Mount Drive

```
from google.colab import drive
drive.mount('/content/drive')
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).
```

Prepare the Dataset

Import library

```
!pip install tensorflowjs
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Collecting tensorflowjs
  Downloading tensorflowjs-3.18.0-py3-none-any.whl (77 kB)
     |████████████████████████████████| 77 kB 3.7 MB/s
Collecting packaging~=20.9
  Downloading packaging-20.9-py2.py3-none-any.whl (40 kB)
     |████████████████████████████████| 40 kB 7.0 MB/s
Requirement already satisfied: tensorflow-hub<0.13,>=0.7.0 in /usr/local/lib/python3.7/dist-packages (from tensorflowjs) (0.12.0)
Requirement already satisfied: six<2,>=1.12.0 in /usr/local/lib/python3.7/dist-packages (from tensorflowjs) (1.15.0)
Requirement already satisfied: tensorflow<3,>=2.1.0 in /usr/local/lib/python3.7/dist-packages (from tensorflowjs) (2.8.0+zzzcolab20220506162203)
Requirement already satisfied: pyparsing>=2.0.2 in /usr/local/lib/python3.7/dist-packages (from packaging~=20.9->tensorflowjs) (3.0.9)
Requirement already satisfied: setuptools in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (57.4.0)
Requirement already satisfied: libclang>=9.0.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (14.0.1)
Requirement already satisfied: numpy>=1.20 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (1.21.6)
Requirement already satisfied: typing-extensions>=3.6.6 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (4.2.0)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (1.46.1)
Requirement already satisfied: gast>=0.2.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (0.5.3)
Requirement already satisfied: absl-py>=0.4.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (1.0.0)
Requirement already satisfied: tensorboard<2.9,>=2.8 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (2.8.0)
Requirement already satisfied: keras<2.9,>=2.8.0rc0 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (2.8.0)
Requirement already satisfied: protobuf>=3.9.2 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (3.17.3)
Requirement already satisfied: termcolor>=1.1.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (1.1.0)
Requirement already satisfied: wrapt>=1.11.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (1.14.1)
Requirement already satisfied: keras-preprocessing>=1.1.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (1.1.2)
Requirement already satisfied: google-pasta>=0.1.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (0.2.0)
Requirement already satisfied: opt-einsum>=2.3.2 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (3.3.0)
Collecting tf-estimator-nightly==2.8.0.dev2021122109
  Downloading tf_estimator_nightly-2.8.0.dev2021122109-py2.py3-none-any.whl (462 kB)
     |████████████████████████████████| 462 kB 32.6 MB/s
Requirement already satisfied: h5py>=2.9.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (3.1.0)
Requirement already satisfied: astunparse>=1.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (1.6.3)
Requirement already satisfied: flatbuffers>=1.12 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (2.0)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.23.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow<3,>=2.1.0->tensorflowjs) (0.26.0)
Requirement already satisfied: wheel<1.0,>=0.23.0 in /usr/local/lib/python3.7/dist-packages (from astunparse>=1.6.0->tensorflow<3,>=2.1.0->tensorflowjs) (0.37.1)
Requirement already satisfied: cached-property in /usr/local/lib/python3.7/dist-packages (from h5py>=2.9.0->tensorflow<3,>=2.1.0->tensorflowjs) (1.5.2)
Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (0
Requirement already satisfied: requests<3,>=2.21.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (2.23.0)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (1.8.1)
Requirement already satisfied: google-auth<3,>=1.6.3 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (1.35.0)
Requirement already satisfied: werkzeug>=0.11.15 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (1.0.1)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (3.3.7)
Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in /usr/local/lib/python3.7/dist-packages (from tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (0.4.6
Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (4
Requirement already satisfied: cachetools<5.0,>=2.0.0 in /usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorfl
Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflc
Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.7/dist-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.9,>=2.8->tensorflow<3,>=2
Requirement already satisfied: importlib-metadata>=4.4 in /usr/local/lib/python3.7/dist-packages (from markdown>=2.6.8->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.7/dist-packages (from importlib-metadata>=4.4->markdown>=2.6.8->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->te
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python3.7/dist-packages (from pyasn1-modules>=0.2.1->google-auth<3,>=1.6.3->tensorboard<2.9,>=2.8->tensorflc
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard<2.9,>=2.8->tensorflow<3,>=
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs) (2.10
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard<2.9,>=2.8->tensorflow<3,>=2.1.0->tensorflowjs)
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.7/dist-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.9,>=2.8-
Installing collected packages: tf-estimator-nightly, packaging, tensorflowjs
  Attempting uninstall: packaging
    Found existing installation: packaging 21.3
    Uninstalling packaging-21.3:
      Successfully uninstalled packaging-21.3
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the source of the following dependency conflicts.
datascience 0.10.6 requires folium==0.2.1, but you have folium 0.8.3 which is incompatible.
Successfully installed packaging-20.9 tensorflowjs-3.18.0 tf-estimator-nightly-2.8.0.dev2021122109
WARNING: The following packages were previously imported in this runtime:
  [packaging]
You must restart the runtime in order to use newly installed versions.
RESTART RUNTIME
```

```
import tensorflow as tf
import subprocess
```

