PROJECT DEVELOPMENT PHASE

SPRINT-1 DATA COLLECTION,IMAGE PREPROCESSING

| TEAM -ID :	PNT2022TMID15882
PROJECT NAME:	AI-powered Nutrition Analyzer for Fitness Enthusiasts

DATA COLLECTION

Data Collection Collect images of different food items organized into subdirectories based on their respective names as shown in the project structure. Create folders of types of food items that need to be recognized. In this project, we have collected images of 5 types of food items apples, 'banana', 'orange', , they are saved in the respective subdirectories with their respective names.

DATASET LINK:

The link provided for accessing the test and train datasets for the CNN model is :

https://drive.google.com/drive/folders/1yNVuLA2hxIstOcDV58enyD7 4Y9drEs6Y?usp=sharing
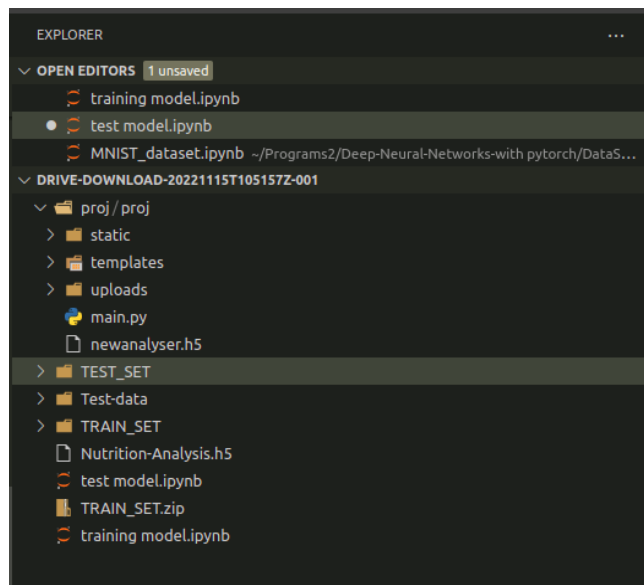
Name ↑	Owner	Last modified	File size
3_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB
4_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB
5_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB
6_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB
7_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB
8_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB
9_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB
30_100.jpg	Shivani Kapoor	10 Jun 2020 Shivani Kapoor	5 KB

IMAGE PREPROCESSING

We will be improving the image data that suppresses unwilling distortions or enhances some image features important for further processing, although performing some geometric transformations of images like rotation, scaling, translation, etc.

- **Import The ImageDataGenerator Library**

- **Configure ImageDataGenerator Class**

- **Apply Image DataGenerator Functionality To Training dataset And Testing dataset**

The Keras deep learning neural network library provides the capability to fit models using image data augmentation via the ImageDataGenerator class.

There are five main types of data augmentation techniques for image data; specifically:

Image shifts via the width_shift_range and height_shift_range arguments. The image flips via the horizontal_flip and vertical_flip arguments.Image rotations via the rotation_range argument Image brightness via the brightness_range argument. Image zoom via the zoom_range argument.

Let us apply ImageDataGenerator functionality to Train dataset and Test dataset by using the following code
For Training set using flow_from_directory function.

```
1  import numpy as np
2  import tensorflow
3  from tensorflow.keras.models import Sequential
4  from tensorflow.keras import layers
5  from tensorflow.keras.layers import Dense,Flatten
6  from tensorflow.keras.layers import Conv2D,MaxPooling2D
7  from keras.preprocessing.image import ImageDataGenerator
```

```
1  train_datagen=ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_flip=True)
2  test_datagen=ImageDataGenerator(rescale=1./255)
```

```
1  x_train = train_datagen.flow_from_directory(r'TRAIN_SET',
2                                              target_size=(64, 64),
3                                              batch_size=5,
4                                              color_mode='rgb',
5                                              class_mode='sparse')
6
7  x_test = test_datagen.flow_from_directory(r'TEST_SET',
8                                              target_size=(64, 64),
9                                              batch_size=5,
10                                             color_mode='rgb',
11                                             class_mode='sparse')
12
```

```
Found 2626 images belonging to 5 classes.
Found 1055 images belonging to 5 classes.
```

```
1  print(x_train.class_indices)
```

```
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
```

```
1  from collections import Counter as ct
2  ct(x_train.labels)
```

```
Counter({0: 606, 1: 445, 2: 479, 3: 621, 4: 475})
```