

Sprint-2

Model Building

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| Date | 08 November 2022 |
| Team ID | PNT2022TMID19478 |
| Project Name | AI-powered Nutrition Analyzer for Fitness Enthusiasts |
| Maximum Marks | |

Dataset:

- In our dataset we have collected images of the five variety of fruits.
 - Apple
 - Orange
 - Pineapple
 - Watermelon
 - Banana

Drive link : https://drive.google.com/file/d/1jzDjV7jYclzllieagaJdubMJ3YeLsry1/view?usp=share_link

Image Pre-processing:

- Import The ImageDataGenerator Library
- Configure ImageDataGenerator Class
- Apply Image DataGenerator Functionality To Trainset And Testset

Model Building:

- Importing The Model Building Libraries
- Initializing The Model
- Adding CNN Layers
- Adding Dense Layers
- Configure The Learning Process

Model Building

1. Importing The Model Building Libraries

```
import numpy as np
import tensorflow
from tensorflow.keras.models import Sequential
from tensorflow.keras import layers
from tensorflow.keras.layers import Dense, Flatten
from tensorflow.keras.layers import Conv2D, MaxPooling2D, Dropout
```

2. Initializing The Model

```
model = Sequential()
```

3. Adding CNN Layers

```
# Initializing the CNN
classifier = Sequential()

# First convolution layer and pooling
classifier.add(Conv2D(32, (3, 3), input_shape=(64, 64, 3), activation='relu'))
classifier.add(MaxPooling2D(pool_size=(2, 2)))

# Second convolution layer and pooling
classifier.add(Conv2D(32, (3, 3), activation='relu'))

# input_shape is going to be the pooled feature maps from the previous convolution layer
classifier.add(MaxPooling2D(pool_size=(2, 2)))

# Flattening the layers
classifier.add(Flatten())
```

4. Adding Dense Layers

```

classifier.add(Dense(units=128, activation='relu'))
classifier.add(Dense(units=5, activation='softmax'))

```

```

#summary of our model
classifier.summary()

```

Model: "sequential_1"

| Layer (type) | Output Shape | Param # |
|--------------------------------|--------------------|---------|
| ===== | | |
| conv2d (Conv2D) | (None, 62, 62, 32) | 896 |
| max_pooling2d (MaxPooling2D) | (None, 31, 31, 32) | 0 |
| conv2d_1 (Conv2D) | (None, 29, 29, 32) | 9248 |
| max_pooling2d_1 (MaxPooling2D) | (None, 14, 14, 32) | 0 |
| flatten (Flatten) | (None, 6272) | 0 |
| dense (Dense) | (None, 128) | 802944 |
| dense_1 (Dense) | (None, 5) | 645 |
| ===== | | |
| Total params: 813,733 | | |
| Trainable params: 813,733 | | |
| Non-trainable params: 0 | | |
| ===== | | |

5. Configure The Learning Process

```

# Compiling the CNN
# categorical_crossentropy for more than 2
classifier.compile(optimizer='adam', loss='sparse_categorical_crossentropy', metrics=['acc

```