Copy dataset from drive

```
rm -rf /content/model10Class.zip
```

```
cp -R /content/drive/MyDrive/indo_food_datasets/jadi/food-dataset-500 /content/
```

Unzip file

```
import zipfile

# Extract the archive
local_zip = './food-dataset-500.zip'
zip_ref = zipfile.ZipFile(local_zip, 'r')
zip_ref.extractall('tmp/food-dataset')
zip_ref.close()

# local_zip = './rps-test-set.zip'
# zip_ref = zipfile.ZipFile(local_zip, 'r')
```

```
# zip_ref.extractall('tmp/rps-test')
# zip_ref.close()
```

Delete unused dataset

```
food_classes = ['soto','pepes', 'mendoan', 'lumpia', 'martabak']

for food_class in food_classes:
  subprocess.run(["rm", "-rf", "/content/food-dataset-500/test/"+food_class])
  subprocess.run(["rm", "-rf", "/content/food-dataset-500/train/"+food_class])
```

```
cp -R /content/food-dataset-500/train /content/drive/MyDrive/indo_food_datasets/jadi/food-dataset-500
```

```
ls /content/drive/MyDrive/indo_food_datasets/jadi/food-dataset-500/train/klepon | wc -l
```

Model

Build Model Layer

```
model = tf.keras.models.Sequential([
    # Note the input shape is the desired size of the image 150x150 with 3 bytes color
    # This is the first convolution
    tf.keras.layers.Conv2D(32, (3,3), activation='relu', input_shape=(150, 150, 3)),
    tf.keras.layers.MaxPooling2D(),
    # The second convolution
    tf.keras.layers.Conv2D(32, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(),
    # The third convolution
    tf.keras.layers.Conv2D(64, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(),
    # The fourth convolution
    # tf.keras.layers.Conv2D(128, (3,3), activation='relu'),
    # tf.keras.layers.MaxPooling2D(2,2),
    # Flatten the results to feed into a DNN
    tf.keras.layers.Flatten(),
    #tf.keras.layers.Dropout(0.5),
    # 512 neuron hidden layer
    tf.keras.layers.Dense(128, activation='relu'),
    tf.keras.layers.Dense(10, activation='softmax')
])

# Print the model summary
model.summary()
```

```
Model: "sequential_2"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_6 (Conv2D)           (None, 148, 148, 32)      896

 max_pooling2d_6 (MaxPooling  (None, 74, 74, 32)       0
 2D)

 conv2d_7 (Conv2D)           (None, 72, 72, 32)        9248

 max_pooling2d_7 (MaxPooling  (None, 36, 36, 32)       0
 2D)

 conv2d_8 (Conv2D)           (None, 34, 34, 64)        18496

 max_pooling2d_8 (MaxPooling  (None, 17, 17, 64)       0
 2D)

 flatten_2 (Flatten)         (None, 18496)             0

 dense_4 (Dense)             (None, 128)               2367616

 dense_5 (Dense)             (None, 10)                1290

=================================================================
Total params: 2,397,546
Trainable params: 2,397,546
Non-trainable params: 0
_________________________________________________________________
```

Compile Model

```
# Set the training parameters
model.compile(loss = 'categorical_crossentropy', optimizer=tf.keras.optimizers.Adam(), metrics=['accuracy'])
```

Prepare the ImageDataGenerator

```
from keras_preprocessing.image import ImageDataGenerator

TRAINING_DIR = "/content/food-dataset-500/train"
training_datagen = ImageDataGenerator(
      rescale = 1./255,
        rotation_range=40,
      width_shift_range=0.2,
      height_shift_range=0.2,
      shear_range=0.2,
      zoom_range=0.2,
      horizontal_flip=True,
      fill_mode='nearest')

VALIDATION_DIR = "/content/food-dataset-500/test"
validation_datagen = ImageDataGenerator(rescale = 1./255)

train_generator = training_datagen.flow_from_directory(
    TRAINING_DIR,
    target_size=(150,150),
    class_mode='categorical',
  batch_size=150
```

```
)

validation_generator = validation_datagen.flow_from_directory(
    VALIDATION_DIR,
    target_size=(150,150),
    class_mode='categorical',
  batch_size=150
  #batch_size=126
)
```

```
     Found 4160 images belonging to 10 classes.
     Found 1000 images belonging to 10 classes.
```

