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SYSTEM FOR MOOD-BASED FOOD RECOMMENDATION USING MACHINE LEARNING

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ABSTRACT

Online information is continually growing, and this is a deliberate tactic for controlling the excessive amount of data. It is impossible to overstate the significance of recommender systems given their widespread usage in several web applications and their ability to solve numerous issues brought on by too many options. The increasing use of technology, which necessitates the use of IT, affects all prospective business areas. One of the industries that is currently growing the fastest and has made a significant contribution to the national economy is the hotel and restaurant sector. The current restaurant recommendation is neither tailored or takes into account the user's current perspective. The suggested approach offers customers totally customized recommendations for meals and nearby establishments depending on their current mood. Using the user's current mood, this system suggests foods and nearby restaurants. To locate the eateries based on the user's location, the Zomato dataset is used. A website has been created where users can enter their basic personal information to create a customized system and then choose the option that best describes their present mood. The programme recommends restaurants and food items for the user based on the inputs received. To create a better experience, the user is given a variety of options along with restaurant ratings. A consumer receives recommendations for a total of 9 eateries, of which the top 3 are the best and the remaining 6 are other options. The restaurants are organised by location using the KNN algorithm, and this model was created using Python Django. One uses a flask to When they are hungry, people eat.

KEYWORDS

Emotion Recognition, Food recommendation system, Food-Mood, Machine learning, Deep face, Streamlit, K-Mean Algorithm, Aar Cascade Algorithm, Four -Mean Rectangle

I.INTRODUCTION

The area of computer science includes a number of methods and tools linked to data science, artificial intelligence, [1] the internet of things, and graphic visualisation. A subfield of artificial intelligence called "machine learning" aims to create programmes that, without being explicitly designed, learn from data over time and become more accurate. An algorithm is a series of statistical processing processes in data science. In machine learning, algorithms are trained to sift through vast volumes of data in search of patterns and features before making judgements and predictions based on fresh data. As it analyses more data, a smarter algorithm will produce conclusions and predictions that are more accurate. Machine learning examples are all around us now. Digital helpers [2] play and perform web searches. before to listening. When we clean the floors, robots vacuum them. Unwanted Emails are prevented from entering our inboxes by spam detectors. Systems for analysing medical images assist doctors in finding tumours they might have missed. And the first autonomous vehicles [3] are now travelling on public roads. Our goal is to provide a solution for "Recommending food based on the emotions" that uses Python and the Django technology. To group the data points, we employ the K-means algorithm. The clustering method organises similar data points into categories that are distinct from one another. the second group. Ultimately, the project offers a cuisine kind to the user based on their mood. The capacity for feeling and emotion is one of the most basic characteristics of people. More than one may understand, emotions have an impact on one's life.Our daily decisions, motivation to act, interpersonal interactions, and many other things are all impacted by emotions. The neurophysiological and hormonal changes that are connected to feelings, pleasure or pain, thoughts, and behaviour are what cause human emotions. Human emotions can be divided into six categories: fear, disgust, anger, surprise, sadness, happiness, and neutral. These six categories can be referred to as the core emotions because all other emotions are subsets of these six; for example, cheerfulness is a variation of happiness, contempt is a variation of disgust, and so on. Our face expressions are affected by these feelings. Food interacts with a variety of physiological systems in our body, including the brain, which controls how we feel, think, and act, from a biochemical perspective. It is commonly known that many people eat their "comfort food" when they are feeling down, as was previously indicated. According to studies, foods like chocolate and coffee boost happiness and reduce weariness, while fruits like bananas trigger the production of serotonin, which is what gives us that "happy" feeling. As we can see, the many compounds found in food, such serotonin and caffeine, have an impact on how we feel. Even though we can find a nutritious diet to improve our mood.

