

DAFTAR RIWAYAT HIDUP



Muhammad Kholilullah lahir di Kabupaten Probolinggo, Provinsi Jawa Timur, Pada tanggal 29 April 1998. Penulis lahir dari pasangan Nur Salam dan Alm. Mislama yang merupakan anak tunggal.

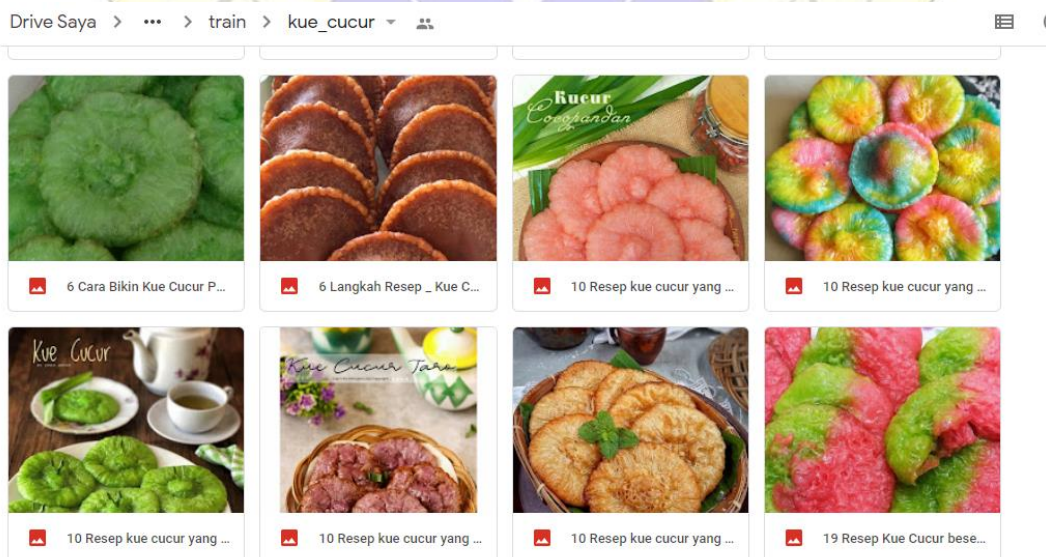
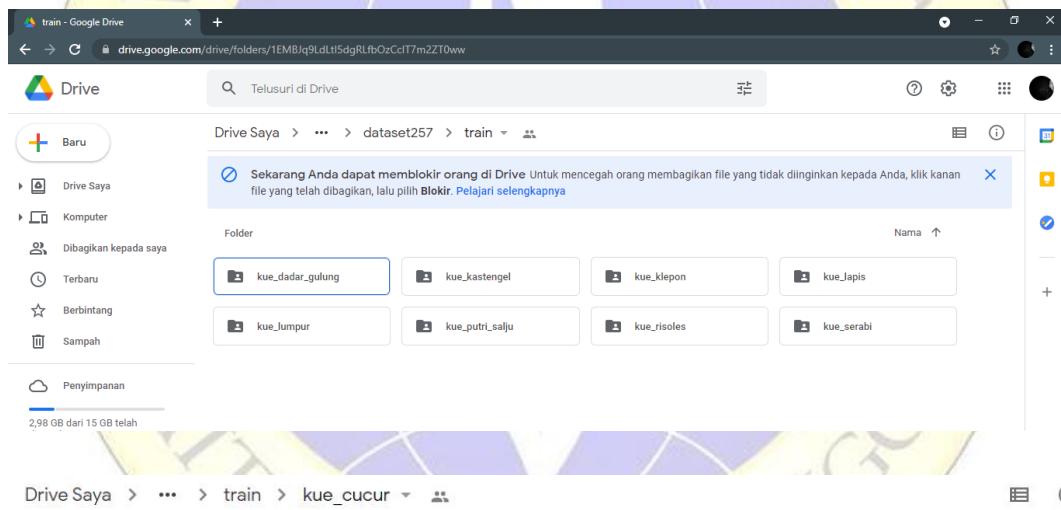
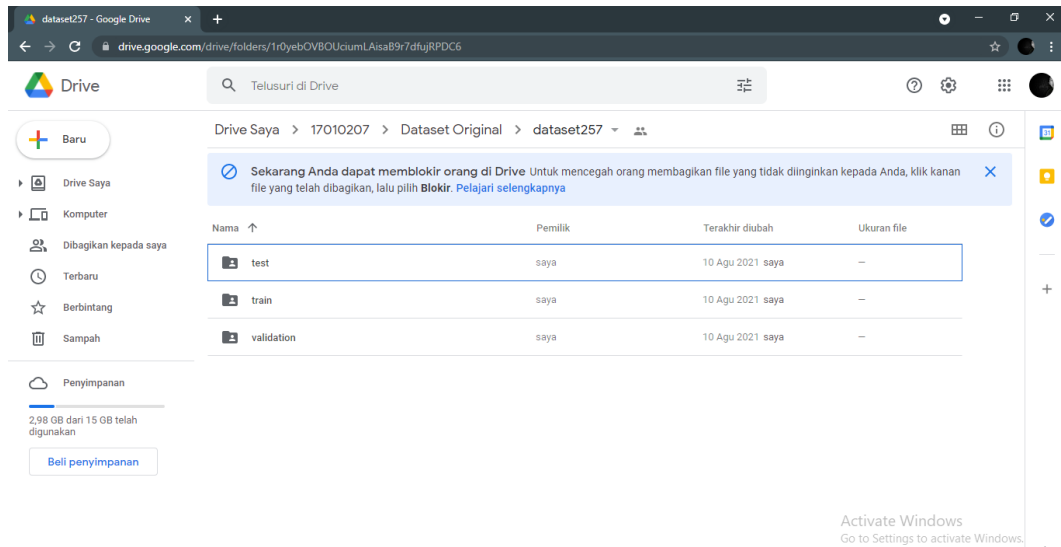
Pada tahun 2003 penulis masuk Tk Islam Ar-Ridho – Jakarta Barat lulus pada tahun 2004. Kemudian melanjutkan Sekolah Tingkat Dasar (SD) di SDN Kedungsari – Kec. Maron, Kab. Probolinggo, lulus pada tahun 2010. Kemudian melanjutkan Sekolah Menengah Atas (SMP) di SMPN 1 Banyuwangi Kec. Banyuwangi, Kab. Probolinggo, lulus pada tahun 2013. Kemudian melanjutkan Sekolah Menengah Kejuruan (SMK) di SMKN 1 Banyuwangi, Kec. Banyuwangi, Kab. Probolinggo, lulus pada tahun 2016.

