special issue.

III. METHODLOGY

Multiple linear regression is a statistical technique used to analyze the relationship between multiple independent variables and a dependent variable. In the context of recommendation systems, multiple linear regression can be used to predict user ratings for items based on their features. The goal of multiple linear regression in our recommendation system is to estimate the coefficients β1 to βn that minimize the sum of squared errors between the predicted ratings and the actual ratings. Once these coefficients are estimated, the model can be used to predict ratings for new items based on their features.

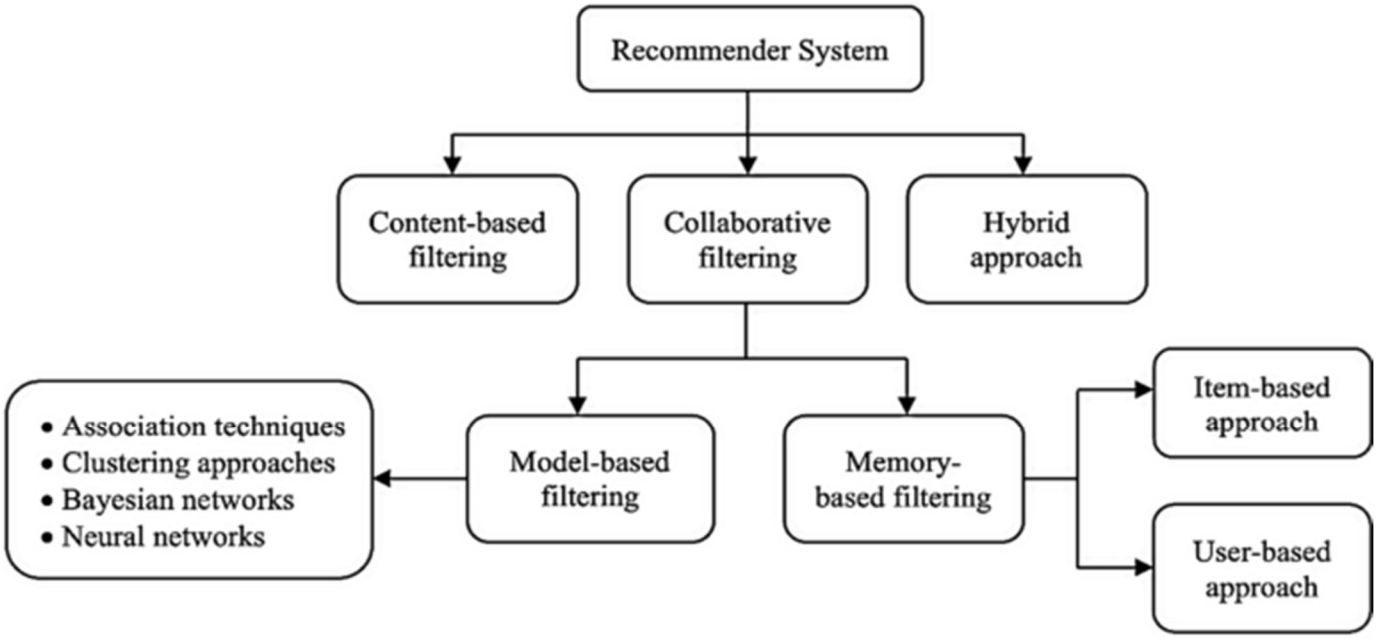

FIG 1. Approaches To Recommendation System

For our use case, we have a dataset of service providers and jobs and we want to predict how efficient a service provider is based on its education, skills, experience, location and rating given by employers. We can use multiple linear regression to estimate the coefficients for each feature, and then use these coefficients to predict the user's rating for the new movie. The predicted rating can then be used to recommend the movie to the user.

For recommending jobs, we have implemented Cosine Similarity. Cosine similarity is a measure of similarity between two non-zero vectors in an inner product space. Given two vectors A and B, the cosine similarity between them is defined as the cosine of the angle between the two vectors.

In other words, the cosine similarity between two vectors is the cosine of the angle between them, and it ranges from -1 (for vectors pointing in opposite directions) to 1 (for vectors pointing in the same direction). A cosine similarity of 0 indicates that the two vectors are orthogonal (perpendicular) to each other.

The cosine similarity is often used in information retrieval and recommendation systems to measure the similarity between two documents or items, where each document or item is represented as a vector of features. The cosine similarity can be used to compute the similarity between the feature vectors of two documents, and the documents that are most similar to a given document can be recommended to the user.