II. LITERATURE REVIEW

We were required to read numerous project papers on an existing system in order to create an Emotion-based Food Recommendation System. The connection between eating and mood is There are just research articles and preliminary attempts to construct a mood-based meal recommendation system currently. The "Mood Based Food Recommendation System", a website where the user receives customised food recommendations, is one of the most current examples of emotion-sensing in food recommendations. The user chooses their current mood from the available alternatives. The website suggests food products to the user based on inputs. IoT and AI were used in another recent study titled "AIoT Application for Food Recommendation based On Human Analysis". In this project, AI cameras and IoT gadgets are utilized to identify the user's emotions and make food recommendations [14] based on those emotions. The "Restaurant recommender system based on sentiment analysis". Is another form of mood-based food suggestions that suggests local eateries to the user based on sentiment analysis. They group the meal names that they have taken from user comments and analyse how they feel about them using a semantic method. Following the sentiment analysis, a nearby restaurant is suggested based on their comments. Another method of connecting food and emotion is "a recipe recommendation system that considers user's mood". It is a recipe recommender that gives the user ideas for handmade food. The "Mood food recommender" is one more type of food mood recommender that suggests three comfort foods to the user based on their present mood. To provide the food recommendation, the system combines NLP with a survey dataset on comfort foods and reasons for eating them. The website "Moodie Foodie "offers options for merchants to sell food on the platform in addition to making culinary recommendations based on fundamental emotions. Based on his current state of mind, the user must choose one of the fundamental emotions before being provided with a list of predefined food choices. Moreover, a recommendation system has been created that takes dietary data and user preferences into account through R. Y. Toledo. We looked more closely at developed recommendation systems. Based on the research review, we made the decision to employ combination of both the user's present state and core emotions in addition to only core emotions when proposing meals.

III.METHODOLOGY

A. THEORY

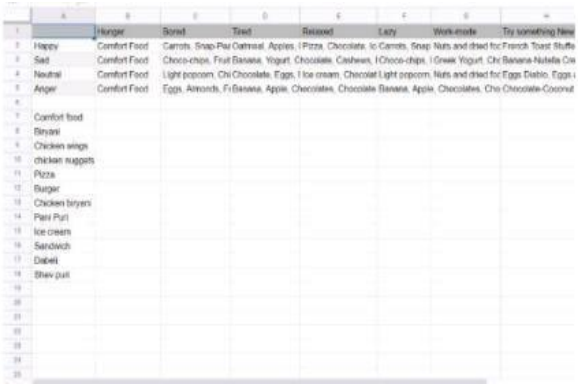
1.DEEPFACE

Python's Deep Face [8] is a library for facial analysis and recognition. It was developed in 2014 by Facebook's AI research team. It has modules for age, gender, and race recognition in addition to its facial analysis module. This module is mostly based on the Python libraries TensorFlow and Kera's, which offer an interface for artificial neural networks. The four steps of facial emotion detection are detect, align, portray, and classify. With the aid of Open-CV, the Haar cascade method must be used to identify faces in a frame. A Python computer vision library is called Open-CV. DeepFace uses a 9-layer CNN (convolutional neural network) that was trained using data from over 4 million Facebook image uploads and maps the image with more than 120 million connection densities. The model's facial and emotion recognition accuracy was over 97.35 0.25%. Thus, it predicts more accurately than humans. Deep Face library is divided into four modules; 2-D alignment, 3-D alignment, Fractalization, and Neural Network

B. METHOD

The other major component of our approach is defining a relationship between mood and food using a dataset. A data set for the Mood Food Recommender project is available on Kaggle. Wherein the author researched the relationship between eating and how people behave and feel. This CSV file has over 125 replies gathered from various individuals, as well as responses pertaining to favorite foods, comfort foods, etc. In addition, we ran a poll using Google Form and had over 110 responses. In this study, we gathered data on respondents' preferred foods. What foods do they favor to consume when they are joyful, depressed, or angry? Even while this seems like adequate information, it was not properly set up and ordered adequate validation Data Gathering: The first step entails gathering information about restaurants, menu items, reviews, and ratings. This information can be found in a variety of places, including social media networks, restaurant websites, and food blogs. Data preprocessing is necessary to maintain consistency and ease of analysis because the data gathered from various sources may be in various forms. Tasks like data cleaning, normalization, and standardization may be involved in this. Data Gathering: The first step entails gathering information about restaurants, menu items, reviews, and ratings. This information can be found in a variety of places, including social media networks, restaurant websites, and food blogs.

