iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** XII **Month of publication:** December 2021

DOI: https://doi.org/10.22214/ijraset.2021.39427

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 9 Issue XII Dec 2021- Available at www.ijraset.com

Foodwiser: Be Wise with What You Eat

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Abstract*: *With the rise of online food ordering websites, maintaining a proper diet and staying healthy has become an important part of a person's lifestyle. But with the rising work from home trend, maintaining a proper diet and being aligned with the fitness goals is becoming tougher day by day. Also fora person having abnormal food habits, it becomes really tough to maintain a repository of the food intake, manage nutrients and carbs intake, etc. Thus with an aim to solve the above stated problem, we present the application Foodwiser: Be wise with whatyou eat.
Keywords: [Deep Learning, CNN, Machine Learning]

I. INTRODUCTION

A. *Foodwiser*

Be wise with what you eat project targets a particular segment of users who wish to keep an in- depth track and maintain a repository of what they eat,how they eat and how the food intake affects their body. Foodwiser is basically a mobile application that helps its users to take note of their food intake habits, track various nutrients and calories, suggest proper diet to improve upon the user's health and help them achieve their fitness goals. The application also helps users with healthy food recipes, calorie meters and much more to make the most out of the improved foodeating habits. The application would provide the user an intuitive interface to monitor their habits and keep track of their daily eating habits. The application can prove to be a game changer in the segment of fitness tracking, with the use of modern technology and Artificial Intelligence. Focused to solve the problem statement, we came up with an idea to build an artificial intelligent mobile application that helps the user in tracking their food consumption habits, maintaining calorie, carbohydrates and other nutrients.The problem of rising obesity can be solved effectively by improving the food eating habits, and this can be achieved by keeping a track of the multitude of food that a person consumes. The solution directly targets the end user and helps them achieve their goal with the help of Machine Learning and Computer Vision based techniques. Also the application helps the user achieve their goals by recommending proper diet, healthy food recipes, and a calorie meter with just a snap of the food which the person intakes.

II. SURVEY OF EXISTING

A. *Systems*

1) *Existing System -1 NutriNet*

It is based on the recognition of food image by using DCNN, was developed as a dietary assessment application for Parkinson's patients.

a) *Problem Address:* Parkinson's disease is a neurological condition that affects a person'smovement. Certain dietary charts are to be followed by patients for lower risk .By doingthis it may help to control the symptoms.

b) Advantage

- It helps the Parkinson's patient to intakeproper food and maintain the level of calories and nutrients.
- It is easy to use and can give regularhealth status.
- We can add our own recipe by whichother users take advantage.

c) *Disadvantage*

- It is specific to Korean Food recipes.
- It requires a good quality image torecognize the food.
- It requires a big set of data.

d) *Gap Filling*

Foodwisher recognize every cuisine and givedetails about the food. There is no barrier to any particular food.

- Reference: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6883229

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2) Existing System -2 Calorie Mama

It is a popular app used for getting names of the fooditems in the picture.

a) Problem Address: Address the problemregarding the food attribute recognition.

b) Advantage

- Accurate food identification with 91%accuracy.

c) Disadvantage

- Only gives the name of the food items.
- Restricted to some particular types offood

d) Gap Filling: Calorie mama just gives the name of the food items while Food Wiser willprovide the nutrients present in that particular food.

e) References: caloriemama.ai

3) Existing System -3 Traditional Pen-Paper based approach

The most popular approach to maintain a track-record of the food habits used, is Pen-Paper Approach. There are a few major drawbacks of this approach. The first being, the user needs to do a thorough researchof the food he/she is eating and to maintain a nutritionalrepository for the same. This involves lots of manual work and sheets of paper to be maintained as records. Secondly, the person may require an expert dietician'sopinion on their current eating habits. This requires large monetary funds to be invested for staying healthy.Third, this approach requires the user to carry physicalrecords of what they eat, and how they eat everywhere,being a tedious task.

4) Existing System -4 Calorie Counter

MyNetDiary It is a popular app with features like a food diary, calorie counter, and exercise tracker. Plan your mealsin advance, dial in those macros, check out nutrition facts, and get insights based on your data.

a) *Problem Address:* Keep Tracks the consumption of calorie and diet management

b) Advantage

- Easy to use with automatic caloriecounter and exercise tracker.

c) Disadvantage

- Highly Paid.

d) Gap Filling: MyNetDiary is a highly paid app whichmany people cannot afford, we bring FoodWiser free and lots of integrated applications.

e) *References:* mynetdiary.com

III. METHODOLOGY

A. Authentication System

1) Building an authentication system with Djangorest framework using **python-social-oauth2** package.

