

# Cuisine Prediction Based On Ingredients Using Algorithm

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**Abstract-** The cooking and recipe sharing has been a common thing done now a days. The resulting huge collection of recipes and ingredients helps us to understand the basics of cooking as well as food pairing. With the increasing popularity of food based and recipe sharing, there have been several platforms that have come up with cooking suggestion procedures or recipe engines. Even though this recommendation system suggests recipes, it is not able to exploit the correlation of ingredients with their cuisines. In proposed system, we aim to predict the cuisine based on ingredients as input. The user will get predicted cuisine as well as they will get to see the recipe of the dish. The system will make use of machine learning algorithm such as Naïve Bayes.

**Keywords-** food pairing, correlation of ingredients, cuisines. machine learning, Naïve Bayes

## I. INTRODUCTION

Food is an indispensable part of our lives. The most basic element with which one can identify a food item are its ingredients. Ingredients are the atomic components of food. Over the years, people have tried to explore new ingredients and incorporate them into recipes or produce new recipes all together. However, the choice of ingredients is characterized by geographical locality. One of the factors responsible for this behavior could be the similarity in availability of an ingredient in a particular geographic region. This has resulted in the set of recipes being divided into geographic classes known as cuisines. One of the obvious relations that we would like to explore is the relation between ingredients and cuisines. It is quite apparent that availability and popularity are important factors influencing the choice of ingredients in a recipe. People in different regions have different taste preferences and hence tend to favor a particular set of ingredients in comparison to the other. Thus, there seems to be a strong co-relation between these two entities. Cuisine differs across India's diverse regions as a result of variation in local culture, geographical location (proximity to sea, desert, or mountains), and economics. It also varies seasonally, depending on which fruits and vegetables are ripe. Indian cuisine consists of a wide variety of regional and traditional cuisines native to the Indian subcontinent. Given the range of diversity in soil type, climate, culture, ethnic groups, and occupations, these cuisines vary substantially from each other and use locally available spices, herbs, vegetables, and fruits. Indian food is also heavily influenced by religion, in particular Hinduism, cultural choices and traditions.

### A. SCOPE OF PROJECT

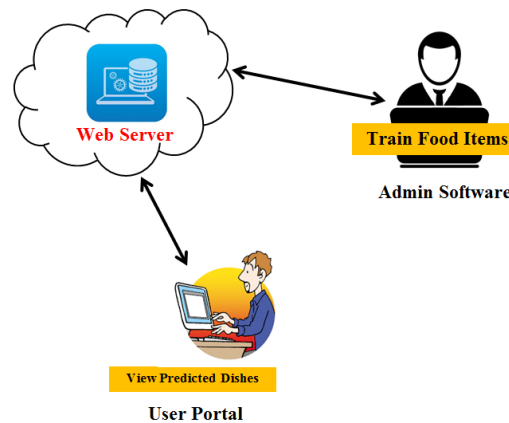
The proposed system will be a client server architecture where user can access the system from user portal. The user of the system will need to input the ingredients and then he will submit the query for prediction. The system will predict the cuisine based on the ingredients and provide user with output. The user can further view the dish recipe.

### B. NEED OF SYSTEM

India cuisine is the most famous food in world. People love Indian food especially for its taste and delicious nature. But many people are unaware of what exactly the food cuisine can be prepared from the available food products. People often

are not able to create dish of good taste as they are not aware of what food products are to be used in which cuisine. Other problem which women's face is what delicious to prepare from the available stuff in their home. Much time one can prepare delicious food items from many different food items but women are not aware of it. So there is a need of system which will predict food cuisine based on the user input.