Preprocessing of Data: The information gathered from various sources may be in different



	Hunger	Bored	Tired	Relaxed	Lazy	Work-mode	Try something New
Happy	Comfort Food	Carrots, Snap-Pea	Oatmeal, Apples, I	Pizza, Chocolate, Ic	Carrots, Snap	Nuts and dried fru	French Toast Stuffe
Sad	Comfort Food	Choco-chips, Fruit	Banana, Yogurt,	Chocolate, Cashews, I	Choco-chips, I	Greek Yogurt, Chi	Banana-Nutella Cre
Neutral	Comfort Food	Light popcorn, Chi	Chocolate, Eggs, I	Ice cream, Chocolat	Light popcorn,	Nuts and dried fru	Eggs Diablo, Eggs
Anger	Comfort Food	Eggs, Almonds, Fr	Banana, Apple,	Chocolates, Chocolate	Banana, Apple,	Chocolates, Cho	Chocolate-Coconut
Comfort food							
Biryani							
Chicken wings							
chicken nuggets							
Pizza							
Burger							
Chicken biryani							
Pani Puri							
Ice cream							
Sandwich							
Dabeli							
Shev puri							

FIGURE1: This Reflects The Dataset of Method

IV.PROBLEM DEFINITION

Here, I'd like to create a project that helps people find meals based on how they're feeling. Using this online application, one could determine the type of food the user preferred to eat when the mood struck him. We would be able to relate the project using web pages [17] using the Python Django [9] platform technology. To choose the food to make this happen. Based on an individual's feelings, this was built. The initiative aids users in choosing meals when they are unsure of having a certain taste based on their mood. ORGANIZATIONSCHEDULE OF THE Projected following sections make up the documentation for our project:The purpose of this project and its motivation are discussed in

Chapter 1: Introduction. The main concepts used in the development of this project are discussed in

Chapter 2 : Literature Survey, along with an overview of the papers that were consulted before the project began.

Chapter 3: The project's analysis is covered in-depth in this chapter. The Software Requirement Specification also including analysesof user requirements, software requirements

Chapter 4: Design, which also explains how the system is organised and designed.

Chapter 5 : Contains screenshots of the results and a step-by-step implementation of the project.

Chapter 6: provides information on testing and validation along with design

V.EXISTING SYSTEM

The current system's restaurant recommendation is not personalised or takes into account the user's current perspective. Only the type of food to be consumed was advised. The proposed system is built using the current system to advise the kind of restaurant, the cost function, the location, and the amount of food you feel like having right now. According to the mood category, the current system is not appropriately categorized. It was redesigned to utilise the web application's functionality [13]in a more effective and efficient way. These existing systems demonstrate the potential of using machine learning techniques to build mood-based food recommendation systems that can provide personalized recommendations to users based on their current mood and dietary preferences. The different algorithms and techniques used by these systems offer unique approaches to providing personalized recommendations, and their successes suggest that this is an area of machine learning with significant potential for growth and development. Here are a few more instances of current mood-based recommendation systems in ML:A. Mood Scope Mood Scope is a mood-based recommendation system that analyses user mood data using machine learning and offers tailored recommendations based on users' moods. By recommending activities that are customised to the user's mood and preferences, the system is intended to assist users in improving their mental health. Affected Using machine learning to analyse facial expressions, affected is a mood-based recommendation system that makes suggestions based on the user's mood. By offering recommendations that are specifically suited to each user's current emotional state, the system is intended to assist users in making wiser decisions. MoodCast This mood-based music suggestion service employs machine learning to assess the user's mood and deliver specially selected music. The different algorithms and techniques used by these systems offer unique approaches to providing personalized recommendations and offers tailored recommendations based on users' moods. By recommending activities that are customised to the user's mood

