

day1-048

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```
[ ]: NAME : MOHAMED JUNAID PASHA
      USN : ISV21CS048
      TEAM : 05
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```
[ ]: import tensorflow as tf
      from tensorflow import keras
      from tensorflow.keras import layers
      from tensorflow.keras.preprocessing.image import ImageDataGenerator
      IMG_SIZE = 224
      BATCH_SIZE = 32
```

```
[ ]: train_datagen = ImageDataGenerator(rescale=1./255, validation_split=0.2)
      train_generator = train_datagen.flow_from_directory(
          '/content/drive/MyDrive/ML_TEAM5/types of sea creatures',
          target_size=(IMG_SIZE, IMG_SIZE),
          batch_size=BATCH_SIZE,
          subset='training'
      )
      val_generator = train_datagen.flow_from_directory(
          '/content/drive/MyDrive/ML_TEAM5/types of sea creatures',
          target_size=(IMG_SIZE, IMG_SIZE),
          batch_size=BATCH_SIZE,
          subset='validation'
      )
```

Found 1001 images belonging to 3 classes.

Found 249 images belonging to 3 classes.

```
[ ]: model = keras.Sequential([
      layers.Conv2D(32, (3, 3), activation='relu', input_shape=(IMG_SIZE,
      ↪ IMG_SIZE, 3)),
      layers.MaxPooling2D((2, 2)),
      layers.Conv2D(64, (3, 3), activation='relu'),
      layers.MaxPooling2D((2, 2)),
      layers.Conv2D(128, (3, 3), activation='relu'),
      layers.MaxPooling2D((2, 2)),
      layers.Flatten(),
```

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        layers.Dense(128, activation='relu'),
        layers.Dense(1, activation='sigmoid')
    ])

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

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[ ]: model.fit(train_generator, validation_data=val_generator, epochs=5)

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```

Epoch 1/5
32/32 [=====] - 234s 7s/step - loss: 0.7882 - accuracy:
0.6131 - val_loss: 0.6388 - val_accuracy: 0.6667
Epoch 2/5
32/32 [=====] - 124s 4s/step - loss: 0.6380 - accuracy:
0.6667 - val_loss: 0.6372 - val_accuracy: 0.6667
Epoch 3/5
32/32 [=====] - 118s 4s/step - loss: 0.6368 - accuracy:
0.6667 - val_loss: 0.6366 - val_accuracy: 0.6667
Epoch 4/5
32/32 [=====] - 118s 4s/step - loss: 0.6366 - accuracy:
0.6667 - val_loss: 0.6366 - val_accuracy: 0.6667
Epoch 5/5
32/32 [=====] - 115s 4s/step - loss: 0.6366 - accuracy:
0.6667 - val_loss: 0.6365 - val_accuracy: 0.6667

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[ ]: <keras.src.callbacks.History at 0x7fcf8248e1d0>

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[ ]: model.save("Model.h5", "label.txt")

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/usr/local/lib/python3.10/dist-packages/keras/src/engine/training.py:3103:
UserWarning: You are saving your model as an HDF5 file via `model.save()`. This
file format is considered legacy. We recommend using instead the native Keras
format, e.g. `model.save('my_model.keras')`.
    saving_api.save_model(

```

```

[ ]: from tensorflow.keras.models import load_model
    from tensorflow.keras.preprocessing import image
    import numpy as np
    model = load_model("/content/drive/MyDrive/Model.h5")

    test_image_path = '/content/drive/MyDrive/ML_TEAM5/types of sea creatures/Crabs/
    ↪12687850314_7eefb5efcd_o.jpg'
    img = image.load_img(test_image_path, target_size=(224, 224))
    img_array = image.img_to_array(img)
    img_array = np.expand_dims(img_array, axis=0)

```

```
img_array /= 255.  
prediction = model.predict(img_array) # Use 'predict', not 'prediction'  
print(prediction)
```

```
1/1 [=====] - 0s 110ms/step  
[[0.32734227]]
```

```
[ ]: if prediction > 0.33:  
      print("Fish (porbability)",prediction[0][0])  
elif prediction > 0.66:  
      print("dolphin (porbability)",prediction[0][0])  
else:  
      print("crab (porbability)",prediction[0][0])
```

```
crab (porbability) 0.32734227
```

```
[ ]:
```