2) Implementing Login/Register system atfrontend with React Native framework which isa popular Javascript-based mobile app framework.

3) Integrating social media logins like Google,Facebook, etc.

4) Testing the flow of authentication systems.

B. Food Attributes Classification

1) Implementing Food Attributes Classification with libraries like tensorflow, pandas and numpy.

2) Using web scraping to get data about the attributes from food websites.

C. Dataset

1) Testing the data with a dataset named Indian Food 101. This dataset consists of 5000 pictureswith two categories, i.e. food and non-food.Indian Food 101 is partitioned into training,validation, and a test collection of data.

2) This dataset contains 250+ dishes from Indian Cuisine. Also consists of information about various Indian dishes, their ingredients, their place of origin, etc.

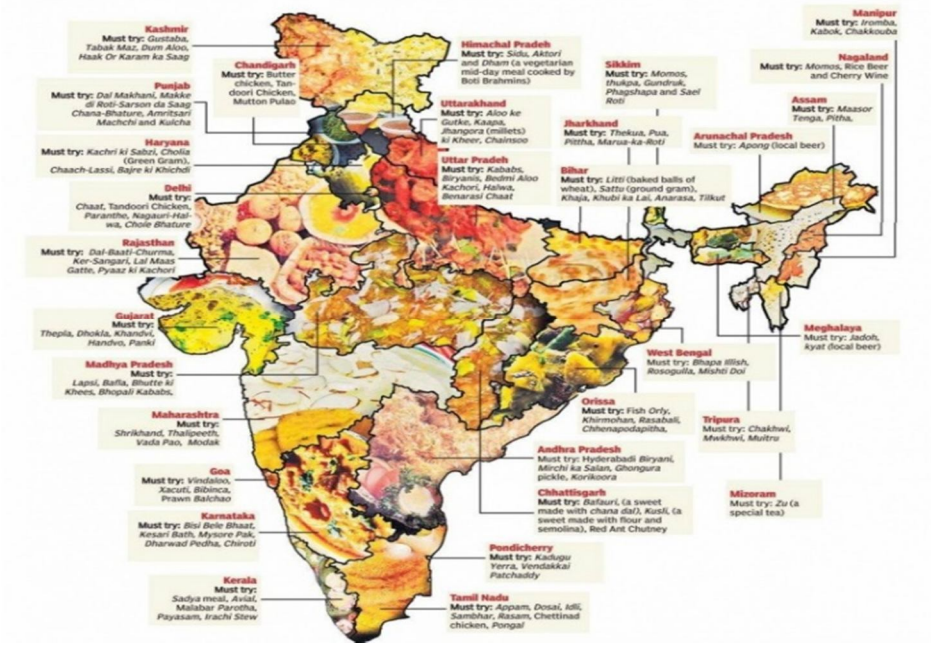

Fig. 1 Indian Cuisine Diversification

D. Recipe Recommendation System

1) Implementing Recipe recommendation usingnatural language processing.

2) Getting data using web scraping with the helpof beautiful-soup, requests and regex.

E. Diet Management System

1) Implementing Diet Management System usingweb scraping.

2) For web scraping we will use beautiful-soup,requests and regex.

F. Working

In this project we will be using new technologies and concepts to prepare a suitable diet and food plan for theuser. This project is to let the user scan a food item andget the nutritional information of that particular food item. Users will be provided certain options to choose from and get the nutritional facts related to that. Later the user can get a proper diet format and will be recommended to achieve his/her goal of a desired body shape or fitness. The app brought to you will be free and easy to use . The main point of this project is to let people have their desired body physique and to get some important knowledge about the food they areeating whether it is healthy or not. (Please refer to Figure 3 for flowchart.) This app will help users to identify the food that is good for health using just theirmobile phone scanning the food, the user will be provided with all the nutritional information of the fooditem and dishes the user can prepare with it . The wholewalkthrough will be like:

1) Scan a particular food item using your mobilephone.

2) A proper formatted nutritional value along withsome dishes will be provided.

3) If the user wants to get a proper dietrecommendation, they can get one. For diet preparations users have to enter their body weight, weight to achieve, and time period to invest

4) After the user enters the following he/she will be recommended with a proper diet they can follow toachieve their desired goals.

