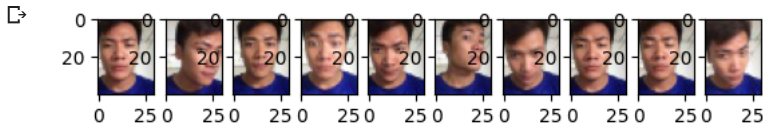


▼ Kiểm tra dữ liệu đầu vào

```

1 # people 2
2
3 import matplotlib.pyplot as plt
4 from matplotlib.image import imread
5 folder = '/content/drive/MyDrive/A_HOC_TAP/Nam_4_Hoc_ky_2/Artificial_Intelligence/Code_AI/ipython/baocaogi
6 for i in range(19):
7     plt.subplot(2,10,i+1)
8     filename = folder + 'truong'+str(i+1)+'.jpg'
9     img = plt.imread(filename)
10    plt.imshow(img)
11 plt.show()

```



```

1 # people 2
2
3 import matplotlib.pyplot as plt
4 from matplotlib.image import imread
5
6 for i in range(19):
7     plt.subplot(2,10,i+1)
8     filename = folder + 'minh'+str(i+1)+'.jpg'
9     img = plt.imread(filename)
10    plt.imshow(img)
11 plt.show()

```

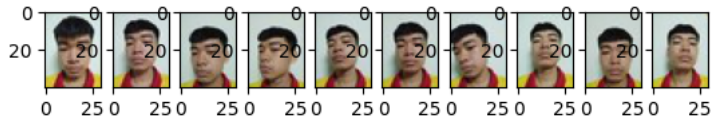
Phím tắt "In số tay" bị tắt khi iframe kết quả của ô chứa mã đang hoạt động. Hãy sử dụng phím Escape để rời khỏi iframe rồi ấn lại vào phím tắt này. ✕



```

1 # people 2
2
3 import matplotlib.pyplot as plt
4 from matplotlib.image import imread
5 folder = '/content/drive/MyDrive/A_HOC_TAP/Nam_4_Hoc_ky_2/Artificial_Intelligence/Code_AI/ipython/baocaogi
6 for i in range(19):
7     plt.subplot(2,10,i+1)
8     filename = folder + 'huy'+str(i+1)+'.jpg'
9     img = plt.imread(filename)
10    plt.imshow(img)
11 plt.show()

```



```

1 # people 2
2
3 import matplotlib.pyplot as plt
4 from matplotlib.image import imread
5 folder = '/content/drive/MyDrive/A_HOC_TAP/Nam_4_Hoc_ky_2/Artificial_Intelligence/Code_AI/ipython/baocaogi
6 for i in range(19):
7     plt.subplot(2,10,i+1)
8     filename = folder + 'tri'+str(i+1)+'.jpg'
9     img = plt.imread(filename)
10    plt.imshow(img)
11 plt.show()

```



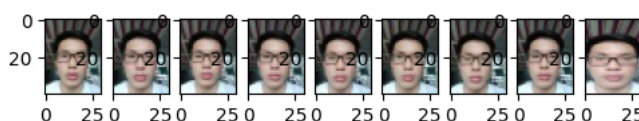
Phím tắt "In số tay" bị tắt khi iframe kết quả của ô chứa mã đang hoạt động. Hãy sử dụng phím Escape để rời khỏi iframe rồi ấn lại vào phím tắt này. ✕

0 25 0 25 0 25 0 25 0 25 0 25 0 25 0 25 0 25 0 25 0 25

```

1 # people 2
2
3 import matplotlib.pyplot as plt
4 from matplotlib.image import imread
5 folder = '/content/drive/MyDrive/A_HOC_TAP/Nam_4_Hoc_ky_2/Artificial_Intelligence/Code_AI/ipython/baocaogi
6 for i in range(19):
7     plt.subplot(2,10,i+1)
8     filename = folder + 'trieu'+str(i+1)+'.jpg'
9     img = plt.imread(filename)
10    plt.imshow(img)
11 plt.show()

```



```

1 # people 2
2
3 import matplotlib.pyplot as plt
4 from matplotlib.image import imread

