Trabalho - CNN Classificaçã | Atividade 2 - CNN Classifica | random.shuffle() function in | Trabalho_ CNN.ipynb - Cola | notebook7048f77464 | Kag | Training and evaluation wit

kaggle.com/code/sarahabo/atividade-2-cnn-classifica-o-de-imagens/edit

Beginner Levels - L... | LIVE STREAMING

https://www.kaggle.com/code/damascenogabriela/trabalho-cnn-classifica-o-de-imagens

Dataset:face shape from kaggle

Atividade 2 - CNN Classificação de Image...

Draft saved

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Run All | Code | Draft Session (1h:42m)

shuffle 2/2

```
Epoch 1/15
25/25 [==============================] - 188s 8s/step - loss: 2.8177 - accuracy: 0.1904 - val_loss: 1.6494 - val_accuracy: 0.2188
Epoch 2/15
25/25 [==============================] - 186s 7s/step - loss: 1.6386 - accuracy: 0.1938 - val_loss: 1.6262 - val_accuracy: 0.1737
Epoch 3/15
25/25 [==============================] - 188s 8s/step - loss: 1.6220 - accuracy: 0.2001 - val_loss: 1.6142 - val_accuracy: 0.2075
Epoch 4/15
25/25 [==============================] - 188s 8s/step - loss: 1.6204 - accuracy: 0.1982 - val_loss: 1.6161 - val_accuracy: 0.2412
Epoch 5/15
25/25 [==============================] - 189s 8s/step - loss: 1.5731 - accuracy: 0.2685 - val_loss: 1.5429 - val_accuracy: 0.3075
Epoch 6/15
25/25 [==============================] - 189s 8s/step - loss: 1.4733 - accuracy: 0.3636 - val_loss: 1.5248 - val_accuracy: 0.3288
Epoch 7/15
25/25 [==============================] - 189s 8s/step - loss: 1.3722 - accuracy: 0.4326 - val_loss: 1.5468 - val_accuracy: 0.3338
Epoch 8/15
25/25 [==============================] - 190s 8s/step - loss: 1.2367 - accuracy: 0.5083 - val_loss: 1.6589 - val_accuracy: 0.3450
Epoch 9/15
25/25 [==============================] - 189s 8s/step - loss: 1.0623 - accuracy: 0.5861 - val_loss: 1.6958 - val_accuracy: 0.3500
Epoch 10/15
25/25 [==============================] - 188s 8s/step - loss: 0.7924 - accuracy: 0.7018 - val_loss: 2.0182 - val_accuracy: 0.3388
Epoch 11/15
25/25 [==============================] - 189s 8s/step - loss: 0.4988 - accuracy: 0.8149 - val_loss: 2.6503 - val_accuracy: 0.3512
Epoch 12/15
25/25 [==============================] - 189s 8s/step - loss: 0.2504 - accuracy: 0.9153 - val_loss: 3.3932 - val_accuracy: 0.3300
Epoch 13/15
25/25 [==============================] - 190s 8s/step - loss: 0.1218 - accuracy: 0.9597 - val_loss: 3.9887 - val_accuracy: 0.3363
Epoch 14/15
25/25 [==============================] - 191s 8s/step - loss: 0.0745 - accuracy: 0.9769 - val_loss: 4.2495 - val_accuracy: 0.3600
Epoch 15/15
25/25 [==============================] - 189s 8s/step - loss: 0.0461 - accuracy: 0.9853 - val_loss: 5.6095 - val_accuracy: 0.3613
```

+ Code + Markdown

[13]:

```
def plot_accuracy_loss(history):
```

Console

ENG 12:47 AM 11/3/2022

Atividade 2 - CNN Classificação de Image...