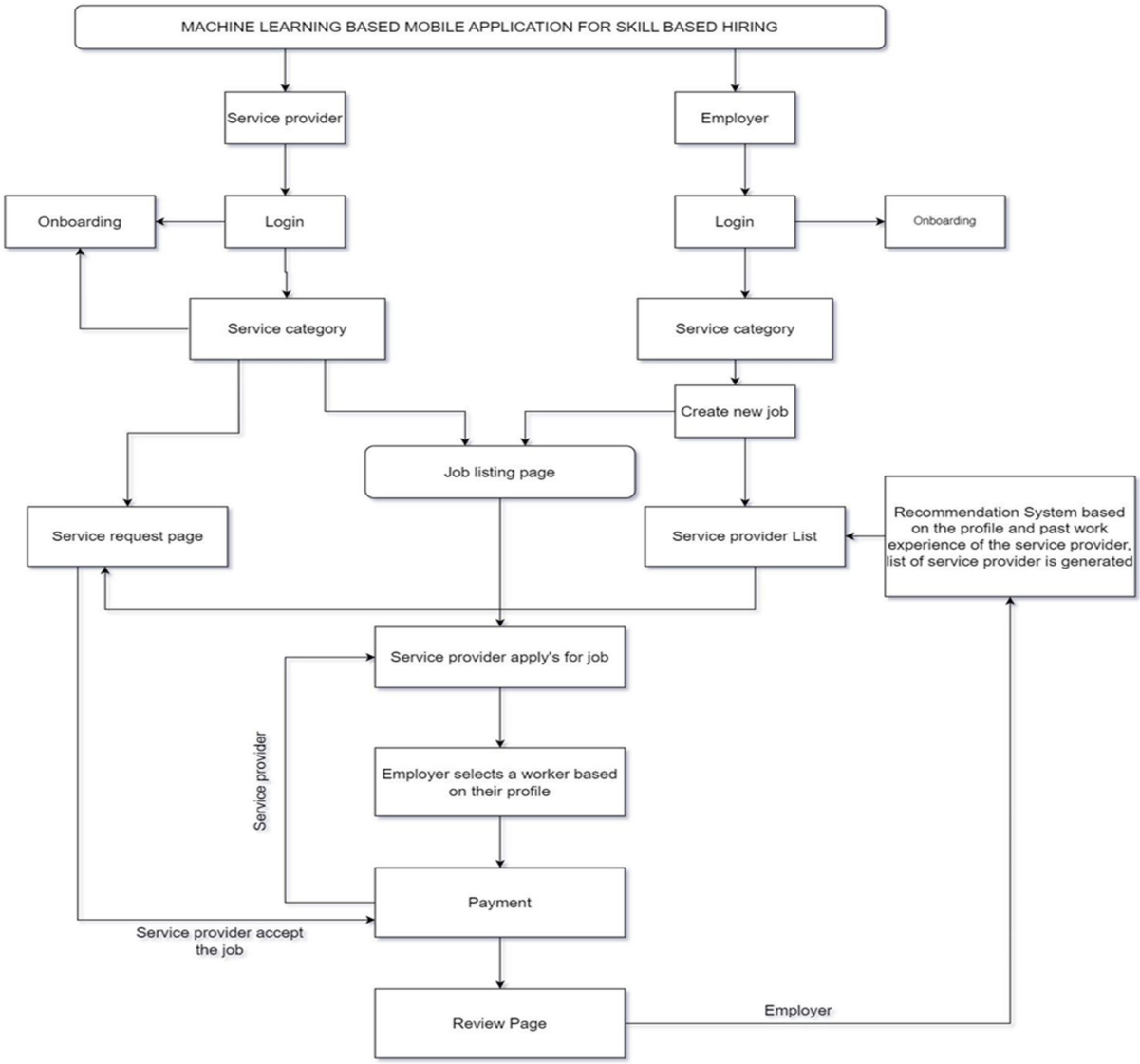

FIG. 2 ARCHITECTURE DIAGRAM

IV. CONCLUSION

Exploring the vast horizons of fields in which AI and ML can be implemented in and be benefited with, we concluded that it would be most fitting if we were to implement it in the very problem that we face today i.e employment and hiring and skill matching. Hence deciding on this topic to be our final year project. The project objective is To develop a Machine Learning based recommendation system, To develop a cheap and easily accessible platform for skill matching, To integrate the recommendation system into a mobile application.

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V. FUTURE SCOPE

The future is promising for skill matching recommendation systems based on multiple linear regression. The need for customised suggestions that can match job seekers' skills with businesses' needs is anticipated to grow as technology develops. Here are a few prospective developments and uses for recommendation systems based on multiple linear regression and utilised for skill matching in the future: Multiple linear regression-based recommendation systems now only take into account information on job needs and skill sets. These systems may eventually include further information from sources like personality qualities, working methods, and previous job performance to deliver recommendations that are even more precise and unique. Multiple linear regression-based recommendation systems can also be used in other contexts. For example, they can be used to suggest courses to students based on their skills and interests or products to customers based on their past purchases and preferences.