Pada tahun 2016 setelah lulus SMK, penulis menganggur selama setahun, baru pada tahun 2017 penulis diterima menjadi mahasiswa Jurusan Teknik Informatika Fakultas Teknik Universitas Nurul Jadid Melalui jalur masuk Reguler. Pada bulan April tahun 2020 sampai bulan Juni tahun 2020 mengikuti Kuliah Kerja Nyata (KKN) di Desa Sidomulyo Kecamatan Kotaanyar, Probolinggo. Kemudian pada bulan Desember tahun 2020 sampai bulan Januari tahun 2021 mengikuti Praktek Kerja Lapangan (PKL) di Kampus Fakultas Teknik Universitas Nurul Jadid, Kabupaten Probolinggo, Provinsi Jawa Timur.

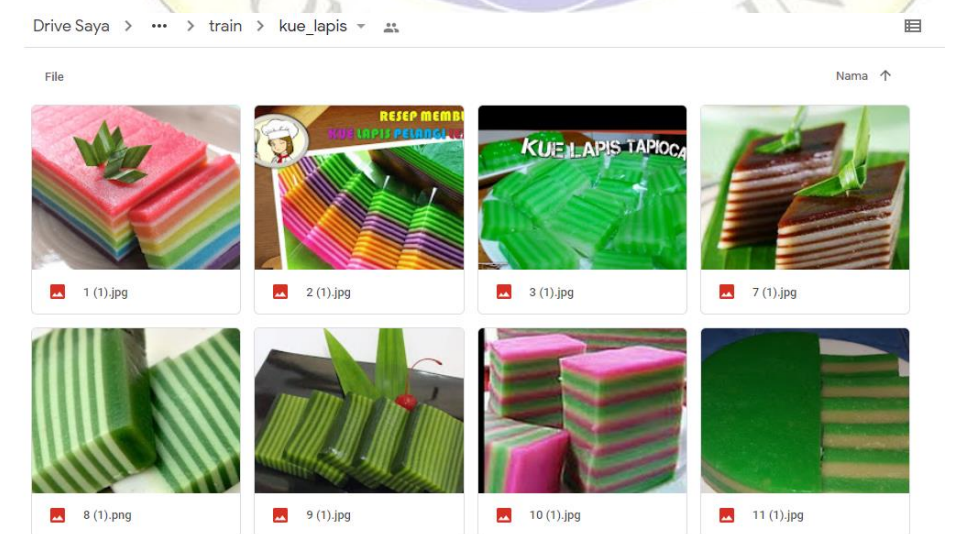
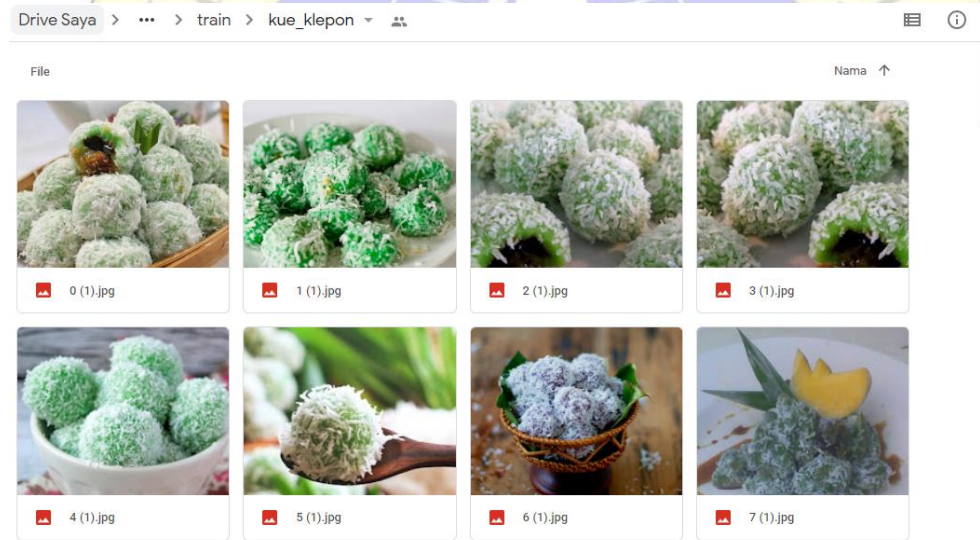
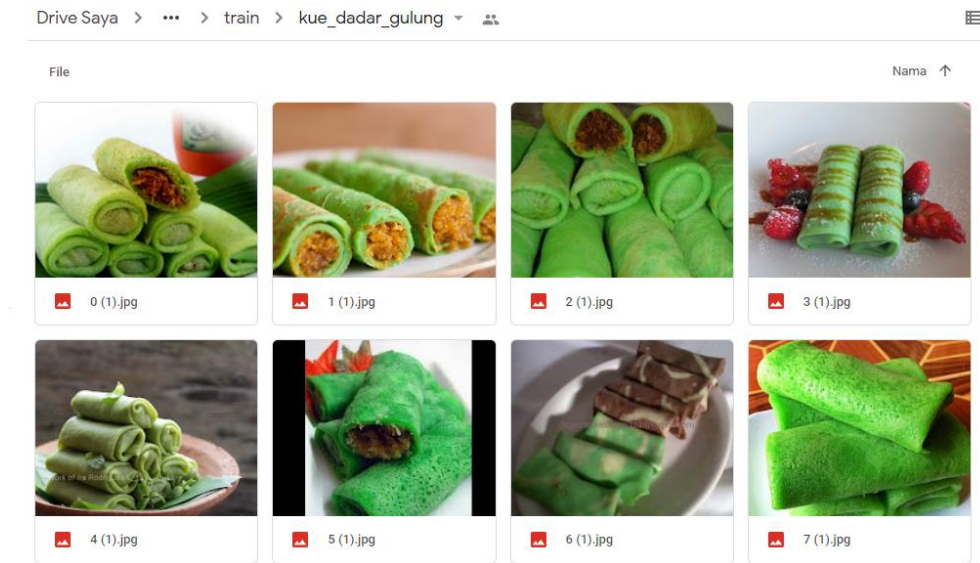
Pada tanggal 22 bulan Agustus tahun 2021 penulis dinyatakan LULUS dan berhak menyangand gelar Sarjana Komputer melalui Ujian Skripsi Jurusan Teknik Informatika Fakultas Teknik Universitas Nurul Jadid dengan Judul Skripsi “Klasifikasi Kue Tradisional Indonesia Menggunakan Algoritma Convolutional Neural Networks”