Figure 2 : Flowchart of Foodwiser

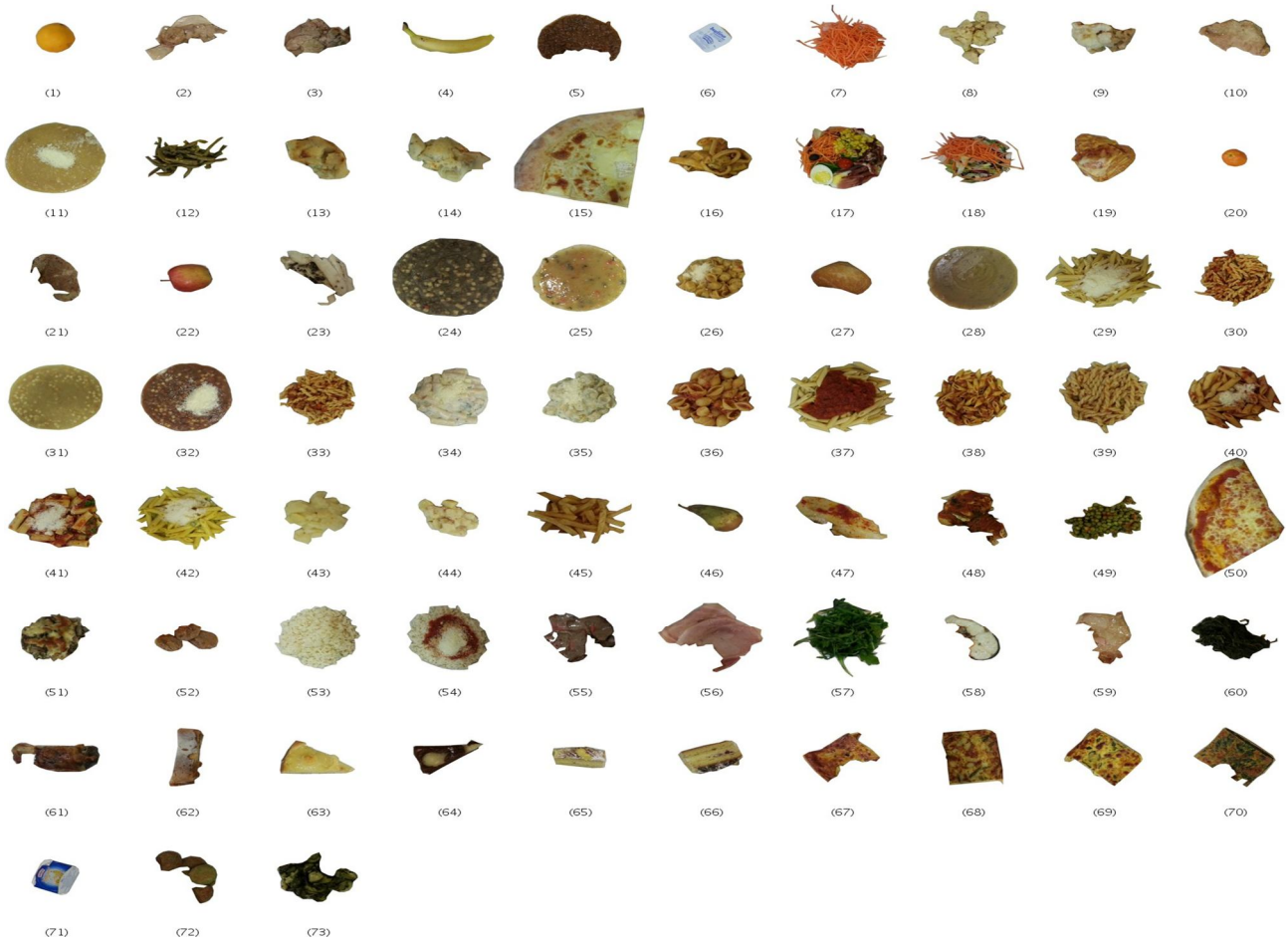

Fig 3. Types of Foods Analyzed.

IV. RESULT

As an outcome the Foodwiser: Be wise with what youeat mobile application will help users to take note of their food intake habits, track various nutrients and calories, suggest proper diet to improve upon the user'shealth and help them achieve their fitness goals. The application also helps users with healthy food recipes, calorie meters and much more to make the most out ofthe improved food eating habits. The application would provide the user an intuitive interface to monitor their habits and keep track of their daily eating habits. Also the application provides the users with an overall healthmanagement system which will ultimately help them stay healthy.