Train the model and evaluate the results

Define Callback

```
class myCallback(tf.keras.callbacks.Callback):
  def on_epoch_end(self, epoch, logs={}):
    '''
    Halts the training after reaching 60 percent accuracy

    Args:
      epoch (integer) - index of epoch (required but unused in the function definition below)
      logs (dict) - metric results from the training epoch
    '''

    # Check accuracy
    # if(logs.get('loss') < 0.4):

    #   # Stop if threshold is met
    #   print("\nLoss is lower than 0.4 so cancelling training!")
    #   self.model.stop_training = True
    if(logs.get('val_accuracy') > 0.8 and logs.get('accuracy') > 0.8):
      # Stop if threshold is met
      print("\nVal_accuracy is higher than 0.8 so cancelling training!")
      self.model.stop_training = True

# Instantiate class
callbacks = myCallback()
```

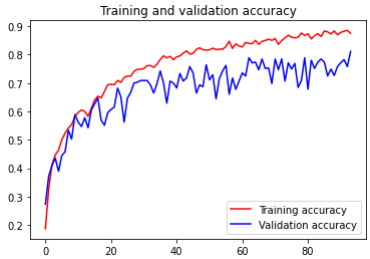
Train Model

```
history = model.fit(train_generator, epochs=100, validation_data = validation_generator, verbose = 1, validation_steps=3, callbacks=[callbacks])
```

```
Epoch 67/100
28/28 [==============================] - 24s 844ms/step - loss: 0.4337 - accuracy: 0.8466 - val_loss: 0.6642 - val_accuracy: 0.7844
Epoch 68/100
28/28 [==============================] - 24s 845ms/step - loss: 0.4294 - accuracy: 0.8495 - val_loss: 0.7643 - val_accuracy: 0.7511
Epoch 69/100
28/28 [==============================] - 24s 861ms/step - loss: 0.4094 - accuracy: 0.8546 - val_loss: 0.8274 - val_accuracy: 0.7533
Epoch 70/100
28/28 [==============================] - 24s 849ms/step - loss: 0.4232 - accuracy: 0.8498 - val_loss: 0.9778 - val_accuracy: 0.6978
Epoch 71/100
28/28 [==============================] - 24s 850ms/step - loss: 0.4228 - accuracy: 0.8570 - val_loss: 0.7438 - val_accuracy: 0.7844
Epoch 72/100
28/28 [==============================] - 24s 845ms/step - loss: 0.4532 - accuracy: 0.8361 - val_loss: 0.9596 - val_accuracy: 0.7467
Epoch 73/100
28/28 [==============================] - 24s 851ms/step - loss: 0.4464 - accuracy: 0.8495 - val_loss: 0.7016 - val_accuracy: 0.7844
Epoch 74/100
28/28 [==============================] - 24s 845ms/step - loss: 0.3993 - accuracy: 0.8584 - val_loss: 0.9783 - val_accuracy: 0.7067
Epoch 75/100
28/28 [==============================] - 24s 850ms/step - loss: 0.3839 - accuracy: 0.8683 - val_loss: 0.7389 - val_accuracy: 0.7711
Epoch 76/100
28/28 [==============================] - 24s 851ms/step - loss: 0.3938 - accuracy: 0.8613 - val_loss: 0.8933 - val_accuracy: 0.7489
Epoch 77/100
28/28 [==============================] - 24s 846ms/step - loss: 0.4107 - accuracy: 0.8589 - val_loss: 0.7515 - val_accuracy: 0.7689
Epoch 78/100
28/28 [==============================] - 24s 869ms/step - loss: 0.4120 - accuracy: 0.8608 - val_loss: 1.0870 - val_accuracy: 0.6844
Epoch 79/100
