Assignment 6.3

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1 Assignment 6.3

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Load the ResNet50 model. Perform image classification on five to ten images of your choice. They can be personal images or publically available images. Include the images in dsc650/assignments/assignment06/images/. Save the predictions dsc650/assignments/assignment06/results/predictions/resnet50 directory. If you are using JupyterHub, you can include those plots in your Jupyter notebook.

[9]:
```
from tensorflow.keras.applications.resnet50 import ResNet50
from tensorflow.keras.preprocessing import image
from tensorflow.keras.applications.resnet50 import preprocess_input,␣
 ↪decode_predictions
import numpy as np

from IPython.core.interactiveshell import InteractiveShell
InteractiveShell.ast_node_interactivity = "all"

model = ResNet50(weights='imagenet')

def process_image(img_path):
    img = image.load_img(img_path, target_size=(224, 224))
    x = image.img_to_array(img)
    x = np.expand_dims(x, axis=0)
    x = preprocess_input(x)
    return(x)

def predict_image(processed_image):
    preds = model.predict(processed_image)
    prediction = decode_predictions(preds, top=1)[0][0]
    description = prediction[1]
    probability = prediction[2]
    return(description,probability)
```

[17]:
```
import os
import pandas as pd
from IPython.display import Image

directory = './6.3 Images/'

for filename in os.listdir(directory):
    img = process_image(f'{directory}{filename}')
    (description,probability) = predict_image(img)
    Image(filename=f'{directory}{filename}')
    print(f'Filename: {filename}\nDescription: {description}\nProbability:␣
↪{probability}\n------------------------------')
```

[17]:

```
Filename: keyboard.jpg
Description: computer_keyboard
Probability: 0.7089291214942932
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[17]:

```
Filename: elephant.jpg
Description: African_elephant
Probability: 0.62835693359375
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[17]:

```
Filename: cat.jpg
Description: tabby
Probability: 0.38291242718696594
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[17]:

```
Filename: table.jpg
Description: desk
Probability: 0.39174094796180725
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[17]:

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Filename: fireplace.jpg
Description: stove
Probability: 0.6792985796928406
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[17]:

```
Filename: refrigerator.jpg
Description: refrigerator
Probability: 0.9945111274719238
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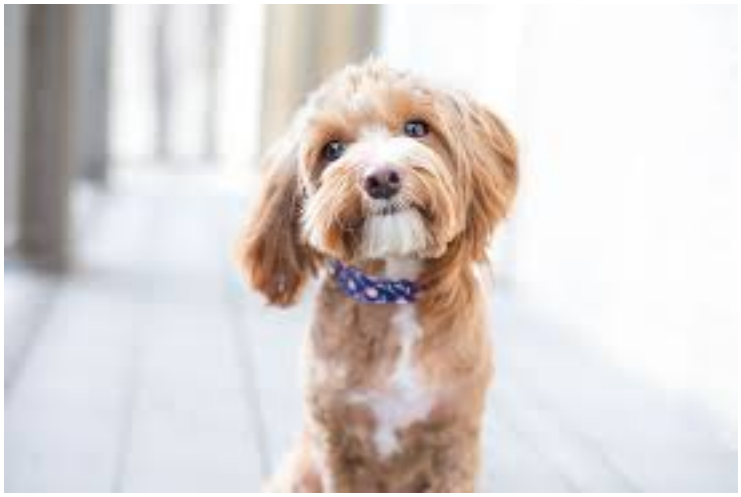
[17]:



```
Filename: dog.jpg
Description: cocker_spaniel
Probability: 0.5130533576011658
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```

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