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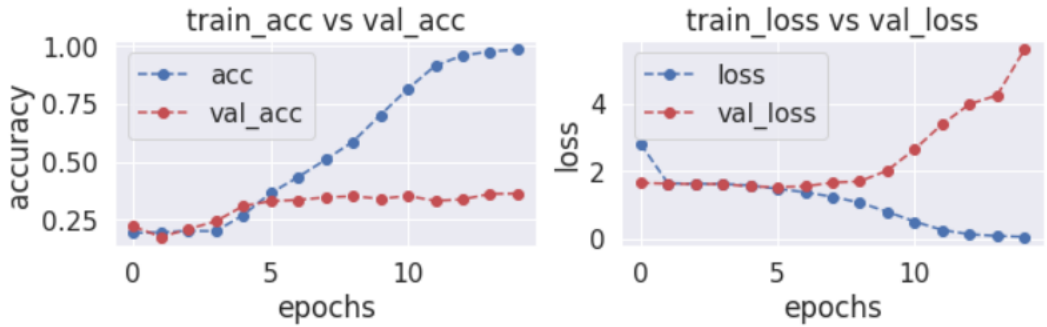
Run All | Code | Draft Session (54m)

shuffle 2/2

```
    plt.plot(history.history['val_loss'], 'ro--', label = "val_loss")
    plt.title("train_loss vs val_loss")
    plt.ylabel("loss")
    plt.xlabel("epochs")

    plt.legend()
    plt.show()
```

```
plot_accuracy_loss(history)
```



+ Code + Markdown

```
test_loss = model.evaluate(test_images, test_labels)
```

Console

Atividade 2 - CNN Classificação de Image...

Draft saved

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Run All | Code | Draft Session (1h:8m)

```
    plt.show()
```

shuffle 2/2

[17]:

```
display_random_image(class_names, train_images, train_labels)
```

Image #1490 : Round

[18]:

```
def display_examples(class_names, images, labels):
    """
        Display 25 images from the images array with its corresponding labels
    """

    fig = plt.figure(figsize=(10,10))
```

Console

Atividade 2 - CNN Classificação de Image...

Draft saved

shuffle 2/2

```
display_examples(class_names, train_images, train_labels)
```

Some examples of images of the dataset

Console

Atividade 2 - CNN Classificação de Image...

Draft saved

File Edit View Run Add-ons Help

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Run All | Code | Draft Session (1h:9m)

shuffle 2/2

```
pred_labels = np.argmax(predictions, axis = 1) # We take the highest probability

display_random_image(class_names, test_images, pred_labels)
```

Image #110 : Round

```
def print_mislabeled_images(class_names, test_images, test_labels, pred_labels):
    """
        Print 25 examples of mislabeled images by the classifier, e.g when test_labels != pred_labels
    """
    BOO = (test_labels == pred_labels)
    mislabeled_indices = np.where(BOO == 0)
    mislabeled_images = test_images[mislabeled_indices]
    mislabeled_labels = pred_labels[mislabeled_indices]
```

Console

Trabalho - CNN Classificação de | Atividade 2 - CNN Classificação | random.shuffle() function in Pyth | notebook7048f77464 | Kaggle | Trabalho_ CNN.ipynb - Colaborat

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Beginner Levels - L... LIVE STREAMING

Atividade 2 - CNN Classificação de Image...

Draft saved

File Edit View Run Add-ons Help

Share Save Version 0

Run All Code

Draft Session (1h:9m)

```
print_mislabeled_images(class_names, test_images, test_labels, pred_labels)
```

shuffle 2/2

Some examples of images of the dataset

Console

12:14 AM 11/3/2022

Atividade 2 - CNN Classificação de Image...

Draft saved

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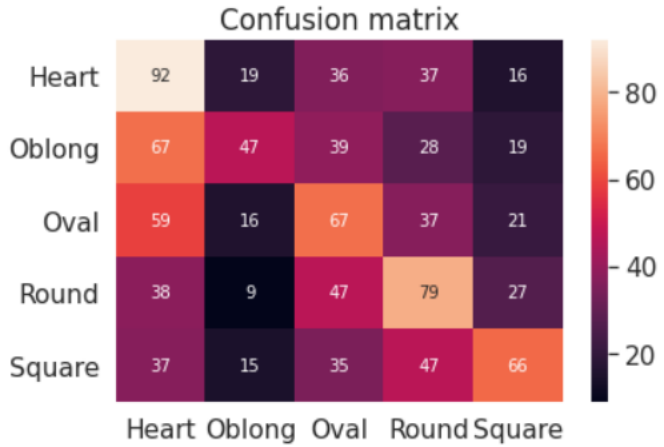
Run All | Code | Draft Session (1h:9m)