VI.PROPOSED SYSTEM

The suggested system offers users completely personalized recommendations [25] for food and nearby restaurants based on their current mood. To locate the restaurants based on the user's location, the Zomato dataset is used. The proposed technology was designed to give users the ability to recognise their perspective taste in order to alter their mood. This method is based on personal tastes and ideas about food. Food to Suit Every Mood This web service [12] uses machine learning to provide meal recommendations based on your mood and then delivers it to your door. We recognise that the first question that naturally enters our minds when we discover a meal recommendation and delivery app is, "HOW IS THIS SOMETHING NEW?" We'll elaborate**.** First, it offers alist of restaurants that simultaneously considers three fundamental factors, namely price, user rating, and distance. As a result, it gives you the widest array of options possible, saving you the hassle of selecting the ideal restaurant for you using specific filters on conventional apps. The majority of popular applications only let you select a restaurant based on one factor at a time, but we recommend the closest, most reasonably priced, and best-quality eateries, meeting all of your needs simultaneously without requiring you to make any compromises.

The steps listed below make up our suggested work's methodology:

The user will first select his current mood by clicking on it.

Step 1 First the user will click on his current mood.

Step 2 After choosing the attitude,

Step 3 The preparation of the data has now been completed, and options are presented.

Step 4 To train our model and do classification, we will use K-means clustering.

Step 5 The goal is to teach the model how to categories food based on its characteristics.

Step 6 Following classification, the dataset is trained using emotions to produce the outcome of different food categories in various moods.

VII.ARCHITECTURE

VIIA. K-MEANS ALGORITHM

K-Means Unsupervised learning [4] algorithm clustering divides [5] the unlabeled dataset into various groupings. Here, K specifies how many pre-defined clusters must be created as part of the procedure; for example, if K=2, there will be two clusters, if K=3, there will be three clusters, and so on. It gives us the ability to divide the data into various groups and provides a practical method for automatically identifying the groups in the unnamed dataset without the need for any training. Each cluster has a centroid assigned to it because the method is centroid-based. This algorithm's primary goal is to reduce the total distances between each data point and its associated clusters. Play Movie The algorithm uses the information without labels as Unsupervised learning method K-Means Clustering divides the unlabeled

dataset into various clusters. Here, K specifies how many pre-defined clusters must be created as part of the procedure; for example, if K=2, there will be two clusters, if K=3, there will be three clusters, and so on. It accepts s input, splits the dataset into k clusters, and then repeats the procedure until no optimal clusters are discovered. In this algorithm, the number of k should be predetermined. The two primary functions of the k-means clustering algorithm are: o Through an iterative procedure, chooses the best value for K center points or centroids. Each data point is assigned to the nearest k-center. A cluster is formed by the data elements that are close to a specific k-center. As a result, each cluster is distinct from other clusters and contains data points with some similarities.

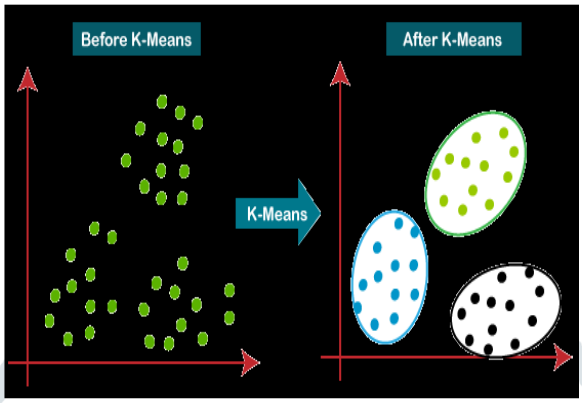


FIGURE 2: This reflects the k-means algorithm

VIIB. What is the Process of K-Means Algorithm?

