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# Unique Prediction of Personality Traits Based On Ocean Model with Machine Learning Techniques

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**ABSTRACT:** In the emerging fields of psychology, computer science, and physics, the idea of utilizing ocean models to forecast personality traits based on machine learning is being explored. According to the Ocean Model idea, personality traits can be thought of as a collection of interrelated waves or patterns that fluctuate throughout time, much like the tides in the ocean. A high degree of accuracy in predicting an individual's personality traits may be achievable by utilizing machine learning and artificial intelligence algorithms to analyze these patterns and variations. An overview of the Ocean Model theory, its possible uses in personality evaluation with two distinct modules and a comparative analysis of algorithms, as well as related difficulties and constraints, are presented in this work.

**KEYWORDS:** Machine learning, Artificial intelligence, K Means Clustering, Logistic Regression, Decision tree, Gaussian Mixture Model

## I. INTRODUCTION

A promising field of study and application is personality prediction based on the OCEAN model with machine learning and artificial intelligence. It may deepen our comprehension of human behavior and facilitate better decision-making across a range of fields. Machine learning and artificial intelligence can be used to predict personality traits using the ocean model, a scientific idea used to replicate the behavior of oceans. This model can find patterns and correlations in both human behavior and the ocean because it is based on the concepts of fluid dynamics.

The goal of this research is to use the OCEAN model to develop a machine learning and artificial intelligence model that can predict a person's personality attributes. A dataset of self-reported personality scores from standardized psychological exams will be used to train the algorithm. After that, to predict new people, it will identify trends and connections between the input variables and personality scores. Virtual assistants and chatbots, marketing, recommendation systems, human resources, psychology research, and mental health interventions are just a few of the applications of this technology. It can enhance user experiences, personalize marketing campaigns, and provide better content recommendations. The model can also improve the user experience of AI-driven platforms and support tailored mental health interventions. This project aims to create a machine learning and artificial intelligence model that can predict an individual's personality traits using the OCEAN model. There will be two separate modules for Candidate and HR, The Candidate module is implemented by K-means clustering, and for the HR module logistic regression algorithm is used to develop an accurate prediction project.

## II. RELATED WORK

Devesh Agarwal et al. presented Self-Prediction Using Machine Learning in April 2022. This initiative aids in the creation of personality assessments and personality diagnosis. By categorizing the behavior, its type can be examined, and based on the findings, the behavior can be improved. Atharva Kulkarni et al. suggested using machine learning for CV analysis-based personal prediction in September 2021. The experimental model uses natural language processing (NLP) to analyze CV and investigate different machine learning techniques for assessing behavior quality.[3]. In [4] Kargatji et al., a neural network technique based on the Big Five test seeks to predict an individual's conduct by obtaining the tweets' meta content. It is employed to assess an individual's conduct. The four processes that the authors took were gathering data from tweets, preprocessing, transformation, and classification. Although neural networks have been used to forecast individual behavior, there are several drawbacks, like the inability

to filter false information, the inability to automatically analyze tweets, and the inadequacy of using Twitter alone to predict user behavior and patterns rather than individual behavior. Afzal Juneja Ayub Zubeda and associates are developing a sorting system that combines machine learning and word processing. Resumes in all formats are sorted by the system based on the standards set by the business. The proposal's authors also consider the competition's LinkedIn and Github accounts in order to gain a deeper understanding of the competitor. This helps the business identify competitors based on attributes such as financial structure, skill set, and—above all—character. [5]. Drs. Tanzim Riza and Sakib Zaman used machine learning and language processing to assess the personal data history before converting the page back to HTML. They then reverse-engineered the HTML code to finalize segmentation and extract relevant features. The model takes information out of resumes and divides it into important categories. To examine the regression analysis, they employed multiple logistic regression. However, the dataset is really tiny.[6]. An additional study expands upon earlier research that classified MBTI types. Based on data from social media, researchers utilize XGBoost to predict MBTI personalities. Prior to beginning the classification process, the raw information is cleaned and pretreated. terms (such as URLs and restricted terms) are removed first, and then lemmatization is performed, for instance using NLTK. The processed text is then vectorized by applying TF-IDF weighting to all pertinent text parts, and the classification function for prediction is then completed. According to the findings, the accuracy of XGBoost is 78.17. According to Sudhir Bagade in [8], a person's character has a significant impact on both their personal growth and the advancement of any business. We developed an internet program that uses a resume or CV to examine a candidate's personality. The TFIDF algorithm is used by the system to choose qualified applicants. The VVCETCSE system uses a ranking technique to forecast behavior. It will include the resume's other elements as well as abilities and experience. In addition, candidates responded to personal questions and completed an aptitude exam. They also receive representative photographs along with the results. [9]. The machine learning method known as logistic regression was created by Gangandeep Kaur. The system predicts personality using the OCEAN model and evaluates applicants' emotional intelligence using psychometric analysis. Only essential staff members are aware of the password, which protects the candidates' information using an encryption mechanism. Candidates can use the control panel and SMS to find out if they have been chosen for an interview.[10]. Using the weighted majority voting algorithm, support vector machines, and random forest algorithm, Afroja Khatun Monalisa created a model. Initially, applications are submitted to the system, whereupon applicants are assessed in accordance with the manager's specifications. After taking personality and talent tests, chosen candidates are given grades based on their responses. A candidate's selection is determined on the demands of the department and grades.[11]