shuffle 2/2

```
CM = confusion_matrix(test_labels, pred_labels)
ax = plt.axes()
sn.heatmap(CM, annot=True,
           annot_kws={"size": 10},
           xticklabels=class_names,
           yticklabels=class_names, ax = ax)
ax.set_title('Confusion matrix')
plt.show()
```



+ Code + Markdown

Console

notebook4772754ce2 | Kaggle | Face Shape Recognition | Kaggle | Trabalho - CNN Classificação de

kaggle.com/code/sarahabo/notebook4772754ce2/edit

Beginner Levels - L... | LIVE STREAMING

https://github.com/Sara-Habo/Face-shape-Recognition-/blob/main/cnn_processed.ipynb

Dataset:face shape processed

notebook4772754ce2

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Run All | Code | Draft Session (43m)

```
history = model.fit(train_images, train_labels, batch_size=128, epochs=15, validation_split = 0.2) #20% of data is used for validation
```

```
2022-11-03 11:48:22.579424: I tensorflow/compiler/mlir/mlir_graph_optimization_pass.cc:185] None of the MLIR Optimization Passes are enabled (registered 2)
Epoch 1/15
25/25 [==============================] - 167s 7s/step - loss: 2.7298 - accuracy: 0.1803 - val_loss: 1.6319 - val_accuracy: 0.1807
Epoch 2/15
25/25 [==============================] - 163s 7s/step - loss: 1.6415 - accuracy: 0.1954 - val_loss: 1.6520 - val_accuracy: 0.1982
Epoch 3/15
25/25 [==============================] - 163s 7s/step - loss: 1.6408 - accuracy: 0.1916 - val_loss: 1.6313 - val_accuracy: 0.1982
Epoch 4/15
25/25 [==============================] - 162s 7s/step - loss: 1.6277 - accuracy: 0.2101 - val_loss: 1.6116 - val_accuracy: 0.1882
Epoch 5/15
25/25 [==============================] - 164s 7s/step - loss: 1.6113 - accuracy: 0.2334 - val_loss: 1.5728 - val_accuracy: 0.2836
Epoch 6/15
25/25 [==============================] - 162s 6s/step - loss: 1.4503 - accuracy: 0.3521 - val_loss: 1.3742 - val_accuracy: 0.4040
Epoch 7/15
25/25 [==============================] - 160s 6s/step - loss: 1.2655 - accuracy: 0.4717 - val_loss: 1.2213 - val_accuracy: 0.4818
Epoch 8/15
25/25 [==============================] - 159s 6s/step - loss: 1.1753 - accuracy: 0.5254 - val_loss: 1.1974 - val_accuracy: 0.4969
Epoch 9/15
25/25 [==============================] - 158s 6s/step - loss: 1.1330 - accuracy: 0.5459 - val_loss: 1.2182 - val_accuracy: 0.4981
Epoch 10/15
25/25 [==============================] - 156s 6s/step - loss: 1.0162 - accuracy: 0.5961 - val_loss: 1.0939 - val_accuracy: 0.5521
Epoch 11/15
25/25 [==============================] - 158s 6s/step - loss: 0.8672 - accuracy: 0.6614 - val_loss: 1.0545 - val_accuracy: 0.5734
Epoch 12/15
25/25 [==============================] - 157s 6s/step - loss: 0.7155 - accuracy: 0.7334 - val_loss: 1.1089 - val_accuracy: 0.5997
Epoch 13/15
25/25 [==============================] - 160s 6s/step - loss: 0.5397 - accuracy: 0.8031 - val_loss: 1.1754 - val_accuracy: 0.5972
Epoch 14/15
25/25 [==============================] - 159s 6s/step - loss: 0.3934 - accuracy: 0.8549 - val_loss: 1.3110 - val_accuracy: 0.6085
Epoch 15/15
25/25 [==============================] - 158s 6s/step - loss: 0.2376 - accuracy: 0.9165 - val_loss: 1.4886 - val_accuracy: 0.6211
```