28/28 [==============================] - 24s 851ms/step - loss: 0.3620 - accuracy: 0.8760 - val_loss: 1.0752 - val_accuracy: 0.7089
Epoch 80/100
28/28 [==============================] - 24s 850ms/step - loss: 0.3813 - accuracy: 0.8673 - val_loss: 0.7793 - val_accuracy: 0.7889
Epoch 81/100
28/28 [==============================] - 24s 848ms/step - loss: 0.3696 - accuracy: 0.8733 - val_loss: 1.2655 - val_accuracy: 0.6778
Epoch 82/100
28/28 [==============================] - 24s 851ms/step - loss: 0.4006 - accuracy: 0.8553 - val_loss: 0.7027 - val_accuracy: 0.7800
Epoch 83/100
28/28 [==============================] - 24s 854ms/step - loss: 0.3970 - accuracy: 0.8659 - val_loss: 0.8600 - val_accuracy: 0.7511
Epoch 84/100
28/28 [==============================] - 24s 849ms/step - loss: 0.3549 - accuracy: 0.8740 - val_loss: 0.7693 - val_accuracy: 0.7733
Epoch 85/100
28/28 [==============================] - 24s 844ms/step - loss: 0.3828 - accuracy: 0.8635 - val_loss: 0.7532 - val_accuracy: 0.7844
Epoch 86/100
28/28 [==============================] - 24s 851ms/step - loss: 0.3348 - accuracy: 0.8832 - val_loss: 0.7003 - val_accuracy: 0.7733
Epoch 87/100
28/28 [==============================] - 24s 843ms/step - loss: 0.3501 - accuracy: 0.8800 - val_loss: 0.9837 - val_accuracy: 0.7244
Epoch 88/100
28/28 [==============================] - 24s 857ms/step - loss: 0.3618 - accuracy: 0.8726 - val_loss: 0.8463 - val_accuracy: 0.7489
Epoch 89/100
28/28 [==============================] - 24s 844ms/step - loss: 0.3405 - accuracy: 0.8832 - val_loss: 0.9606 - val_accuracy: 0.7267
Epoch 90/100
28/28 [==============================] - 24s 845ms/step - loss: 0.3651 - accuracy: 0.8697 - val_loss: 0.8629 - val_accuracy: 0.7578
Epoch 91/100
28/28 [==============================] - 24s 846ms/step - loss: 0.3448 - accuracy: 0.8781 - val_loss: 0.7417 - val_accuracy: 0.7711
Epoch 92/100
28/28 [==============================] - 24s 844ms/step - loss: 0.3479 - accuracy: 0.8822 - val_loss: 0.7605 - val_accuracy: 0.7822
Epoch 93/100
28/28 [==============================] - 24s 851ms/step - loss: 0.3378 - accuracy: 0.8853 - val_loss: 0.7863 - val_accuracy: 0.7578
Epoch 94/100
28/28 [==============================] - ETA: 0s - loss: 0.3578 - accuracy: 0.8750
Val_accuracy is higher than 0.8 so cancelling training!
28/28 [==============================] - 24s 845ms/step - loss: 0.3578 - accuracy: 0.8750 - val_loss: 0.7164 - val_accuracy: 0.8111
```

```
import matplotlib.pyplot as plt

# Plot the results
acc = history.history['accuracy']
val_acc = history.history['val_accuracy']
```

```
loss = history.history['loss']
val_loss = history.history['val_loss']

epochs = range(len(acc))

plt.plot(epochs, acc, 'r', label='Training accuracy')
plt.plot(epochs, val_acc, 'b', label='Validation accuracy')
plt.title('Training and validation accuracy')
plt.legend(loc=0)
plt.figure()

plt.show()
```




```
<Figure size 432x288 with 0 Axes>
```