V. CONCLUSION

The food culture has a strong effect on everyday life and it reflects the person's history, lifestyle, values, andbeliefs from different countries. In this, we presencuisine and flavors classification methods by multi- scale convolutional network to identify a food image. Afeature map aggregation is also used for improving thenetwork performance. The proposed model achieved anacceptable classification rate compared with recent state-of-the-art models. The direction of our future research hints to continue with the fusion of the Recurrent Neural Networks. Furthermore, we aim at increasing food attributes to classify cuisine, course, nutritions, ingredients and flavors in order to develop aunified AI framework of food attributes analysis.

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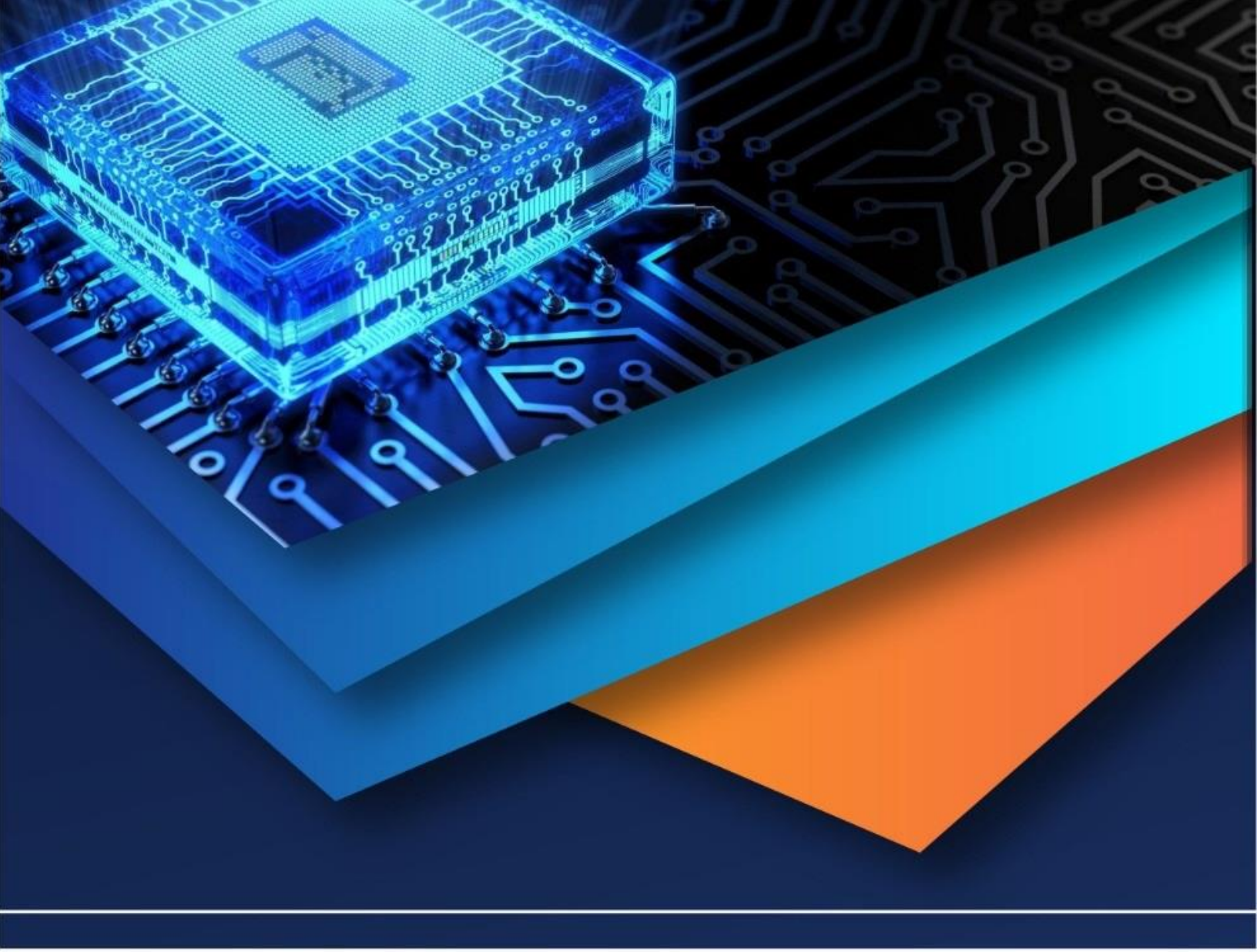

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