# SPRINT -1

DATE	25 October 2022
TEAM ID	PNT2022TMID30520
PROJECT NAME	AI-powered Nutrition Analyzer for Fitness Enthusiasts

AI-POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS

Food is essential for human life and has been the concern of many healthcare conventions. Nowadays new dietary assessment and nutrition analysis tools enable more opportunities to help people understand their daily eating habits, exploring nutrition patterns and maintain a healthy diet. Nutritional analysis is the process of determining the nutritional content of food. It is a vital part of analytical chemistry that provides information about the chemical composition, processing, quality control and contamination of food.

The main aim of the project is to building a model which is used for classifying the fruit depends on the different characteristics like colour, shape, texture etc. Here the user can capture the images of different fruits and then the image will be sent the trained model. The model analyses the image and detect the nutrition based on the fruits like (Sugar, Fibre, Protein, Calories, etc.).

Technical Architecture:
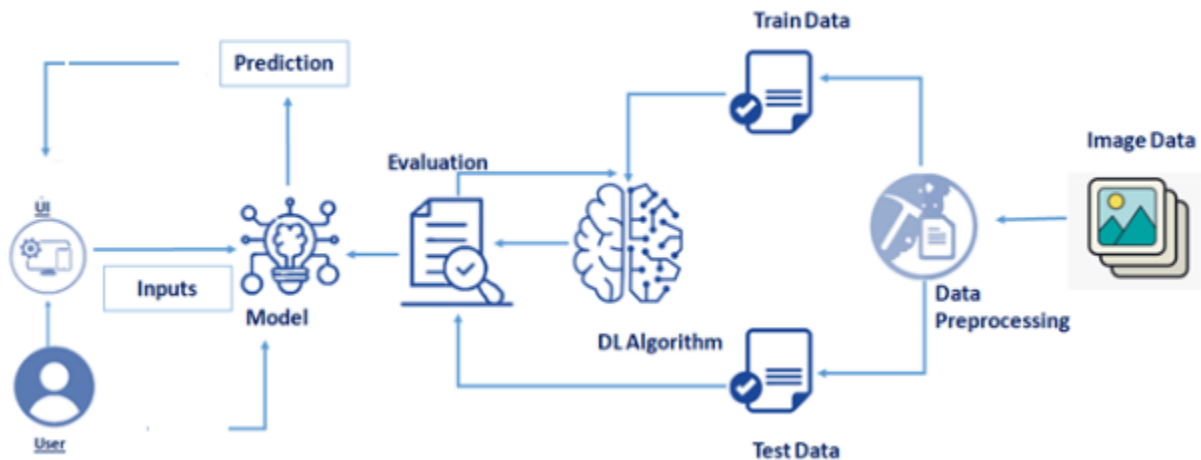
PROJECT OBJECTIVES

By the end of this project you will:

- ➢ know fundamental concepts and techniques of Convolutional Neural Network.

- ➢ gain a broad understanding of image data.

- ➢ Knowhow to pre-process/clean the data using different data preprocessing techniques.

- ➢ know how to build a web application using the Flask framework.

PROJECT FLOW

- • The user interacts with the UI (User Interface) and give the image as input.

- • Then the input image is then pass to our flask application,

- • And finally with the help of the model which we build we will classify the result and showcase it on the UI.

To accomplish this, we have to complete all the activities and tasks listed below

- • **Data Collection.**
  - • Collect the dataset or Create the dataset

- • **Data Preprocessing.**
  - • Import the ImageDataGenerator library
  - • Configure ImageDataGenerator class
  - • ApplyImageDataGenerator functionality to Trainset and Testset

- • **Model Building**
  - • Import the model building Libraries
  - • Initializing the model
  - • Adding Input Layer
  - • Adding Hidden Layer
  - • Adding Output Layer
  - • Configure the Learning Process
  - • Training and testing the model

- - Save the Model

- - **Application Building**
  - - Create an HTML file
  - - Build Python Code

PREREQUISITES FOR ARTIFICIAL INTELLIGENCE

Hardware Specifications:

- - Windows (minimum 10), Mac & Linux
- - Ram - 4GB (minimum)
- - Hard Disk - 100GB (minimum)
- - Processor - Intel i3 (minimum), Mac M1

Software Specifications:

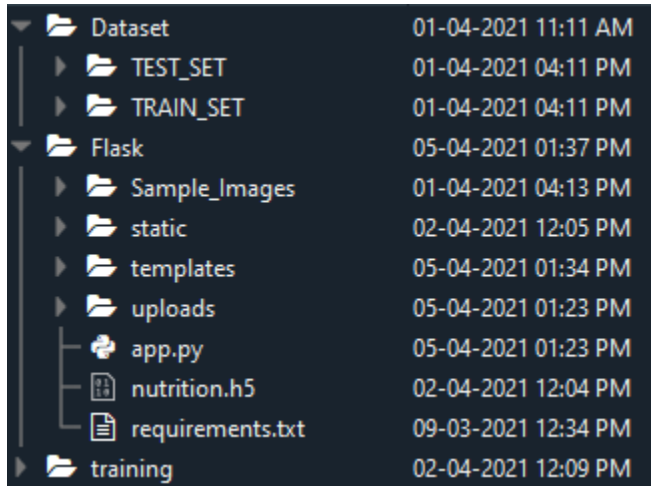- - Anaconda Navigator - https://www.anaconda.com/products/distribution
- - Jupyter notebook.
- - Google Colab - https://colab.research.google.com/
- - Spyder / VS Code / Pycharm

IBM:

- - IBM Account Creation - https://vimeo.com/742609168/1824d26a5b
  (Follow this video for IBMSkill Build Account Creation)
- - IBM Skill Build - https://www.ibm.com/academic/home
- - Webmail - https://sg2plmcpnl492529.prod.sin2.secureserver.net:2096/
- - IBM Cloud - https://cloud.ibm.com/login

PROJECT STRUCTURE

Create a Project folder that contains files as shown below

```
▼ 📂 Dataset                  01-04-2021 11:11 AM
  ▶ 📂 TEST_SET               01-04-2021 04:11 PM
  ▶ 📂 TRAIN_SET              01-04-2021 04:11 PM
▼ 📂 Flask                    05-04-2021 01:37 PM
  ▶ 📂 Sample_Images          01-04-2021 04:13 PM
  ▶ 📂 static                 02-04-2021 12:05 PM
  ▶ 📂 templates              05-04-2021 01:34 PM
  ▶ 📂 uploads                05-04-2021 01:23 PM
    🐍 app.py                 05-04-2021 01:23 PM
    📄 nutrition.h5           02-04-2021 12:04 PM
    📄 requirements.txt       09-03-2021 12:34 PM
▶ 📂 training                 02-04-2021 12:09 PM
```

- • Dataset folder contains the training and testing images for training our model.

- • We are building a Flask Application that needs HTML pages stored in the templates folder and a python script app.py for serverside scripting.

- • we need the model which is saved and the saved model in this content is a nutrition.h5

- • templates folder contains home.html, image.html, imageprediction.html pages.

- • Statis folder had the css and js files which are necessary for styling the html page and for executing the actions.

- • Uploads folder will have the uploaded images(which are already tested).

- • Sample_images will have the images which are used to test or upload.

- - Training folder contains the trained model file.