# Model Building For Fruit Disease Prediction

**Model is build using augmented and preprocessed Dataset images of Fruits**

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| Project Name | Fertilizers Recommendation System For Disease Prediction |

## 1. Import the model building Libraries

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense,Convolution2D,MaxPooling2D,Fl
atten
import matplotlib.pyplot as plt
import numpy as np
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
```

## 2. Initializing the model

```
model=Sequential()
```

## 3. Adding CNN Layers

```
model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
```

## 4. Adding Dense Layers

```
32*(3*3*3+1)
model.add(Dense(300,activation='relu'))
model.add(Dense(150,activation='relu'))
model.add(Dense(6,activation='softmax'))
```

## 5. Train and Save the model

```
history=model.fit(x_train,steps_per_epoch=len(x_train),validation_data=x_test,validation_steps=len(x_test),epochs=10)
```

```
Epoch 1/10
225/225 [==============================] - 201s 890ms/step - loss: 0.9345 - accuracy: 0.7975 - val_loss: 0.3362 - val_accuracy: 0.8695
Epoch 2/10
225/225 [==============================] - 190s 844ms/step - loss: 0.2634 - accuracy: 0.9112 - val_loss: 0.1930 - val_accuracy: 0.9276
Epoch 3/10
225/225 [==============================] - 184s 816ms/step - loss: 0.2115 - accuracy: 0.9261 - val_loss: 0.1744 - val_accuracy: 0.9419
Epoch 4/10
225/225 [==============================] - 182s 809ms/step - loss: 0.1819 - accuracy: 0.9352 - val_loss: 0.1265 - val_accuracy: 0.9555
```

```
model.save('fruitdata.h5')
```