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An Energy Measuring System using MobileNetV2 Model

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Abstract

As health is currently a very prominent concern for many people. More options exist for measuring the health care of people. It is possible to measure the quality of health care in various ways. Taking quality food that has less calories boosts the mind and wellbeing as well as helps us to stay healthy. Regular health checks allow you to detect medical issues at the earliest stage and identify illnesses before they become problematic. Having control in the quantity of daily food consumption helps to avoid unnecessary sickness in the body. In this study, one of the measurement techniques used for measuring the total calories of the daily appetite is described. Measuring food calorie is a way to create awareness among the people about the food they have. These techniques can be used for teaching the public to control their diets according to calories measure.

Keywords: Energy, Measuring System, Image Segmentation, MobileNetV2

1. Introduction

A measuring system of the existing[14]achieves the desired result using the following tools. For deep learning tasks, such as creating models and predicting objects, the Keras tools are used. It is very easy to maintain and provides scalability. These models can be utilized for prediction, feature extraction, and fine-tuning. Pillow tool is a light weight image

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processing tool. Pre-processing the images of the dataset is performed with the Pillow tool. TheBackend framework for web application developed and the frontend with the machine learning deployment is done using the Streamlit tool . It is an opensource python library designed to facilitate the development of large streaming applications. A web scraping tool called Beautiful Soup extracts data from the internet in order to predict the expected results. NumPy tools support the mathematical features. The image matrix handling is carried out using a set of NumPy tools in Python. The goal of NumPy tool is manipulating the data. The estimation of calorie consumption level is monitored every day. The people who are overweight and obese can utilize this system to monitor their calorie measurement everyday [1]. It has been found that there are better ways of applying these models to object detection according to MobileNetV2. The important thing to note is that in addition to learning how to build mobile semantic segmentation models, also it is also important to keep note of the prediction of the energy level of the predicted object [2]. In order to improve hospital management, high quality care must be provided to people. Hospital management's performance enhances clinical quality measurement [4]. The new method for measuring facility management performance in primary health care (PHC) is used to measure the performance of facilities [7]. Image segmentation is carried out using the Mobilenetv2 architecture. A variety of datasets [15] were used to test the recognition of images. It was found that the MobileNetV2 model had higher accuracy rates than MobileNetV1 when compared with other models [11]. It provides accurate classification of an uploaded image.

2. An Overview of Energy Measuring System

Image segmentation and accurate prediction worked well with MobilenetV2 architecture. MobileNetV2 is a convolutional neural network architecture that seeks to perform well on mobile devices. It is an inverted residual structure where the connections are in between the bottleneck layers. Keras MobileNetV2 supports any input size less than 32x 32. The user can use this type of system to detect the calorie count of fruits and vegetables. People take more attention to their health. This study helps them identify the calorie of given model as well as helps them to have food that improve their health condition

In the present circumstances, even if people consume healthy food, the intentions behind high-quality meals may vary from person to person on such cases people find it difficult

to predict the calorie level for certain food. Calories are measurement of energy. The number of calories in a food or drink decides the amount of energy stored in that food item.

This study discussed about how much amount of energy can be consumed from fruits and vegetables. based on the study a simple web application that every user can use it for increasing or decreasing their energy level is suggested. User need to upload the Image of any fruit or vegetable. This system will automatically classify the image and it will give you the prediction about the name of fruit or vegetable, and now we have added one another module which will give you the energy level of the predicted object. This is web application, so user can directly use it in any browser. A user desires to find the calories of fruits and vegetable. An object's energy level can be predicted by utilizing a prediction and classification method. Web application is developed for the user to predict the calories of the predicted object. The MobileNetv2 architecture is used for image segmentation. It provides accurate classification of an uploaded image.

3. Architecture of Suggested Energy Measuring System

The Figure 1. Shows the workflow representation or pictorial view of Energy level measuring system utilized to measure the calorie of the fruits and vegetables which predicts the calorie count of given model. This Measuring System consists of following section Collection, Conversion, Confirmation. The people upload the image or model to the web application. The web application is very simple and easy to use by any user. It recognizes the model and resize it according to the available model from data store. The data store which contains the images of fruits and vegetables. The model converted into vectorized form. Then verifies the model with the data set. Once the confirmation done with imported model, the category is predicted. After the Originate the Category, the model projected. New module added with the system is to predict the calories of projected model. Then the number of calories displayed from the accessible dataset which is energy level for the model.