LAMPIRAN

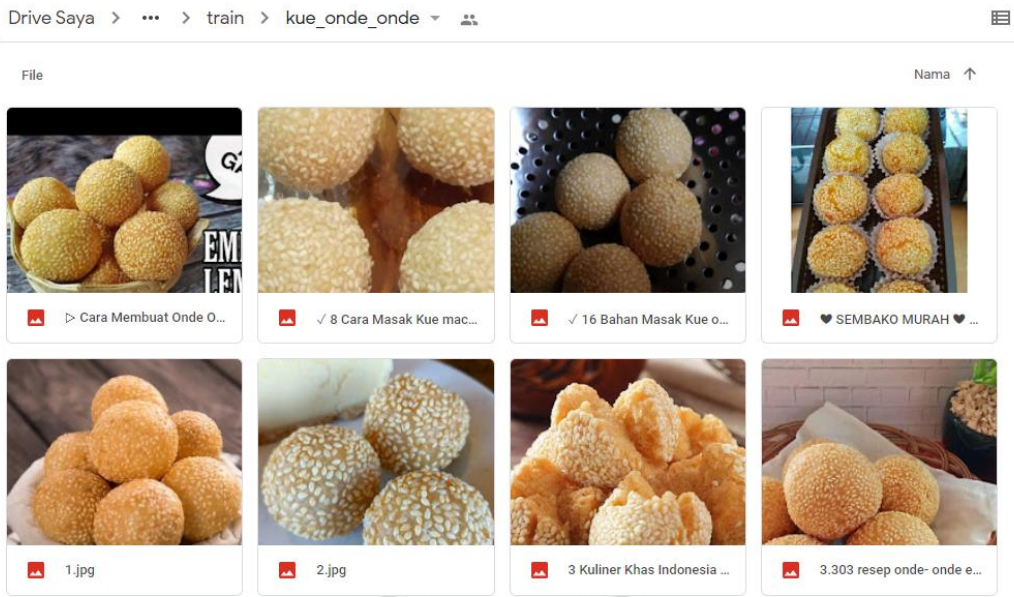
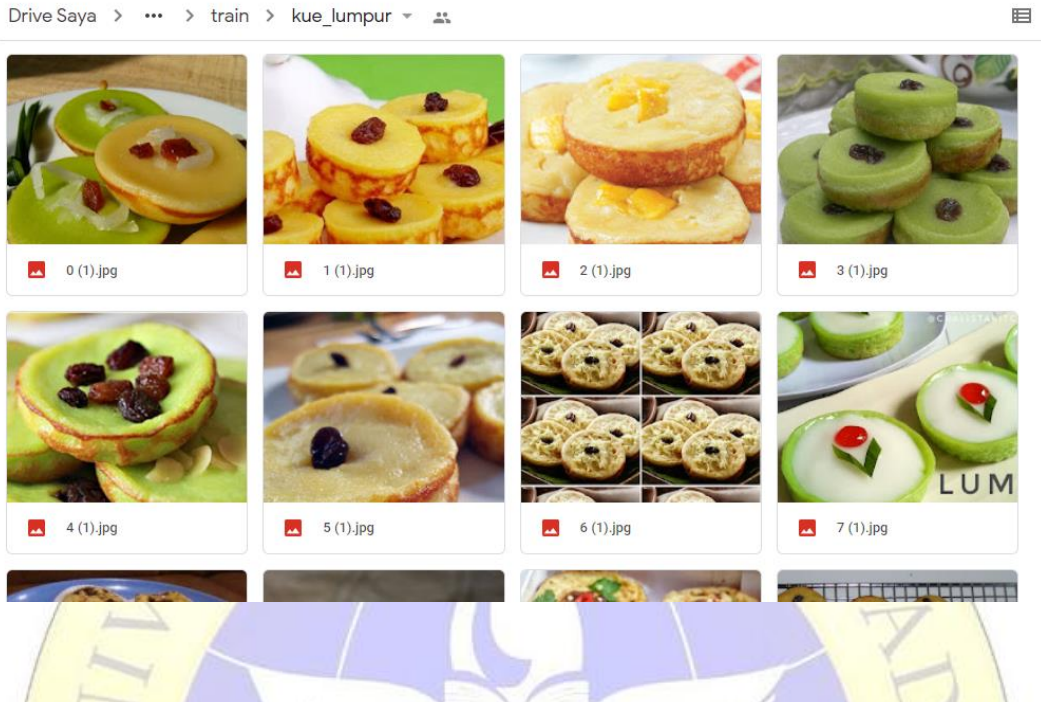
LAMPIRAN 1 DATASET