```

```

5 folder = '/content/drive/MyDrive/A HUC IAP/Nam 4 Hoc ky 2/Artificial Intelligence/Code AI/ipython/baocaogi
6 for i in range(19):
7     plt.subplot(2,10,i+1)
8     filename = folder + 'trung'+str(i+1)+'.jpg'
9     img = plt.imread(filename)
10    plt.imshow(img)
11 plt.show()

```



▼ Gan nhan

```

1 from os import listdir
2 from os.path import isdir
3 from numpy import asarray
4 from numpy import save
5 from keras.utils import load_img, img_to_array
6 folder = '/content/drive/MyDrive/iCloudDrive/AI_image/predict_people/'
7 photos, labels = list(), list()
8 for file in listdir(folder):
9     output = 0.0
10    if file.startswith('truong'):

```

Phím tắt "In số tay" bị tắt khi iframe kết quả của ô chứa mã đang hoạt động. Hãy sử dụng phím Escape để rời khỏi iframe rồi ấn lại vào phím tắt này. ✕

```

13    output = 2
14    if file.startswith('huy'):
15        output = 3
16    if file.startswith('tri'):
17        output = 4
18    if file.startswith('trung'):
19        output = 5
20    if file.startswith('tung'):
21        output = 6
22    img = load_img(folder+file)
23    photo = img_to_array(img)
24    photos.append(photo)
25    labels.append(output)
26 photos = asarray(photos)
27 labels = asarray(labels)
28 print(photos.shape, labels.shape)
29 save('/content/drive/MyDrive/iCloudDrive/AI_image/np_files/predict_people_photos.npy', photos)
30 save('/content/drive/MyDrive/iCloudDrive/AI_image/np_files/predict_people_labels.npy', labels)

```

(147, 40, 30, 3) (147,)

```

1 import numpy as np
2 x_train = np.load('/content/drive/MyDrive/iCloudDrive/AI_image/np_files/predict_people_photos.npy')
3 y_train = np.load('/content/drive/MyDrive/iCloudDrive/AI_image/np_files/predict_people_labels.npy')
4 print(x_train.shape)
5 print(y_train.shape)

```

(147, 40, 30, 3)
(147,)

1

```

1 x_train = x_train.astype('float32')/255
2 from keras.utils import to_categorical

```

```
3 y_train = to_categorical(y_train,10)
```

▼ Tao lop tich chap - CNN

```
1 from keras.models import Sequential
2 from keras.layers import Dense,Dropout,Flatten,Conv2D,MaxPooling2D,Normalization,LeakyReLU
3 from keras.optimizers import Adam
4
5 #32 lan tich chap
6 model = Sequential()
7 model.add(Conv2D(32,kernel_size = (3,3),activation = 'relu',input_shape=(40,30,3),padding='Same'))
8 model.add(MaxPooling2D((2,2),padding='same'))
9 model.add(Dropout(0.25))
10
11 #64 lan tich chap
12 model.add(Conv2D(64,(3,3),activation ='relu',padding = 'same'))
13 model.add(MaxPooling2D((2,2),padding='same'))
14 model.add(Dropout(0.25))
15
16 #128 lan tich chap
17 model.add(Conv2D(128,(3,3),activation ='relu',padding ='same'))
18 model.add(MaxPooling2D((2,2),padding='same'))
19 model.add(Dropout(0.25))
20
21 model.add(Flatten())
22 model.add(Dense(128,activation = 'relu'))
23 model.add(Dropout(0.25))
24 model.add(Dense(10,activation='softmax'))
25
26 from keras.losses import categorical_crossentropy
27 model.compile(loss = categorical_crossentropy,optimizer = Adam(),metrics=['accuracy'])
28 model.summary()
29 train = model.fit(x_train,y_train,batch_size=250,epochs = 20,verbose = 1)
```

Model: "sequential_3"