### III. METHODOLOGY

First, we have a varied and representative dataset comprising personal data such as habits, preferences, and other pertinent characteristics. Self-reported personality ratings from standardized psychological tests ought to be included in this dataset as well. To manage missing values, outliers, and inconsistent data, it cleans and preprocesses the dataset. In addition, feature engineering, scaling numerical variables, and categorical variable transformation might be used in this step. Identify the most relevant features that contribute to predicting personality traits based on the OCEAN model. This step may involve techniques such as correlation analysis, feature importance ranking, or dimensionality reduction. Apply machinelearning algorithms such as decision trees to train a prediction model.

The model will be trained using the cleaned and pre-processed dataset. Assess the performance of the trained model using appropriate evaluation metrics such as accuracy, precision, recall, or F1-score. This step will involve splitting the dataset into training and testing sets and comparing the predicted personality scores with the actual scores. Fine-tune the model parameters and hyper parameters to improve its performance. This step may involve techniques such as grid search, cross-validation, or ensemble methods. Once the model shows satisfactory performance, it can be deployed as an application or integrated into an existing system. The application will take input data about an individual and provide predicted personality trait scores based on the OCEAN model. This project aims to develop an accurate and reliable machine learning and artificial intelligence model for predicting personality traits based on the OCEAN model which has two modules HR and candidate to have a robust accuracy. The Ocean Model theory, a concept in psychology, suggests that personality traits can be predicted using machine learning and artificial intelligence. The theory suggests that personality traits are interconnected patterns that ebb and flow over time, similar to the ocean's tides. By analyzing these patterns more deeply in the future and selecting more different algorithms for the Candidate and HR module can predict an individual's traits with high accuracy. While the concept is still in its experimental phase, it can serve as a powerful tool for personal analysis and easy for the recruitment process.

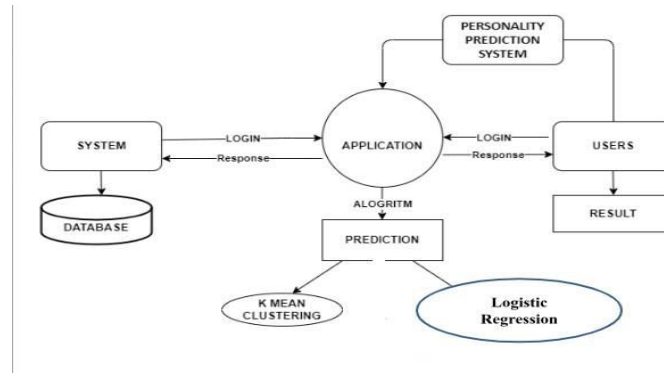


Fig. 1. Representation of The Methodology.

#### IV. CONCLUSION

The OCEAN model, which stands for agreeableness, con-sciousness, extraversion, openness, and neuroticism, is a well-liked framework for personality prediction. Machine learning and artificial intelligence algorithms are capable of analyzing large data sets, from which they derive personality trait predictions based on patterns and correlations. Utilizing this technology can enhance advertising efforts and provide personalized advice in the fields of marketing, psychology, and human resources. However, it has shortcomings and ethical conundrums, such as potential biases and privacy concerns. The psychology theory known as the Ocean Model suggests that machine learning may be used to predict personality traits; nevertheless, the field is promising and has various applications. The theory suggests that personality traits are connected patterns that change over time, much like ocean tides. By selecting more varied algorithms for the Candidate and HR modules and looking at these patterns more closely in the future, it will be possible to predict a person’s traits with a high degree of accuracy. Though it is still in its infancy, the idea has the potential to be a helpful instrument for hiring process streamlining and self-analysis.

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