+ Code + Markdown

Console

ENG 2:29 PM 11/3/2022

notebook4772754ce2 | Kaggle | Face Shape Recognition | Kaggle | Trabalho - CNN Classificação de

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Beginner Levels - L... | LIVE STREAMING

notebook4772754ce2

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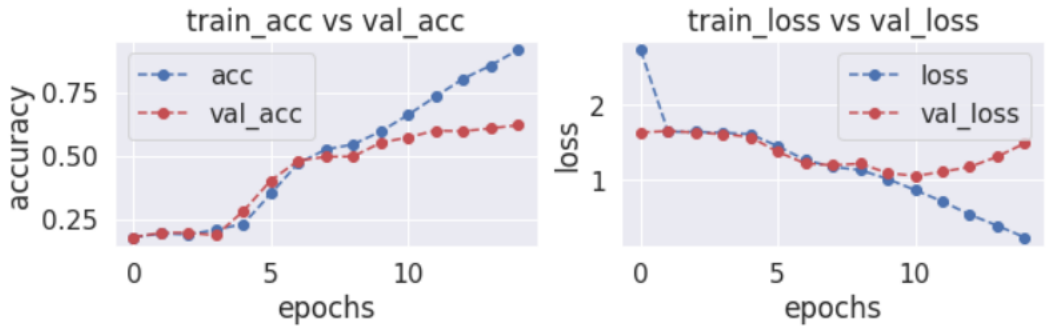
Run All | Code | Draft Session (43m)

```
plot_accuracy_loss(history)
```



+ Code + Markdown

```
[ ]: test_loss = model.evaluate(test_images, test_labels)
```

```
[ ]: def display_random_image(class_names, images, labels):
         """
             Display a random image from the images array and its correspond label from the labels array
```

Console

ENG 2:29 PM 11/3/2022

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Beginner Levels - L... | LIVE STREAMING

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Draft saved

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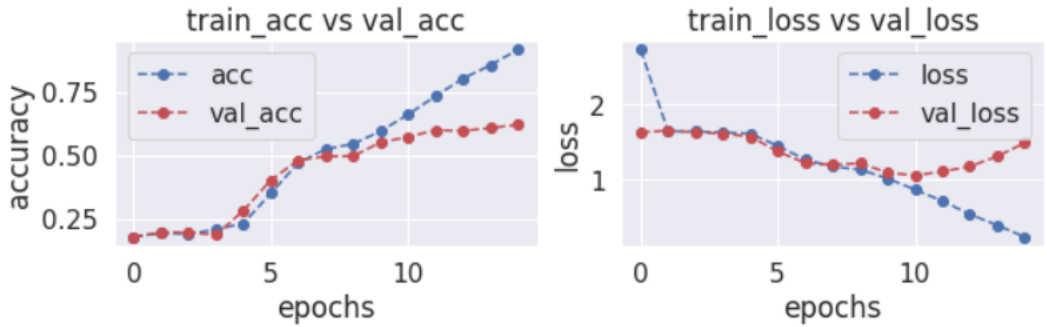
Run All | Code | Draft Session (43m)

[14]:
```
plot_accuracy_loss(history)
```




```
test_loss = model.evaluate(test_images, test_labels)
```

```
32/32 [==============================] - 11s 333ms/step - loss: 1.7018 - accuracy: 0.5892
```

+ Code + Markdown

[ ]:
```
def display_random_image(class_names, images, labels):
    """
        Display a random image from the images array and its correspond label from the labels array.
    """
```

Console

ENG 2:29 PM 11/3/2022

notebook4772754ce2

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Run All Code Draft Session (44m)

```
    plt.yticks([])
    plt.grid(False)
    plt.title('Image #{} : '.format(index) + class_names[labels[index]])
    plt.show()
```

```
display_random_image(class_names, train_images, train_labels)
```