The following steps describe how the K-Means algorithm functions:
Step 1 To determine the number of clusters, choose K.
Step 2 Pick K locations or centroids at random. (It can be other from the input dataset).
Step 3 Assign each data point to its nearest centroid, which will create the K groups that have been predetermined.
Step 4 Determine the variance and relocate each cluster's centre
Step 5 Re-assign each data point to the new nearest centroid of each cluster by repeating the third step.
Step 6 Go to step 4 if there is a transfer; otherwise, go to FINISH.
Step 7 The finished model.

VIII. HAAR CASCADE ALGORITHM

The Haar Cascade algorithm [6]was employed by us to identify faces in a live video frame. [7] The Haar Cascade algorithm, one of the most advanced and established algorithms ever, was created by Paul Viola and Michael Jones. An object detection algorithm called Haar Cascade finds things in a real-time frame [16] or a picture. The article "Rapid Object Detection[20] using a Boosted Cascade[19]of Simple Features" from 2001 provides edge or line detection features, which are used in this algorithm. With the aid of machine learning, the Haar cascade method can be used to teach a classifier by classifying an image as either positive or negative. Negative images contain everything but the object we're trying to recognize, while positive images include it. You can access the model developed from this training to find faces in a picture or live video at the OpenCV GitHub repository. The models in this repository are kept in XML files and can be viewed using OpenCV techniques. These consist of models for detecting faces, eyes, the upper and lower bodies, etc. Four stages can be used to explain the algorithm. Utilizing Ada boost, calculating haar features, producing integral pictures, and implementing cascade classifiers
Each pixel is assigned a proportional value between 0 and 1, with 0 denoting the lightest pixel and 1 denoting the darkest pixel. The sum of the pixels in the darker and lighter area is then calculated using three distinct features.

FIGURE 3: This Reflects Edge Feature, Line Feature .

VIII**A.FOUR- RECTANGLE FEATURE**

The haar feature moves constantly in a top-left to bottom-right direction. Hash overflow [21] characteristics Figures 2 and 3 show the Edge feature, which is responsible for locating the lighter and darker areas along the edge. Last but not least, line features compare neighboring rectangular regions with darker and lighter pixels. (c) A contrast along the diagonal is made using a four-rectangle feature [15] Determining these characteristics will be essential for a larger image. Since using the integral image reduces the amount of operations, this is where integral images play a role. Therefore, to compute the Haar feature, the complete image is divided into rectangular fields rather than being

calculated for each individual pixel [18]. It would be ineffective to use the rectangular field as a classifier if it includes the fewest haar features; in this case, Ad boost training is important. Ad boost aids in selecting the most advantageous feature and teaches the classifier. Boosting is used to teach weak learners, resulting in a highly accurate classifier from
the average prediction of all weak learners. The classifier chooses whether to point to an object that was discovered (positive) or move to the next area based on this prediction. (negative). Negative samples are rejected by stages.
If the rectangular field has the fewest haar characteristics, it should be used as a classifier; in this situation, Ad enhance training is crucial. Ad boost assists in determining which feature is more favourable and trains the classifier. Weak learners are taught via boosting, which produces a highly accurate classifier from the average guess made by all novices. Based on this prediction, the classifier decides whether to point to an object that was detected (positively) or go to the next region. (negative). Stage-by-stage rejection of negative samples. use the rectangular field as a classifier if it includes the fewest haar features; in this case, Ad boost training is important.

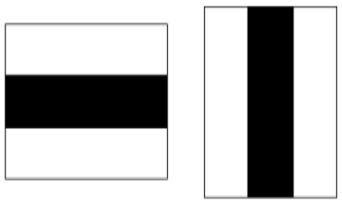


FIGURE 4: This reflects the four- rectangle feature

IX. DATASET

The information was collected in a specific area of Delhi. This dataset is a poll of food preferences made by individuals. The dataset includes fields for food, type of food preference, calories, calorie count for a specific food,
gender specified food, and other information. Additionally, this lists the eateries that are popular for a specific food
This dataset represents a survey of people's eating preferences. The dataset has fields for food, food preference type, calorie count for a certain food, food unique to a gender, and other data. Additionally, this lists the restaurants that are well-known for serving a particular dish.