LANJUTAN LAMPIRAN 1 DATASET

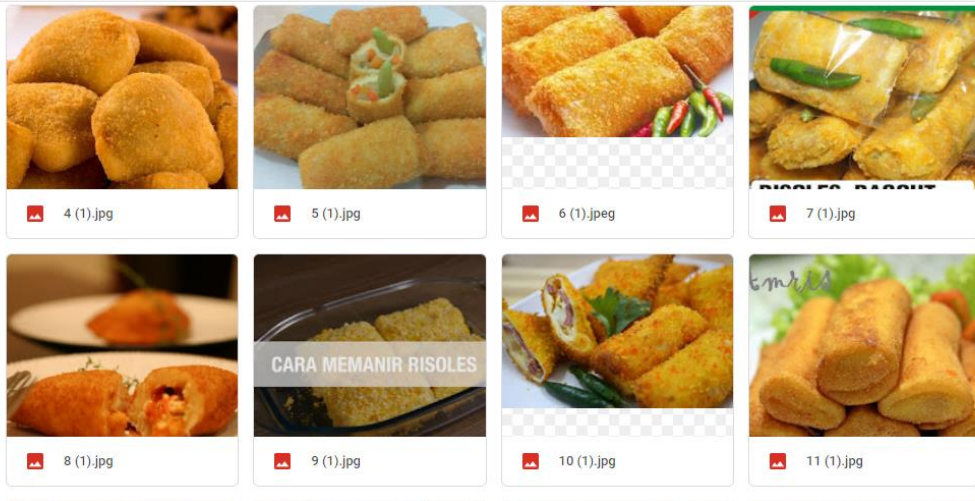


LANJUTAN LAMPIRAN 1 DATASET



LANJUTAN LAMPIRAN 1 DATASET

Drive Saya > ... > train > kue_risoles



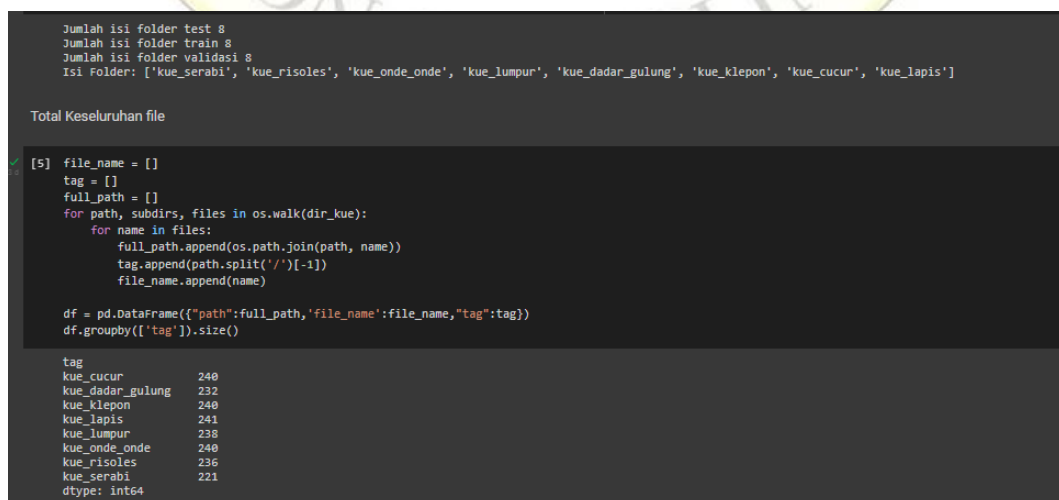
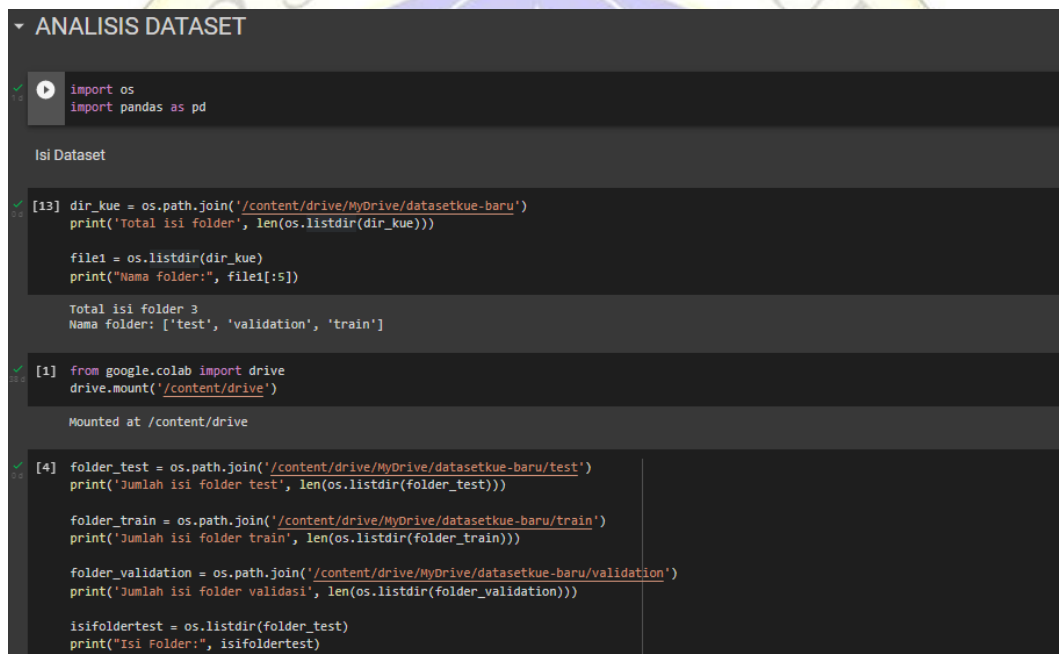
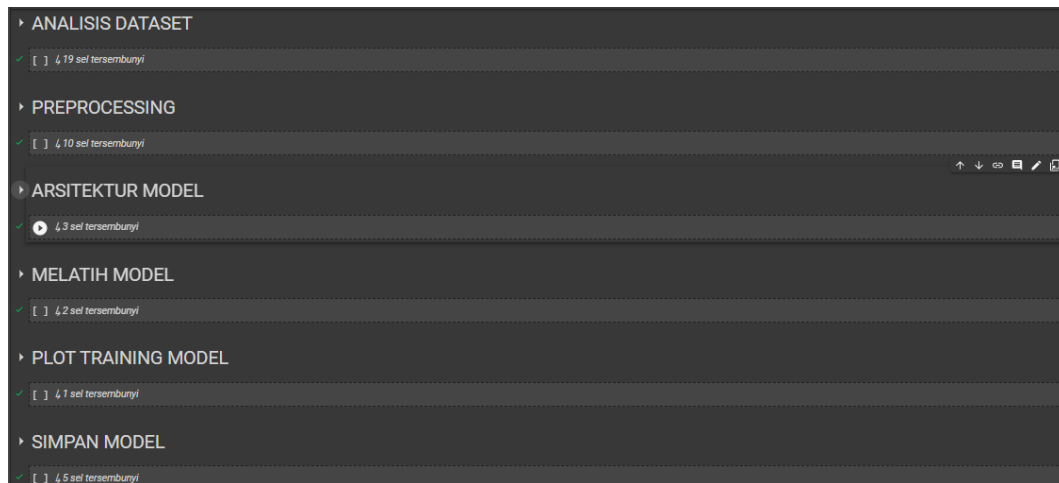
Drive Saya > ... > train > kue_serabi