Phím tắt "In số tay" bị tắt khi iframe kết quả của ô chứa mã đang hoạt động. Hãy sử dụng phím Escape để rời khỏi iframe rồi ấn lại vào phím tắt này. ✕

conv2d_7 (Conv2D)	(None, 40, 30, 32)	896
max_pooling2d_7 (MaxPooling 2D)	(None, 20, 15, 32)	0
dropout_10 (Dropout)	(None, 20, 15, 32)	0
conv2d_8 (Conv2D)	(None, 20, 15, 64)	18496
max_pooling2d_8 (MaxPooling 2D)	(None, 10, 8, 64)	0
dropout_11 (Dropout)	(None, 10, 8, 64)	0
conv2d_9 (Conv2D)	(None, 10, 8, 128)	73856
max_pooling2d_9 (MaxPooling 2D)	(None, 5, 4, 128)	0
dropout_12 (Dropout)	(None, 5, 4, 128)	0
flatten_3 (Flatten)	(None, 2560)	0
dense_6 (Dense)	(None, 128)	327808
dropout_13 (Dropout)	(None, 128)	0
dense_7 (Dense)	(None, 10)	1290

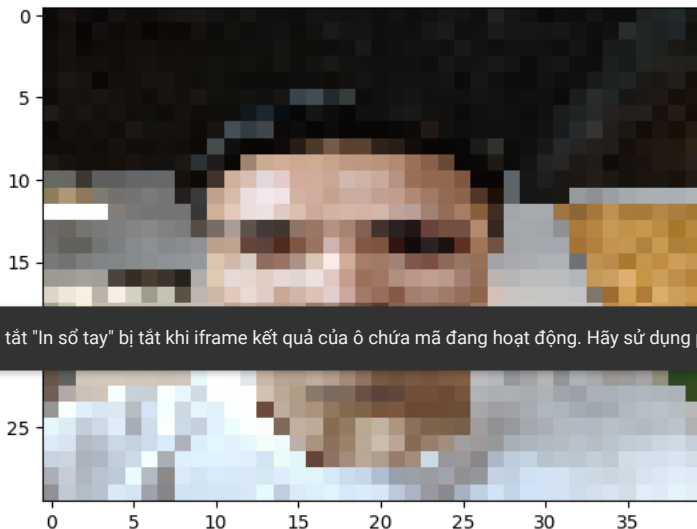
```
=====
Total params: 422,346
Trainable params: 422,346
Non-trainable params: 0

Epoch 1/20
1/1 [=====] - 1s 912ms/step - loss: 2.2190 - accuracy: 0.1905
Epoch 2/20
1/1 [=====] - 0s 466ms/step - loss: 1.9175 - accuracy: 0.2789
Epoch 3/20
1/1 [=====] - 0s 478ms/step - loss: 1.7495 - accuracy: 0.3061
Epoch 4/20
1/1 [=====] - 0s 492ms/step - loss: 1.5717 - accuracy: 0.3741
```

```
Epoch 5/20
1/1 [=====] - 1s 500ms/step - loss: 1.4142 - accuracy: 0.4422
Epoch 6/20
1/1 [=====] - 0s 479ms/step - loss: 1.2286 - accuracy: 0.5306
Epoch 7/20
1/1 [=====] - 1s 505ms/step - loss: 1.0321 - accuracy: 0.6735
Epoch 8/20
1/1 [=====] - 0s 311ms/step - loss: 0.9666 - accuracy: 0.6599
Epoch 9/20
1/1 [=====] - 0s 274ms/step - loss: 0.8532 - accuracy: 0.6735
Epoch 10/20
1/1 [=====] - 0s 283ms/step - loss: 0.6433 - accuracy: 0.7950
```

```
1 import matplotlib.pyplot as plt
2 from keras.utils import load_img
3 from keras.utils.image_utils import img_to_array
4 import numpy as np
5 vat = {1: 'truong', 2: 'minh', 3: 'huy', 4: 'tri', 5: 'trung', 6: 'tung'}
6 img = load_img("/content/drive/MyDrive/iCloudDrive/AI_image/predict.jpg", target_size=(30,40))
7 plt.imshow(img)
8 img = img_to_array(img)
9 img=img.reshape(1,40,30,3)
10 img = img.astype('float32')
11 img =img/255
12 result = np.argmax(model.predict(img),axis=1)
13 vat[result[0]]
```

```
1/1 [=====] - 0s 120ms/step
'tri'
```



Phím tắt "In số tay" bị tắt khi iframe kết quả của ô chứa mã đang hoạt động. Hãy sử dụng phím Escape để rời khỏi iframe rồi ấn lại vào phím tắt này. ✕

1