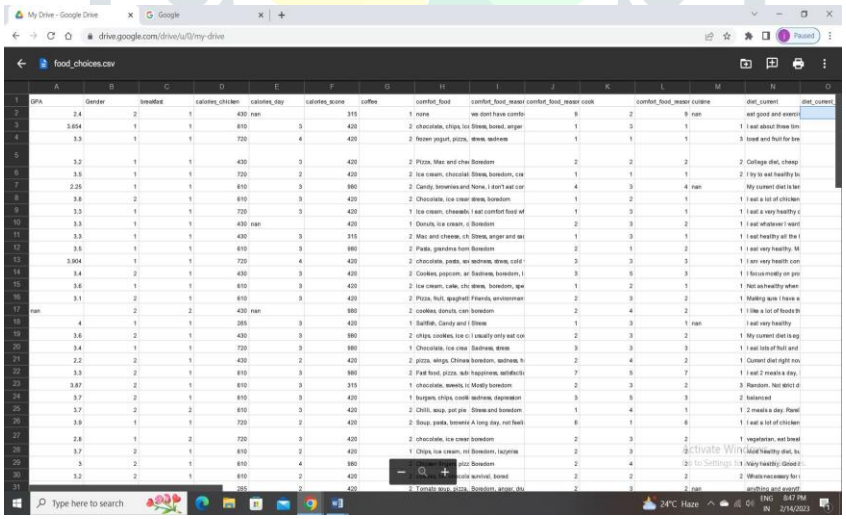


FIGURE 5: This reflects the dataset

X.LOCATION WISE RESTAURANT MEDIAN RATING IN NEW DELHI

This is a mood-based rating of different foods by region. In erster Linie erfordert a mood-based food recommendation system eine Databank, die alle Restaurants in New Delhi enthält, zusammen mit Ratings, Menus und anderen relevance Informational. In addition, it would need to be able to analyze the user's mood based on a variety of factors, such as weather, time of day, occasion, etc. The recommendation system could then suggest restaurants based on the median rating, which is a good indicator of the overall quality of the restaurant, after the user's mood has been determined. In order to calculate the median rating, the system would have to collect and analyze ratings from a variety of sources, such as online reviews and ratings, mentions in social media, and so on. Auf der Grundlage dieser Daten könnte das System The recommendation system could then suggest restaurants based on the median rating, which is a good indicator of the overall quality of the restaurant, after the user's mood has been determined. In order to calculate the median rating, the system would have

to collect and analyze ratings from a variety of sources, such as online reviews and ratings, mentions in social media, and so on. In addition, it would need to be able to analyze the user's mood based on a variety of factors, such as weather, time of day, occasion, etc.Die Stimmung des Benutzers wurde festgestellt. In order to calculate the median rating, the system would have to collect and analyze ratings from a variety
of sources, such as reviews and ratings online, mentions in social media, etc. Furthermore, it must be capable of analyzing the user's mood based on a variety of factors, such as weather, time of day, occasion, etc.