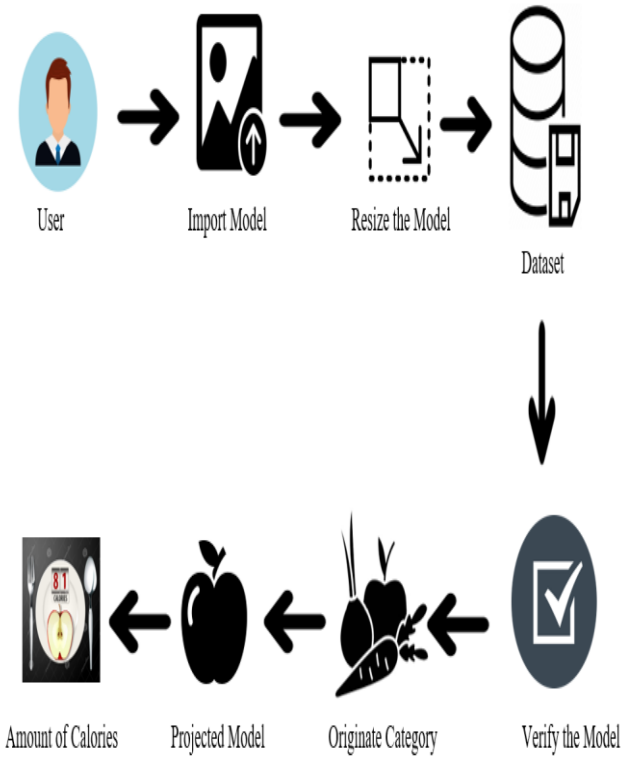

Figure 1. Architecture of Energy Measuring System

In Collection section, user import the image to web application. Streamlit builds the interactive web application with a variety of dataset generated. In Conversion section, html5lib's, plays a role to extract the image and convert it into vectorized form. Image vectorization is accomplished with Numpy tool. neural-enhance improves the image quality. neural enhance with NumPy tool performs the image manipulation in various aspects such as reducing the size of the image and transforming the color of the images. Then the category of the image is predicted. In confirmation section, Keras tools give the prediction of predicted category. From the category the expected image is projected. Then it displays the estimated amount of calorie for the image.

The flow chart of Energy measuring System shown in the Figure 2. Which represents the flow of the process involved in energy measuring System. In the beginning a user uploads the image on the web application. Then the received image can be resized to check with available data set. Before verifying the data, it filters similar data from the data set. After verification of the model, the category of model is recognized. Based on the recognized model, it predicts the count of calorie. Finally, it shows the amount of energy for the received image.

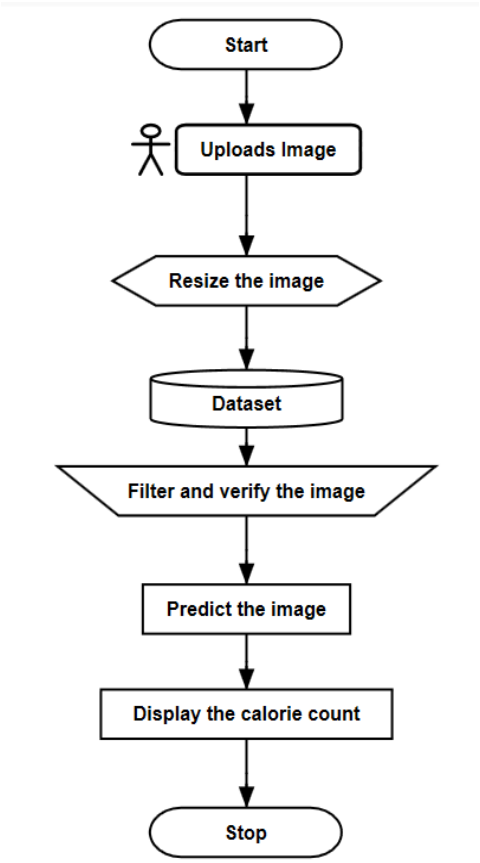

Figure 2. Flow Chart for Energy Measuring System

4. Progress of the Work to Date

The suggested work at present is in the process of web application development using the python platform, the front end and the backend of the application are to be developed using the python streamlit and MySQL database, the extraction of the images are designed to carry out using the htmlib's the neural enhance and the NumPy tool are employed for the purpose of image enhancement. The deep learning model used for the process of prediction at present is pretrained with "Fruits and Vegetables Image Recognition Dataset," Kaggle 2020. The deep learning model implementation is planned using the Keras. At present the work is in the process of connection establishment between different layers of the Web application. The future work is planned with the commencement of the web app for the public use

5. Conclusion

The suggested model of food calorie identification helps people to maintain a healthy food habit and ensure the quality of the food they take; they can also identify the calorie level for particular food using this application. As the calorie measures of fruits and vegetables is carried out in this work. it will be very helpful for the people with the food constraints. Enhancement of this study would be prediction of how much calorie has to be burnt to maintain a healthy life. As part of future work, we hope to implement this application for public usage.

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