

```
from keras.models import Sequential
from keras.layers import Dense , Conv2D , MaxPooling2D, Flatten
```

```
model = Sequential()
```

```
from re import A
model.add(Conv2D(64, (3,3), activation = 'relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
model.add(Dense(128, activation = 'relu'))
model.add(Dense(1 , activation = 'sigmoid'))
```

```
model.summary()
```

Model: "sequential_2"

Layer (type)	Output Shape	Param #
conv2d_3 (Conv2D)	?	0 (unbuilt)
max_pooling2d_3 (MaxPooling2D)	?	0
flatten_3 (Flatten)	?	0 (unbuilt)
dense_6 (Dense)	?	0 (unbuilt)
dense_7 (Dense)	?	0 (unbuilt)

Total params: 0 (0.00 B)
 Trainable params: 0 (0.00 B)
 Non-trainable params: 0 (0.00 B)

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(
    rescale=1./255,
    shear_range=0.2,
    zoom_range=0.2,
    width_shift_range=0.2,
    height_shift_range=0.2,
    fill_mode='nearest',
    vertical_flip=True,
    horizontal_flip=True)
test_datagen = ImageDataGenerator(rescale=1./255)
```

```
train_path = '/content/drive/MyDrive/experiment/train'
test_path = '/content/drive/MyDrive/experiment/test'
train_generator = train_datagen.flow_from_directory(
    train_path,
    target_size=(64,64),
    batch_size=8,
    class_mode='binary')
test_generator = test_datagen.flow_from_directory(
    test_path,
    target_size=(64,64),
    batch_size=8,
    class_mode='binary')
```

Found 11 images belonging to 2 classes.
 Found 20 images belonging to 2 classes.

```
train_generator.class_indices
```

```
{'cat': 0, 'dog': 1}
```

```
model.compile(optimizer='adam', loss='binary_crossentropy', metrics=['accuracy'])
```

```
model.fit(train_generator, epochs=100, validation_data=test_generator)
```

Epoch 1/100
 /usr/local/lib/python3.11/dist-packages/keras/src/trainers/data_adapters/py_dataset_adapter.py:121: UserWarning: Your `PyDataset` class
 self._warn_if_super_not_called()

```
2/2 ----- 7s 3s/step - accuracy: 0.3535 - loss: 2.4872 - val_accuracy: 0.5000 - val_loss: 1.7173
Epoch 2/100
2/2 ----- 1s 447ms/step - accuracy: 0.4747 - loss: 1.5581 - val_accuracy: 0.5000 - val_loss: 0.7024
Epoch 3/100
2/2 ----- 1s 620ms/step - accuracy: 0.6742 - loss: 0.6942 - val_accuracy: 0.5000 - val_loss: 0.9326
Epoch 4/100
2/2 ----- 1s 382ms/step - accuracy: 0.6136 - loss: 0.8018 - val_accuracy: 0.5000 - val_loss: 1.1405
Epoch 5/100
2/2 ----- 1s 478ms/step - accuracy: 0.5354 - loss: 0.7574 - val_accuracy: 0.5000 - val_loss: 0.8135
Epoch 6/100
2/2 ----- 1s 474ms/step - accuracy: 0.4747 - loss: 0.8325 - val_accuracy: 0.6000 - val_loss: 0.7136
Epoch 7/100
2/2 ----- 1s 496ms/step - accuracy: 0.4697 - loss: 0.8213 - val_accuracy: 0.5000 - val_loss: 0.7537
Epoch 8/100
2/2 ----- 1s 405ms/step - accuracy: 0.7576 - loss: 0.6002 - val_accuracy: 0.5000 - val_loss: 0.9251
Epoch 9/100
2/2 ----- 1s 324ms/step - accuracy: 0.6970 - loss: 0.5727 - val_accuracy: 0.5000 - val_loss: 0.9448
Epoch 10/100
2/2 ----- 0s 266ms/step - accuracy: 0.5960 - loss: 0.7809 - val_accuracy: 0.7000 - val_loss: 0.6910
Epoch 11/100
2/2 ----- 1s 279ms/step - accuracy: 0.6364 - loss: 0.7655 - val_accuracy: 0.5000 - val_loss: 0.8832
Epoch 12/100
2/2 ----- 1s 267ms/step - accuracy: 0.5253 - loss: 0.6730 - val_accuracy: 0.5000 - val_loss: 0.8333
Epoch 13/100
2/2 ----- 0s 279ms/step - accuracy: 0.3864 - loss: 0.8399 - val_accuracy: 0.6500 - val_loss: 0.6915
Epoch 14/100
2/2 ----- 1s 259ms/step - accuracy: 0.8788 - loss: 0.5033 - val_accuracy: 0.5500 - val_loss: 0.7037
Epoch 15/100
2/2 ----- 1s 322ms/step - accuracy: 0.7955 - loss: 0.5272 - val_accuracy: 0.5500 - val_loss: 0.7426
Epoch 16/100
2/2 ----- 1s 472ms/step - accuracy: 0.6932 - loss: 0.5416 - val_accuracy: 0.5500 - val_loss: 0.7827
Epoch 17/100
2/2 ----- 1s 344ms/step - accuracy: 0.6465 - loss: 0.5683 - val_accuracy: 0.4500 - val_loss: 0.7342
Epoch 18/100
2/2 ----- 1s 417ms/step - accuracy: 0.7955 - loss: 0.4382 - val_accuracy: 0.5000 - val_loss: 0.7390
Epoch 19/100
2/2 ----- 1s 382ms/step - accuracy: 0.6970 - loss: 0.4706 - val_accuracy: 0.5500 - val_loss: 0.8315
Epoch 20/100
2/2 ----- 1s 363ms/step - accuracy: 0.6742 - loss: 0.4802 - val_accuracy: 0.4500 - val_loss: 0.7759
Epoch 21/100
2/2 ----- 1s 415ms/step - accuracy: 0.6566 - loss: 0.5593 - val_accuracy: 0.5500 - val_loss: 0.9473
Epoch 22/100
2/2 ----- 0s 256ms/step - accuracy: 0.6465 - loss: 0.5743 - val_accuracy: 0.5500 - val_loss: 0.9836
Epoch 23/100
2/2 ----- 1s 235ms/step - accuracy: 0.8182 - loss: 0.3881 - val_accuracy: 0.5500 - val_loss: 0.9160
Epoch 24/100
2/2 ----- 0s 284ms/step - accuracy: 0.7348 - loss: 0.4828 - val_accuracy: 0.6000 - val_loss: 0.8491
Epoch 25/100
2/2 ----- 0s 253ms/step - accuracy: 0.8283 - loss: 0.4451 - val_accuracy: 0.6000 - val_loss: 0.8511
Epoch 26/100
2/2 ----- 0s 288ms/step - accuracy: 0.8371 - loss: 0.3830 - val_accuracy: 0.6500 - val_loss: 0.8558
Epoch 27/100
2/2 ----- 0s 265ms/step - accuracy: 0.8788 - loss: 0.3552 - val_accuracy: 0.6500 - val_loss: 0.8614
Epoch 28/100
```

```
model.save('dog-cat-classifier.h5')
```

⚠ WARNING:absl:You are saving your model as an HDF5 file via `model.save()` or `keras.saving.save_model(model)`. This file format is consi