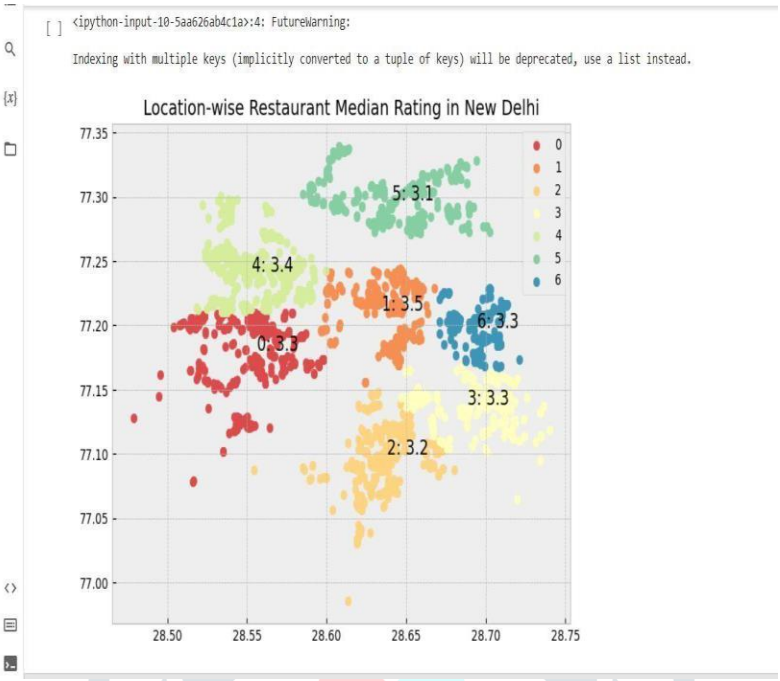


FIGURE 6: This Reflects The Location Wise Restaurant Rating In New Delhi

XI.DISCUSSIONS

Our web application uses the Deep Face Model to identify the user's emotions, and for more accurate food recommendations, we take into account the user's present mental state. On the validated dataset we produced for this project, these suggestions are based. Additionally, using the Kaggle dataset for a variety of moods, we have added a method to allow users to enter specific keywords about their current mood and suggest food items. Additionally, the user has the option to share his thoughts on the suggestion system in order to help it get better**.**Small changes have a big effect because nutrition is one of the variables that has the most influence on our health. It is impossible to consider every option on the menu due to the growing number of options accessible. Utilizing a recommendation system is the only way to navigate all of the available choices and select the best nutrition.The way that products or websites interact with users has changed thanks to recommendation systems, which alsoenable businesses to Using the data they compile on each client, they can raise their sales and profits. The food business will undergo a positive revolution as a result of developing an accurate food recommendation system. One of the many elements we must take into account when developing a food recommendation system is the attitude. Because we were dealing with a small dataset, our project is still far from being the most accurate recommendation system. We will need to input more data and validate it for accuracy in order to improve this model further.

XII.CONCLUSION &FUTURE SCOPE

Pandas and Deepface have been used to create a food recommendation system that takes emotion into account. Systems for recommending foods are getting more attention as a result of their importance in the contemporary world for leading a healthy lifestyle. When recommending food, our system first determines the user's fundamental feelings and then gathers information about their current health. The development of mood-based food recommendations is still in its early stages, but as emotion detection technology and studies into the connection between food and mood progress, so will this initiative Recommendation engines [10] have an effect on a consumer's goals and decision-making process, according to Smart-Waiter. This is particularly true in restaurants where customers find it difficult to choose from a large menu and would rather order a familiar dish than attempt something new. An emotional emotion-sensing waiter would be able to make food recommendations based on the customer's present mood as well as a few other factors. A robot with emotion-sensing [23] capabilities can also use artificial intelligence and machine learning to behave more humanely. It might make the dining experience for the client more tailored. Additionally, the clever waiter could use customer input to adjust services. The development of mood-based food recommendation technologies has seen a rise in. It might make the dining experience for the client more tailored.[24] Additionally, the clever waiter could use customer input to adjust services. The accuracy and variety of the suggested foods have both increased thanks to technological advancements [11]in mood-based food recommendation systems. The created web programme is used to make food recommendations based on emotions like happiness, sadness, depression, etc. Users of this software can alter their mood with its assistance. Moodie Foodie assists in selecting tastes based on criteria such as expense, quality, and distance. This aids the expansion of small-scale businesses in the current technologically advanced world. By using the food choices and Zomato datasets to train and classify the model, this might be made feasible. A methodology has been created in this project to make it simple for a person to categorise their

preferences using their emotions. The development of this initiative was based on the local population's gastronomic preferences. [22] The user would need to sign up using the details, and based on the created web programme is used to make food recommendations based on emotions like happiness, sadness, depression, etc. Users of this software can alter their mood with its assistance. Moodie Foodie assists in selecting tastes based on criteria such as expense, quality, and distance. This aids the expansion of small-scale businesses in the current technologically advanced world. By using the food choices and Zomato datasets to train and classify the model, this might be made feasible. A methodology has been created in this project to make it simple for a person to categorise their preferences using their emotions. The development of this initiative was based on the local population's gastronomic preferences. User opinion would need to be considered.