VI. ACKNOWLEDGEMENTS

Projects are great opportunities offered to those who are specializing in certain skills and career development. This will help an aspirant develop working ethics and set great working standards that could help build his/her working foundations in a group. With this, it is important to expose these aspirants to a great and competitive working environment that could enhance their skills, capabilities, standards, and outputs. The journey started as a student towards professional life with the aim in mind to learn the practical aspect of life, ended as a memorable experience, and also helped me to come off with flying colours. No work can be completed without others' help or contribution. The preparation of the presentation of this humble work encompasses the immense and unlimited help and sound thought of innumerable people. I express my deep and sincere gratitude to my teacher and guide Prof. A. V. Dirgule, for guidance, supervision which helped me to tide over the hardship encountered during the study. Special thanks to Head of Department Dr. Prof. M. P. Wankhede and Principal Dr. S. D. Lokhande for expert suggestion & encouragement. I would like to express my sincere gratitude to them for providing me with the most valuable guidance given to me at every stage to boost my morale, which helped me to add a feather in my cap.
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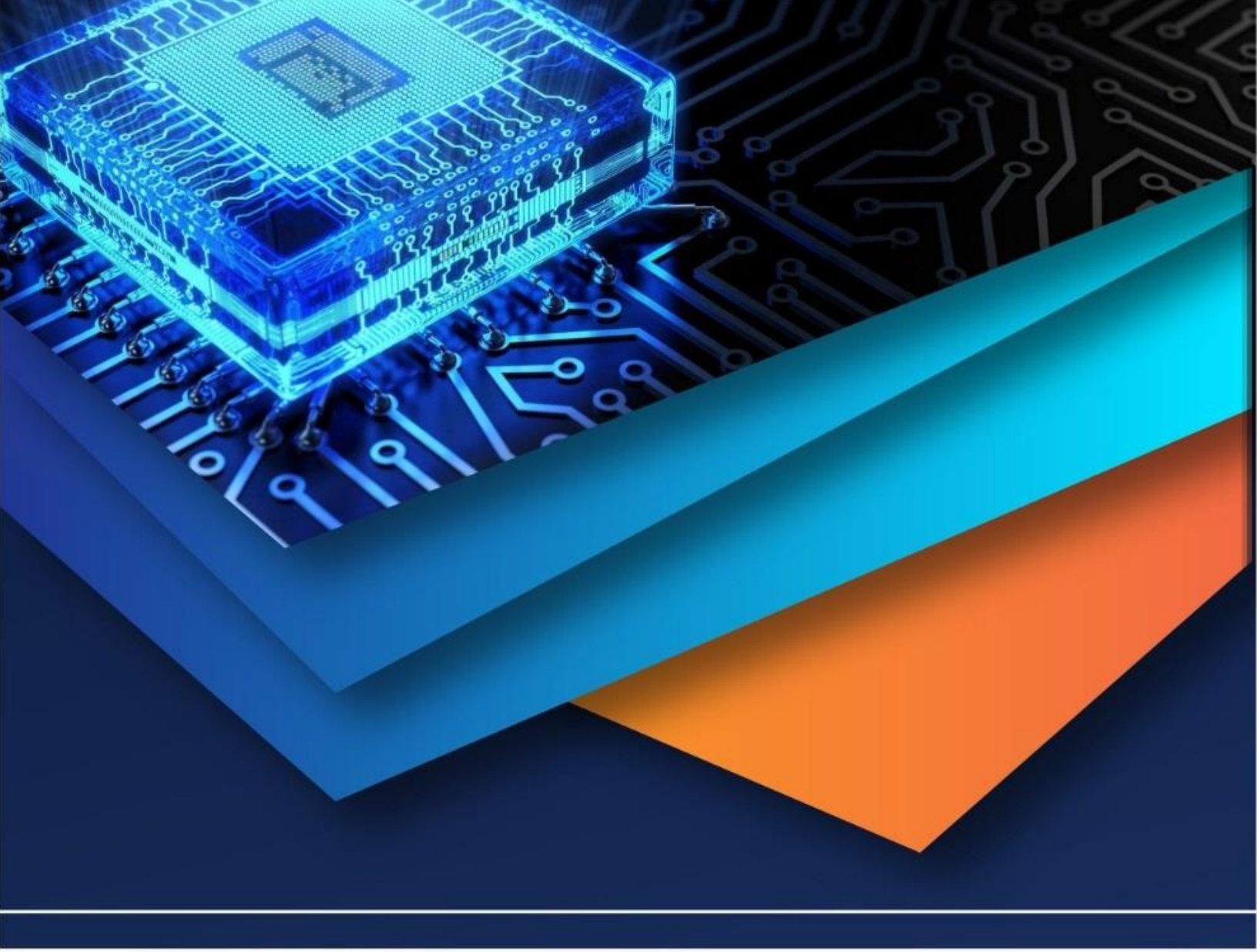

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