MES COLLEGE OF ENGINEERING, KUTTIPPURAM
DEPARTMENT OF COMPUTER APPLICATIONS
20MCA246 – MAIN PROJECT

PRO FORMA FOR THE APPROVAL OF THE FOURTH SEMESTER MAIN PROJECT

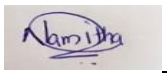
(Note: All entries of the pro forma for approval should be filled up with appropriate and complete information. Incomplete Pro forma of approval in any respect will be rejected.)

Main Project Proposal No : _____ *(Filled by the Department)*	Academic Year : 2021-2022 Year of Admission : 2020

1. Title of the Project : Food Scanner Application

2. Name of the Guide : Nowshad C V

3. Student Details (in BLOCK LETTERS)

Name	Register Number	Signature
NAMITHA C	MES20MCA- 2036	

Date:24/4/2022

Approval Status : Approved / Not Approved

Signature of Committee Members

Comments of the Guide Dated Signature

Initial Submission :

First Review :

Second Review :

Comments of The Project Coordinator Dated Signature

Initial Submission:

First Review

Second Review

Final Comments :

Dated
Signature
of HOD

Food Scanner Application

Namitha C

Introduction

Automatic image-based food recognition is a particularly challenging task. Food, which is an important part of everyday life in all cultures, constitutes a particular challenge in the domain of image classification, due to its visually intricate complexity, as well as the semantic complexity stemming from the variation in the mixing of various ingredients practiced by regional communities. Traditional image analysis approaches have achieved low classification accuracy in the past, whereas deep learning approaches enabled the identification of food types and their ingredients. The contents of food dishes are typically deformable objects, usually including complex semantics, which makes the task of defining their structure very difficult. Deep learning methods have already shown very promising results in such challenges. The development of a new deep learning model (architecture) applied to a new domain (problem - task) is a complex and time-consuming process that requires programming and mathematical skills beyond the average, along an understanding of data driven (empirical) model learning. On the other hand, transfer learning with fine-tuning should be adopted when an immediate solution is required. The most recent food recognition systems are developed based on deep convolutional neural network architectures. Deep learning is one of the only methods by which we can circumvent the challenges of feature extraction. This is because deep learning models are capable of learning to focus on the right features by themselves, requiring little guidance from the programmer.

Objective:

A CNN is developed using already Pre-trained CNN Model, which is been trained on a dataset and a pretrained model's is Loaded into the network. Food Identification is a kind of Visual recognition which is relatively harder. The Goal is to recognize the food using a neural network. The neural network is trained with a large number of dataset. The network learns to predict the image and give which class it belongs to. The network is trained with different sets of labels which could predict different class of food. The layers are created depending upon the requirements. The last few layers of the Pre-Trained models network is removed and few more layer is added to it and the dataset is trained accordingly. After Transfer Learning the datasets are trained and food identification is carried out. The web application that uses the picture of the food, to recognize multiple food items in the same meal. The system then uses image processing and computational intelligence for food item recognition.

Problem Definition:

Existing System:

Traditionally, the image-to-recipe problem has been formulated as a retrieval task, where a recipe is retrieved from a fixed dataset based on the image similarity score in an embedding space. The performance of such systems highly depends on the dataset size and diversity, as well as on the quality of the learned embedding. Not surprisingly, these systems fail when a matching recipe for the image query does not exist in the static dataset.

Proposed System:

An alternative to overcome the dataset constraints of retrieval systems is to formulate the image-to-recipe problem as a conditional generation one. Therefore, in this paper, we present a system that generates a cooking recipe containing a title, ingredients and cooking instructions directly from an image.

THE INVERSE COOKING SYSTEM : Generating a recipe (title, ingredients and instructions) from an image is a challenging task, which requires a simultaneous understanding of the ingredients composing the dish as well as the transformations they went through, e.g. slicing, blending or mixing with other ingredients. Instead of obtaining the recipe from an image directly, we argue that a recipe generation pipeline would benefit from an intermediate step predicting the ingredients list. The sequence of instructions would then be generated conditioned on both the image and its corresponding list of ingredients, where the interplay between image and ingredients could provide additional insights on how the latter were processed to produce the resulting dish.

BASIC FUNCTIONALITIES OF PROJECT

Workflow

Image Encoder - We extract image features eI with the image encoder, parameterized by I

2. Ingredient Decoder - Ingredients are predicted by L

3. Ingredient Encoder - encoded into ingredient embeddings eL with e.

4. Cooking instruction decoder - parameterized by R generates a recipe title and a sequence of cooking steps by attending to image embeddings eI , ingredient embeddings eL, and previously predicted words (r0, ..., rt1).

The implementation of our project will have 4 stages

: 1. Implementation of Encoders

2. Implementation of Decoders

3. Transfer learning and fine-tuning

4. Web Application Development using Python Flask

HARDWARE AND SOFTWARE REQUIREMENT

This specifies the hardware and the support software required to carry out the development.

Hardware Requirements

The selection of hardware is very important in the existence and proper working of any software. Then selection hardware, the size and capacity requirements are also important.

- Processor : 64 bit
- RAM : Min 3 GB
- Hard Disk : 10 GB

Software Requirements

One of the most difficult task is selecting software for the system, once the system requirements is found out then we have to determine whether a particular software package fits for those system requirements. The application requirement:

- OPERATING SYSTEM: WINDOWS 10
- FRONT END: HTML, CSS, JAVASCRIPT
- BACK END: Mysql
- IDE: Jetbrains Pycharm, Android studio
- TECHNOLOGY USED: PYTHON,JAVA
- FRAME WORK USED: Flask
- Libraries : torch,torchvision,Flask,pillow,matplotlib,tensorflow ,numpy