XIII.REFERENCES

[1] An article reference on Artificial
https://link.springer.com/article/10.1007/s10796-022-10279-0
[2] An article reference on book digital helper
https://www.sciencedirect.com/science/article/abs/pii/S0969698921003714
[3] An article reference on web autonomous vehicles
https://ieeexplore.ieee.org/abstract/document/972027
[4] An article reference on Unsupervised learning
https://www.sciencedirect.com/science/article/abs/pii/S0360835219304838
[5] An article on web reference algorithm clustering divides
https://www.tandfonline.com/doi/full/10.1080/1369118X.2020.1736124
[6] An article on web reference Haar Cascade algorithm
https://www.mdpi.com/2076-3417/13/1/69
[7] An article reference on web a live video frame
https://link.springer.com/article/10.1007/s11036-022-01939-1
[8] An article reference on book Deep Face
https://link.springer.com/article/10.1007/s40031-021-00681-8
[9] An article reference on Python Django\
https://iopscience.iop.org/article/10.1088/1742-6596/2425/1/012018/meta
[10]An article reference on book Recommendation engines
https://www.sciencedirect.com/science/article/abs/pii/S0957417421012100
[11] An article on book reference technological advancements
https://dl.acm.org/doi/abs/10.1145/3477495.3531959
[12] An article reference on web service
https://www.igi-global.com/article/augmenting-labeled-probabilistic-topic-model-for-web-service-classification/220391
[13] An article reference application's functionality
iopscience.iop.org/article/10.1088/1361-648X/ab51ff/meta
[14] An article on web reference food recommendations
https://academic.oup.com/nutritionreviews/article/79/4/382/5870414
[15] An article on book references a four-rectangle feature
https://onlinelibrary.wiley.com/doi/abs/10.1002/mmce.22895
[16] An article on book references a real-time frame
sciencedirect.com/science/article/abs/pii/S0167577X22019978
[17] An article on book reference web pages
//journals.sagepub.com/Doi/full/10.1177/20530196221136422
[18] An article on book reference individual pixel
https://link.springer.com/article/10.1007/s00330-021-08441-4
[19] An article on book reference Boosted Cascade
https://link.springer.com/article/10.1007/s00330-021-08441-4
[20] An article on book reference Rapid Object Detection
https://www.sciencedirect.com/science/article/abs/pii/S0924271622003008
[21]An Article on Book reference of. Hash overflow
https://link.springer.com/article/10.1140/epjs/s11734-021-00365-w
[22] An Article on web reference of gastronomic preferences
https://www.mdpi.com/1660-4601/19/6/3235
[23] An Article on web reference emotion-sensing
https://www.tandfonline.com/doi/abs/10.1080/10447318.2021.1979290
[24] An Article on book reference the client more tailored
https://www.ceeol.com/search/article-detail?id=1045812
[25] An Article Reference of personalized recommendations
https://link.springer.com/article/10.1007/s10489-021-02363-ws

XIV. BIBLOGRAPHY

Ganteda Manoj Kumar is Studying His 2nd Year, Master of Computer Applications in Sanketika Vidya Parishad Engineering College, Affiliated To Andhra University, Accredited By NAAC. With His Interest In Python Language and Machine Leaning Method As A Part Of Academic Project, he Used System For Mood- Based Food Recommendation Using Machine Learning. As A Result Of Desired To Comprehend The Flaws In Conventional Reporting And To Preserve Timely And High Quality Report Output In Mood - Based Food Recommendation System. A Completely Developed Project Along with Code Has Been Submitted for Andhra University As An Academic Project. In Completion of His MCA

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