Model Prediction

```
## CODE BLOCK FOR NON-SAFARI BROWSERS
## SAFARI USERS: PLEASE SKIP THIS BLOCK AND RUN THE NEXT ONE INSTEAD

import numpy as np
from google.colab import files
from keras.preprocessing import image

uploaded = files.upload()

for fn in uploaded.keys():

  # predicting images
  path = fn
  img = image.load_img(path, target_size=(150, 150))
  x = image.img_to_array(img)
  x = np.expand_dims(x, axis=0)

  images = np.vstack([x])
  classes = model.predict(images, batch_size=10)
  print(fn)
  print(classes)
```

Choose Files 10 files

- **945.png**(image/png) - 10606 bytes, last modified: 5/13/2022 - 100% done
- **946.png**(image/png) - 11239 bytes, last modified: 5/13/2022 - 100% done
- **950.png**(image/png) - 8406 bytes, last modified: 5/13/2022 - 100% done
- **952.png**(image/png) - 9228 bytes, last modified: 5/13/2022 - 100% done
- **956.png**(image/png) - 13426 bytes, last modified: 5/13/2022 - 100% done
- **969.png**(image/png) - 12597 bytes, last modified: 5/13/2022 - 100% done
- **977.png**(image/png) - 13368 bytes, last modified: 5/13/2022 - 100% done
- **980.png**(image/png) - 12148 bytes, last modified: 5/13/2022 - 100% done
- **982.png**(image/png) - 11236 bytes, last modified: 5/13/2022 - 100% done
- **1001.png**(image/png) - 8701 bytes, last modified: 5/13/2022 - 100% done

```
Saving 945.png to 945 (2).png
Saving 946.png to 946 (1).png
Saving 950.png to 950 (2).png
Saving 952.png to 952 (2).png
Saving 956.png to 956 (1).png
Saving 969.png to 969 (1).png
Saving 977.png to 977 (1).png
Saving 980.png to 980 (2).png
Saving 982.png to 982 (1).png
Saving 1001.png to 1001 (1).png
945.png
[[0. 0. 1. 0. 0. 0. 0. 0. 0. 0.]]
946.png
[[7.4979746e-23 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
  0.0000000e+00 0.0000000e+00 1.0000000e+00 0.0000000e+00 0.0000000e+00]]
950.png
[[0. 0. 0. 0. 0. 0. 1. 0. 0. 0.]]
952.png
[[0. 0. 0. 0. 0. 0. 1. 0. 0. 0.]]
956.png
[[0. 0. 0. 0. 0. 0. 1. 0. 0. 0.]]
969.png
[[0. 0. 0. 0. 0. 0. 1. 0. 0. 0.]]
977.png
[[0. 0. 0. 0. 0. 0. 1. 0. 0. 0.]]
980.png
[[0. 0. 0. 0. 0. 0. 1. 0. 0. 0.]]
982.png
[[2.3510841e-01 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
  0.0000000e+00 2.9528758e-28 7.6489162e-01 0.0000000e+00 0.0000000e+00]]
1001.png
[[1. 0. 0. 0. 0. 0. 0. 0. 0. 0.]]
```

```
import os
import numpy as np
from google.colab import files
from keras.preprocessing import image
from pathlib import Path


predictDir = [x[0] for x in os.walk('/content/drive/MyDrive/indo_food_datasets/test/')]
del predictDir[0]
predictDir.sort()
presentase = 0
index = 0
```

```
for folder in predictDir:
  print('================================================================')
  print('Predict food: ', folder)
  print('================================================================')
  for fn in Path(folder).glob('*.png'):
    # predicting images
    path = os.path.join(folder,fn)
    img = image.load_img(path, target_size=(150, 150))
    x = image.img_to_array(img)
    x = np.expand_dims(x, axis=0)

    images = np.vstack([x])
    classes = model.predict(images, batch_size=10)
    print(fn)
    print(classes)
    print(classes[0,index])
    if classes[0,index] >= np.max(classes) :
      presentase += 1
  presentase = presentase/10
  print('Presentase untuk {} adalah {}'.format(folder, str(presentase)))
  index += 1
  presentase = 0
```

```
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tahu petis/945.png
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tahu petis/950.png
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tahu petis/952.png
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tahu petis/964.png
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tahu petis/967.png
    [[0. 0. 0. 0. 0. 0. 1. 0. 0.]]
    0.0
    /content/drive/MyDrive/indo_food_datasets/test/tahu petis/970.png
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tahu petis/986.png
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    1.0
    Presentase untuk /content/drive/MyDrive/indo_food_datasets/test/tahu petis adalah 0.9
    ================================================================
    Predict food:  /content/drive/MyDrive/indo_food_datasets/test/tumpeng
    ================================================================
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/436.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/687.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/39.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/513.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/295.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/167.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/165.png
    [[0. 0. 0. 0. 0. 0. 0. 1. 0.]]
    0.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/383.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/112.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    /content/drive/MyDrive/indo_food_datasets/test/tumpeng/596.png
    [[0. 0. 0. 0. 0. 0. 0. 0. 1.]]
    1.0
    Presentase untuk /content/drive/MyDrive/indo_food_datasets/test/tumpeng adalah 0.9
```

```
import time
saved_model_path = "./saved_model/{}.h5".format(int(time.time()))

model.save(saved_model_path)


!tensorflowjs_converter --input_format=keras {saved_model_path} ./saved_model/js/


!zip -r 8class_nastartumpeng_150batch_V2.zip saved_model
```

```
       adding: saved_model/ (stored 0%)
       adding: saved_model/js/ (stored 0%)
       adding: saved_model/js/group1-shard3of3.bin (deflated 7%)
       adding: saved_model/js/group1-shard2of3.bin (deflated 7%)
       adding: saved_model/js/model.json (deflated 82%)
       adding: saved_model/js/group1-shard1of3.bin (deflated 7%)
       adding: saved_model/1653899443.h5 (deflated 24%)
```

Finish

✓ 3s completed at 3:55 PM