File

Nama ↑



LAMPIRAN 2 SCREENSHOT SOURCE CODE



LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

```
Data Test

test_kue_cucur = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_cucur')
print('Total data test kue_cucur ', len(os.listdir(test_kue_cucur)))

test_kue_dadar_gulung = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_dadar_gulung')
print('Total data test kue_dadar_gulung ', len(os.listdir(test_kue_dadar_gulung)))

test_kue_klepon = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_klepon')
print('Total data test kue_klepon ', len(os.listdir(test_kue_klepon)))

test_kue_lapis = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_lapis')
print('Total data test kue_lapis ', len(os.listdir(test_kue_lapis)))

test_kue_lumpur = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_lumpur')
print('Total data test kue_lumpur ', len(os.listdir(test_kue_lumpur)))

test_kue_onde_onde = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_onde_onde')
print('Total data test kue_onde_onde ', len(os.listdir(test_kue_onde_onde)))

test_kue_risoles = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_risoles')
print('Total data test kue_risoles ', len(os.listdir(test_kue_risoles)))

test_kue_serabi = os.path.join('/content/drive/MyDrive/datasetkue-baru/test/kue_serabi')
print('Total data test kue_serabi ', len(os.listdir(test_kue_serabi)))

Total data test kue_cucur 20
Total data test kue_dadar_gulung 20
Total data test kue_klepon 20
Total data test kue_lapis 20
Total data test kue_lumpur 20
Total data test kue_onde_onde 20
Total data test kue_risoles 20
Total data test kue_serabi 20
```

```
Data Train

train_kue_cucur = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_cucur')
file_train_kue_cucur = os.listdir(train_kue_cucur)
print('Total data train kue_cucur ', len(os.listdir(train_kue_cucur)))

train_kue_dadar_gulung = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_dadar_gulung')
file_train_kue_dadar_gulung = os.listdir(train_kue_dadar_gulung)
print('Total data train kue_dadar_gulung ', len(os.listdir(train_kue_dadar_gulung)))

train_kue_klepon = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_klepon')
file_train_kue_klepon = os.listdir(train_kue_klepon)
print('Total data train kue_klepon ', len(os.listdir(train_kue_klepon)))

train_kue_lapis = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_lapis')
file_train_kue_lapis = os.listdir(train_kue_lapis)
print('Total data train kue_lapis ', len(os.listdir(train_kue_lapis)))

train_kue_lumpur = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_lumpur')
file_train_kue_lumpur = os.listdir(train_kue_lumpur)
print('Total data train kue_lumpur ', len(os.listdir(train_kue_lumpur)))

train_kue_onde_onde = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_onde_onde')
file_train_kue_onde_onde = os.listdir(train_kue_onde_onde)
print('Total data train kue_onde_onde ', len(os.listdir(train_kue_onde_onde)))

train_kue_risoles = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_risoles')
file_train_kue_risoles = os.listdir(train_kue_risoles)
print('Total data train kue_risoles ', len(os.listdir(train_kue_risoles)))

train_kue_serabi = os.path.join('/content/drive/MyDrive/datasetkue-baru/train/kue_serabi')
file_train_kue_serabi = os.listdir(train_kue_risoles)
print('Total data train kue_serabi ', len(os.listdir(train_kue_serabi)))

Total data train kue_cucur 200
Total data train kue_dadar_gulung 192
Total data train kue_klepon 200
Total data train kue_lapis 201
Total data train kue_lumpur 198
Total data train kue_onde_onde 200
Total data train kue_risoles 196
Total data train kue_serabi 181
```

LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

Data validasi

```
[ ] val_kue_dadar_gulung = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_dadar_gulung')
print('Total data validation kue_dadar_gulung ', len(os.listdir(val_kue_dadar_gulung)))

val_kue_kastengel = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_kastengel')
print('Total data validation kue_kastengel ', len(os.listdir(val_kue_kastengel)))

val_kue_klepon = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_klepon')
print('Total data validation kue_klepon ', len(os.listdir(val_kue_klepon)))

val_kue_lapis = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_lapis')
print('Total data validation kue_lapis ', len(os.listdir(val_kue_lapis)))

val_kue_lumpur = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_lumpur')
print('Total data validation kue_lumpur ', len(os.listdir(val_kue_lumpur)))

val_kue_putri_salju = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_putri_salju')
print('Total data validation kue_putri_salju ', len(os.listdir(val_kue_putri_salju)))

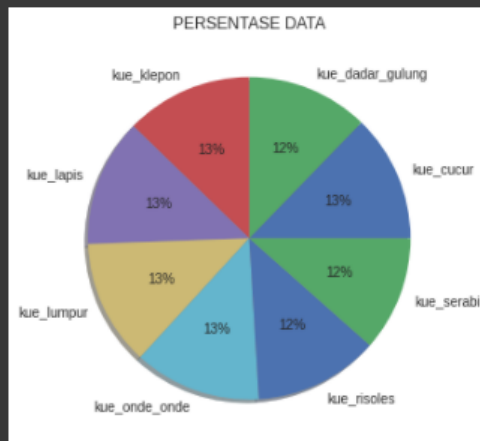
val_kue_risoles = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_risoles')
print('Total data validation kue_risoles ', len(os.listdir(val_kue_risoles)))

val_kue_serabi = os.path.join('/content/drive/MyDrive/datasetkue/validation/kue_serabi')
print('Total data validation kue_serabi ', len(os.listdir(val_kue_serabi)))
```

```
Total data validation kue_dadar_gulung 20
Total data validation kue_kastengel 20
Total data validation kue_klepon 20
Total data validation kue_lapis 20
Total data validation kue_lumpur 20
Total data validation kue_putri_salju 20
Total data validation kue_risoles 20
Total data validation kue_serabi 20
```

Persentase Data

```
[ ] target, count = np.unique(df['tag'], return_counts=True)
percentage = [x / np.sum(count) for x in count]
plt.style.use('seaborn')
plt.pie(precentage, labels = target, autopct='%1.f%%', shadow=True)
plt.title('PERSENTASE DATA')
plt.show()
```



LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

```
from PIL import Image
import os

lis = os.listdir(train_path)
total = 0

for X in lis:
    nidir = os.path.join(train_path, X)
    y = len(os.listdir(nidir))
    print(X+':', y)
    total = total + y

    img_name = os.listdir(nidir)
    for z in range(8):
        im_path = os.path.join(nidir, img_name[z])
        imgs = Image.open(im_path)
        print('-', imgs.size)
        print('-----')

print('\nTotal :', total)
```

```
kue_dadar_gulung: 192
- (1200, 1600)
- (480, 360)
- (3141, 1942)
- (1600, 1200)
- (1200, 630)
- (1200, 630)
- (1237, 1600)
- (1920, 1080)
-----
kue_cucur: 200
- (750, 500)
- (720, 960)
- (1000, 770)
- (750, 500)
- (750, 500)
```

```
+ Kode + Teks
```

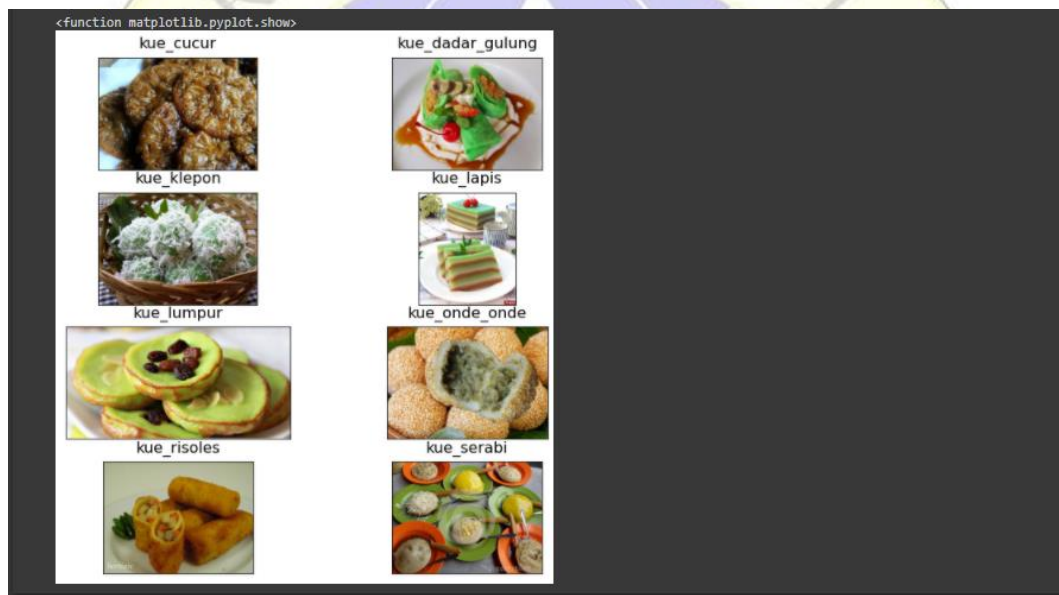
```
kue_onde_onde: 200
- (550, 374)
- (1200, 630)
- (780, 390)
- (751, 532)
- (1200, 921)
- (751, 532)
- (2000, 1333)
- (1200, 630)
-----
kue_lumpur: 198
- (500, 375)
- (800, 533)
- (1067, 1600)
- (1200, 630)
- (800, 630)
- (751, 532)
- (333, 500)
- (395, 286)
-----
kue_klepon: 200
- (1600, 1555)
- (700, 393)
- (500, 353)
- (800, 600)
- (500, 516)
- (568, 428)
- (598, 740)
- (500, 353)
-----
kue_lapis: 201
- (800, 450)
- (1467, 1080)
- (464, 503)
- (320, 186)
- (1280, 720)
- (492, 650)
- (749, 500)
- (272, 204)
-----

Total : 1568
```

LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

```
import numpy as np
import matplotlib.pyplot as plt

fig, ax = plt.subplots(4, 2, figsize=(10,10))
# fig.suptitle("acak ", fontsize=16)
kue_sort = sorted(lis)
kueid = 0
for i in range(4):
    for j in range(2):
        try:
            kue_select = kue_sort[kueid]
            kueid += 1
        except:
            break
        if kue_select == '.TEMP':
            continue
        kue_select_img = os.listdir(os.path.join(train_path, kue_select))
        kue_select_acak = np.random.choice(kue_select_img)
        imgg = plt.imread(os.path.join(train_path, kue_select, kue_select_acak))
        ax[i][j].imshow(imgg)
        ax[i][j].set_title(kue_select, pad=10, fontsize=16)
        plt.setp(ax, xticks=[], yticks=[])
plt.show
```



LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

ARSITEKTUR MODEL

```
[ ] model = tf.keras.models.Sequential([
    tf.keras.layers.Conv2D(16, (3,3), activation='relu', input_shape=(150, 150, 3)),
    tf.keras.layers.MaxPooling2D(2, 2),
    tf.keras.layers.ZeroPadding2D(padding=(1,1)),

    tf.keras.layers.Conv2D(32, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(2,2),

    tf.keras.layers.Conv2D(64, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(2,2),

    tf.keras.layers.Conv2D(128, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(2,2),

    tf.keras.layers.Conv2D(32, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(2,2),

    tf.keras.layers.Flatten(),
    tf.keras.layers.Dropout(0.2),

    tf.keras.layers.Dense(128, activation='relu'),
    tf.keras.layers.Dense(512, activation='relu'),
    tf.keras.layers.Dense(8, activation='softmax')
])

model.summary()
model.compile(loss = 'categorical_crossentropy', optimizer='rmsprop', metrics=['accuracy'])
```

```
Model: "sequential"
Layer (type)                Output Shape                Param #
-----
conv2d (Conv2D)             (None, 148, 148, 16)       448
max_pooling2d (MaxPooling2D) (None, 74, 74, 16)         0
zero_padding2d (ZeroPadding2D) (None, 76, 76, 16)         0
conv2d_1 (Conv2D)           (None, 74, 74, 32)         4640
max_pooling2d_1 (MaxPooling2D) (None, 37, 37, 32)         0
conv2d_2 (Conv2D)           (None, 35, 35, 64)         18496
max_pooling2d_2 (MaxPooling2D) (None, 17, 17, 64)         0
conv2d_3 (Conv2D)           (None, 15, 15, 128)        73856
max_pooling2d_3 (MaxPooling2D) (None, 7, 7, 128)         0
conv2d_4 (Conv2D)           (None, 5, 5, 32)           36896
max_pooling2d_4 (MaxPooling2D) (None, 2, 2, 32)           0
flatten (Flatten)           (None, 128)                 0
dropout (Dropout)           (None, 128)                 0
dense (Dense)                (None, 128)                 16512
dense_1 (Dense)              (None, 512)                 66048
dense_2 (Dense)              (None, 8)                   4104
-----
Total params: 221,000
Trainable params: 221,000
Non-trainable params: 0
```

LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

```
▼ MELATIH MODEL

▶ history=model.fit(
    train_generator,
    steps_per_epoch=train_generator.samples // BATCH_SIZE,
    epochs=500,
    validation_data=validation_generator,
    validation_steps=validation_generator.samples // BATCH_SIZE,
    verbose=2,
    callbacks=[callbacks])

Epoch 1/500
24/24 - 481s - loss: 2.0897 - accuracy: 0.1295 - val_loss: 2.0677 - val_accuracy: 0.1641
Epoch 2/500
24/24 - 62s - loss: 2.0357 - accuracy: 0.1782 - val_loss: 2.0633 - val_accuracy: 0.1875
Epoch 3/500
24/24 - 62s - loss: 1.9283 - accuracy: 0.2417 - val_loss: 1.8903 - val_accuracy: 0.2109
Epoch 4/500
24/24 - 60s - loss: 1.8579 - accuracy: 0.2790 - val_loss: 1.7581 - val_accuracy: 0.3125
Epoch 5/500
24/24 - 59s - loss: 1.8282 - accuracy: 0.2957 - val_loss: 1.7649 - val_accuracy: 0.3086
Epoch 6/500
24/24 - 57s - loss: 1.7766 - accuracy: 0.3224 - val_loss: 1.7144 - val_accuracy: 0.3320
Epoch 7/500
24/24 - 57s - loss: 1.7691 - accuracy: 0.3531 - val_loss: 1.8641 - val_accuracy: 0.2891
Epoch 8/500
24/24 - 57s - loss: 1.7031 - accuracy: 0.3551 - val_loss: 1.6054 - val_accuracy: 0.3945
Epoch 9/500
24/24 - 57s - loss: 1.6755 - accuracy: 0.3858 - val_loss: 1.5598 - val_accuracy: 0.4570
Epoch 10/500
24/24 - 56s - loss: 1.6646 - accuracy: 0.3665 - val_loss: 1.7283 - val_accuracy: 0.3203

24/24 - 63s - loss: 0.3723 - accuracy: 0.8852 - val_loss: 0.3198 - val_accuracy: 0.9023
Epoch 423/500
24/24 - 63s - loss: 0.3948 - accuracy: 0.8858 - val_loss: 0.2646 - val_accuracy: 0.8945
Epoch 424/500
24/24 - 65s - loss: 0.3663 - accuracy: 0.8932 - val_loss: 0.2516 - val_accuracy: 0.9414
Epoch 425/500
24/24 - 66s - loss: 0.3489 - accuracy: 0.8925 - val_loss: 0.2608 - val_accuracy: 0.9062
Epoch 426/500
24/24 - 66s - loss: 0.3977 - accuracy: 0.8885 - val_loss: 0.2831 - val_accuracy: 0.9180
Epoch 427/500
24/24 - 67s - loss: 0.4402 - accuracy: 0.8730 - val_loss: 0.2640 - val_accuracy: 0.9453
Epoch 428/500
24/24 - 66s - loss: 0.3795 - accuracy: 0.8785 - val_loss: 0.2269 - val_accuracy: 0.9453
Epoch 429/500
24/24 - 65s - loss: 0.3703 - accuracy: 0.8758 - val_loss: 0.2339 - val_accuracy: 0.9062
Epoch 430/500
24/24 - 66s - loss: 0.4047 - accuracy: 0.8698 - val_loss: 0.3488 - val_accuracy: 0.8867
Epoch 431/500
24/24 - 65s - loss: 0.3153 - accuracy: 0.8965 - val_loss: 0.5442 - val_accuracy: 0.8438
Epoch 432/500
24/24 - 66s - loss: 0.3747 - accuracy: 0.8818 - val_loss: 0.3941 - val_accuracy: 0.8828
Epoch 433/500
24/24 - 67s - loss: 0.3544 - accuracy: 0.8832 - val_loss: 0.6787 - val_accuracy: 0.8320
Epoch 434/500
24/24 - 66s - loss: 0.3687 - accuracy: 0.8825 - val_loss: 0.3188 - val_accuracy: 0.9062
Epoch 435/500
24/24 - 64s - loss: 0.5686 - accuracy: 0.8525 - val_loss: 0.3410 - val_accuracy: 0.8828
Epoch 436/500
24/24 - 65s - loss: 0.3322 - accuracy: 0.8919 - val_loss: 0.7190 - val_accuracy: 0.8242
Epoch 437/500
24/24 - 66s - loss: 0.3212 - accuracy: 0.9132 - val_loss: 0.2361 - val_accuracy: 0.9258

PELATIHAN BERHENTI, AKURASI MODEL SUDAH LEBIH DARI 90%!
```

LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

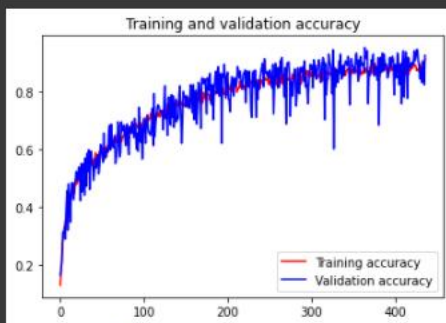
▼ PLOT TRAINING MODEL

```
import matplotlib.pyplot as plt
acc = history.history['accuracy']
val_acc = history.history['val_accuracy']
loss = history.history['loss']
val_loss = history.history['val_loss']

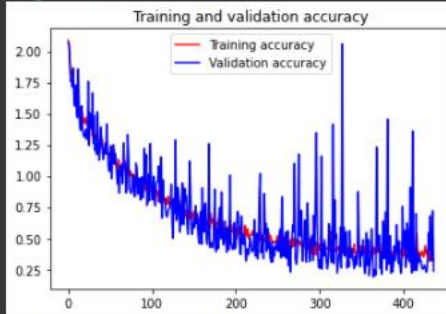
epochs = range(len(acc))

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()

plt.plot(epochs, loss, 'r', label='Training accuracy')
plt.plot(epochs, val_loss, 'b', label='Validation accuracy')
plt.title('Training and validation accuracy')
plt.legend(loc=0)
plt.figure()
plt.show()
```



<Figure size 432x288 with 0 Axes>



<Figure size 432x288 with 0 Axes>

▼ SIMPAN MODEL

```
[ ] MODEL_BASE_PATH = "dataset-baru"
    NAMA_PROYEK = "klasifikasi-kue"
    NAMA_MODEL = "models-b2-db-500ep.h5"
    save_model_path = os.path.join(MODEL_BASE_PATH, NAMA_PROYEK, NAMA_MODEL)

    if os.path.exists(os.path.join(MODEL_BASE_PATH, NAMA_PROYEK)) == False:
        os.makedirs(os.path.join(MODEL_BASE_PATH, NAMA_PROYEK))

    print('Model disimpan di {}'.format(save_model_path))
    model.save(save_model_path, include_optimizer=False)
```

Model disimpan di dataset-baru/klasifikasi-kue/models-b2-db-500ep.h5...

LANJUTAN LAMPIRAN 2 SCREENSHOT SOURCE CODE

```
▼ PENGUJIAN

[ ] from tensorflow.keras.models import load_model

MODEL_PATH = '/content/models-b2-db-500ep.h5'
model = load_model(MODEL_PATH, compile=False)
print('model sudah di muat...')

model sudah di muat....
```

```
import requests
from io import BytesIO
from PIL import Image
import numpy as np
from google.colab import files
from keras.preprocessing import image
import matplotlib.pyplot as plt

uploaded = files.upload()

for fn in uploaded.keys():
    path = fn
    im = image.load_img(path, target_size=(150, 150))

input_size = (150,150)
channel = (3,)
input_shape = input_size + channel
labels = ['kue_cucur', 'kue_dadar_gulung', 'kue_klepon', 'kue_lapis', 'kue_lumpur', 'kue_onde_onde', 'kue_risoles', 'kue_serabi']

def preprocess(img, input_size):
    nimg = img.convert('RGB').resize(input_size, resample=0)
    img_arr = (np.array(nimg))/255
    return img_arr

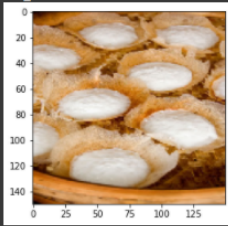
def reshape(imgs_arr):
    return np.stack(imgs_arr, axis=0)

plt.imshow(im)
X = preprocess(im, input_size)
X = reshape([X])
y = model.predict(X)
print( labels[np.argmax(y)], np.max(y) )
```

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```
plt.imshow(im)
X = preprocess(im, input_size)
X = reshape([X])
y = model.predict(X)
print( labels[np.argmax(y)], np.max(y) )
```

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LAMPIRAN 3 CEK PLAGIARISME

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