## II. PROPOSE SYSTEM



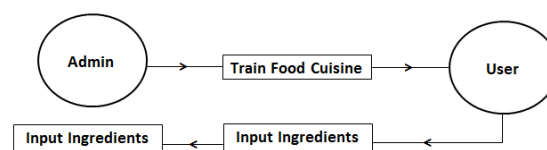
**Fig.1 Proposed system**

The proposed system is a client server based architecture where all the clients will communicate with one server via internet/ wifi medium. The system will consist of relational MSQYL database which will be managed by the server. System will work in private server environment and consist of following modules:

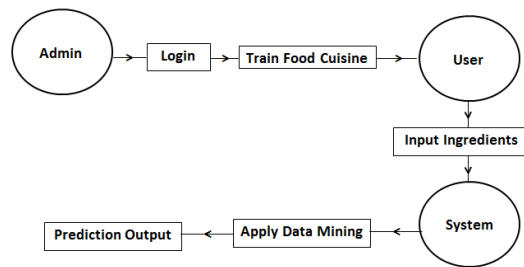
- Admin Desktop Software:** The admin software will allow admin to train food items which the user can detect from their portal at time of dish prediction. The desktop software will be well protected with username and password.
- User Portal:** This module will be a java application which the user will use to perform prediction of dish. This application will allow user to first input food ingredients of food item and the input will be submitted to server for detection. The server will send in response the food item name which admin has trained. The user can select multiple ingredients and then submit the query for dish prediction. The system will apply machine learning and display all the dishes which can be prepared using the input food items.
- Web Server:** Web server will be the central part of the system where the database will be stored. The server will use java servlets technology. The server will be responsible for all the request and response handling of the clients. The server will apply image processing techniques and extract features and trained the image. The sever will apply machine learning algorithm such as naïve Bayes and predict the dishes according to user input.

## III. SYSTEM DESIGN

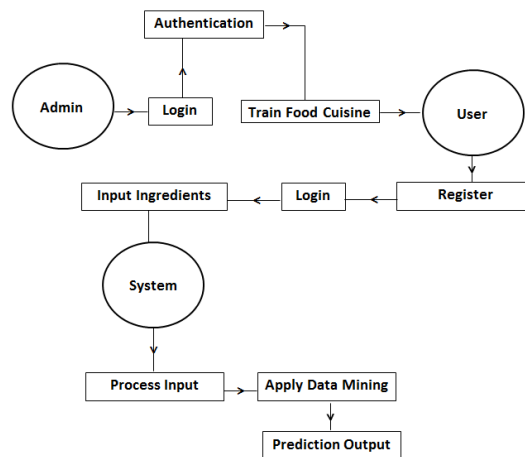
A data flow diagram (DFD) is use a very small number of primitive symbols to represent the functionality performed by the project and the flow data among the different functions of the project.



**Fig.2 DFD Level 0**



**Fig.3 DFD Level 1**



**Fig.4 DFD Level 2**

#### **IV. IMPLIMENTATIONS DETAILS**

**a. Admin Desktop Software:**

The admin desktop software is a software application designed and developed in java using Net beans editor. The front end GUI of this software is designed using java swing/awt components. The back end code of this software is written in java programming language. The admin software communicates with database using JDBC connection. The database is a relational MYSQL database.

**b. Web Server:**

The web server is the integral part of entire system. The web server is developed using Net beans editor. The web server consists of servlets to communicate which handles all the request and response from android app. The server communicates with database which is relational MYSQL database using JDBC connection. The server uses prediction algorithm namely Naïve Bayes to predict food dish based on the inputs provided by the user. The entire algorithm is developed in java.

**c. User Portal:**

The admin desktop software is a software application designed and developed in java using Net beans editor. The front end GUI of this software is designed using java swing/awt components. The back end code of this software is written in java programming language.

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## **V. CONCLUSION**

Preparing delicious food dishes from the ingredients available is very challenging task for every individual. Searching the appropriate menu from internet medium needs time and there is variety of dishes available which makes the user confusing. Thus the proposed system will help users with prediction of the dish name along with recipe by just giving input the ingredients. Thus the system will serve as helpful to all the food cooking lovers.

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