Image #3087 : Heart

+ Code + Markdown

```
[ ]:
def display_examples(class_names, images, labels):
```

Console

notebook4772754ce2 | Kaggle | Face Shape Recognition | Kaggle | Trabalho - CNN Classificação de

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Beginner Levels - L... | LIVE STREAMING

notebook4772754ce2 Draft saved

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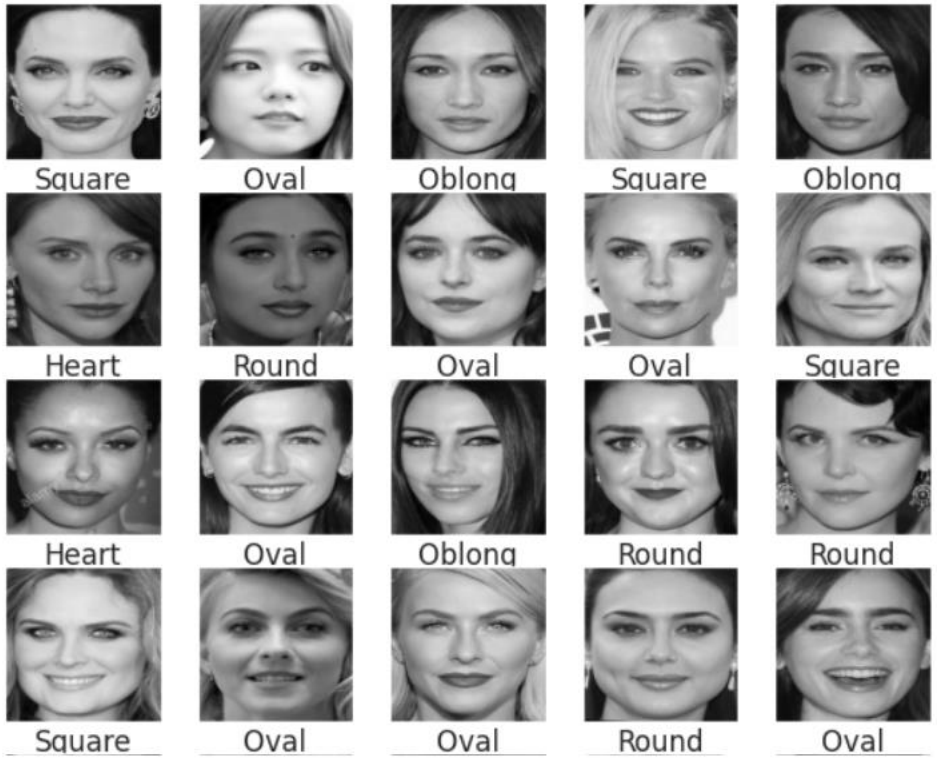
Run All | Code | Draft Session (44m)

Some examples of images of the dataset



Console

2:30 PM 11/3/2022

notebook4772754ce2 Draft saved

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Run All Code Draft Session (45m)

```
predictions = model.predict(test_images)     # Vector of probabilities
pred_labels = np.argmax(predictions, axis = 1) # We take the highest probability

display_random_image(class_names, test_images, pred_labels)
```

Image #437 : Square

+ Code + Markdown

[ ]:

```
def print_mislabeled_images(class_names, test_images, test_labels, pred_labels):
    """
        Print 25 examples of mislabeled images by the classifier, e.g when test_labels != pred_labels
    """
```

Console

notebook4772754ce2 | Kaggle | Face Shape Recognition | Kaggle | Trabalho - CNN Classificação de

kaggle.com/code/sarahabo/notebook4772754ce2/edit

Beginner Levels - L... | LIVE STREAMING

notebook4772754ce2

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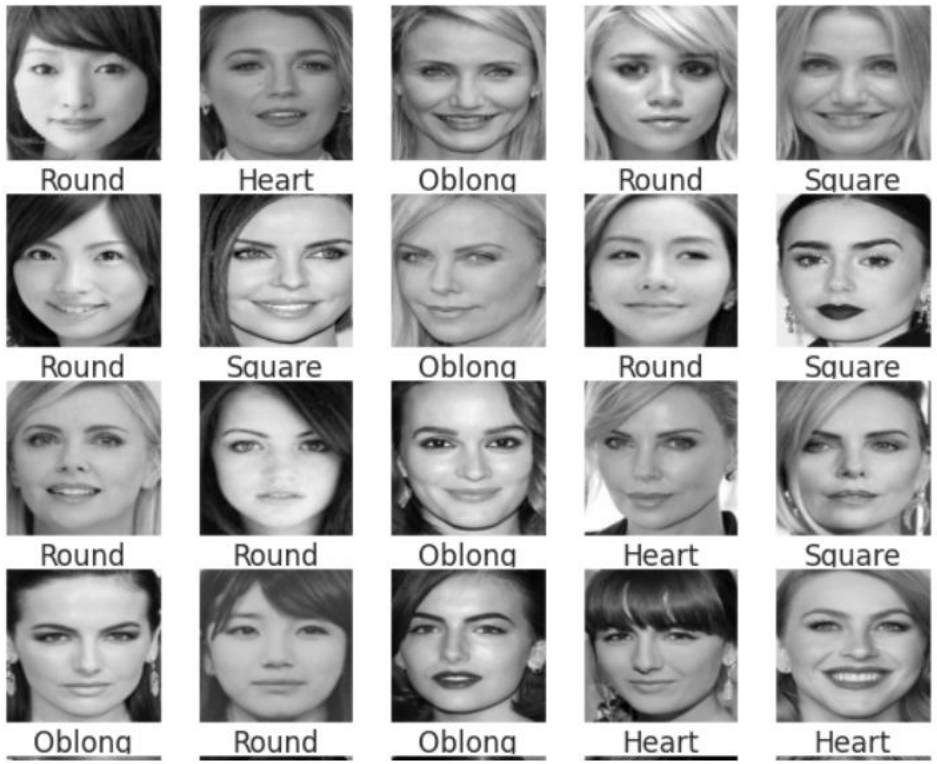
Run All | Code | Draft Session (45m) | HDD | CPU | RAM

Some examples of images of the dataset



Console

2:31 PM 11/3/2022

notebook4772754ce2 | Kaggle | Face Shape Recognition | Kaggle | Trabalho - CNN Classificação de

kaggle.com/code/sarahabo/notebook4772754ce2/edit

Beginner Levels - L... | LIVE STREAMING

notebook4772754ce2

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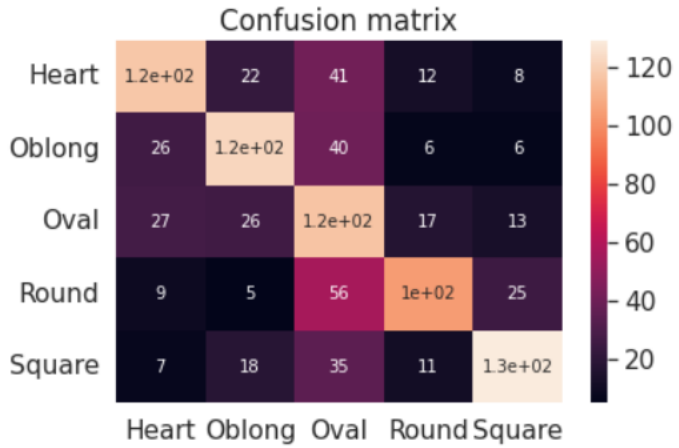
Run All | Code | Draft Session (45m)

```
CM = confusion_matrix(test_labels, pred_labels)
ax = plt.axes()
sn.heatmap(CM, annot=True,
           annot_kws={"size": 10},
           xticklabels=class_names,
           yticklabels=class_names, ax = ax)
ax.set_title('Confusion matrix')
plt.show()
```



+ Code + Markdown

Console

ENG 2:31 PM 11/3/2022

https://www.kaggle.com/code/zeyadkhalid/face-shape-recognition-73-accuracy

- 50 epoch
- I can not run this on my laptop
- Dataset(face shape processed)