6.3 ResNet50 model: image classification

In [3]:
```
import os
from google.colab import drive
drive.mount('/content/drive', force_remount = True)
os.chdir('/content/drive/My Drive/DSC650/assignment06')
!pwd
```

```
Mounted at /content/drive
/content/drive/My Drive/DSC650/assignment06
```

In [9]:
```
import glob
import numpy as np
import matplotlib.pyplot as plt

from tensorflow.keras.applications.resnet50 import ResNet50
from tensorflow.keras.preprocessing import image
from tensorflow.keras.applications.resnet50 import preprocess_input, decode_predictior
from tensorflow.keras.applications import resnet50
```

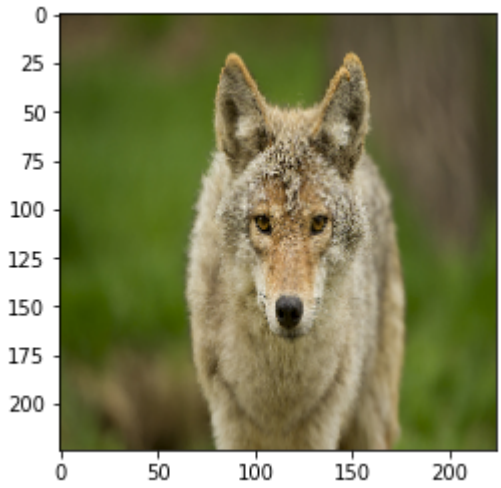
Load the Model

In [10]:
```
model = ResNet50(weights = 'imagenet')
```

Classify Images

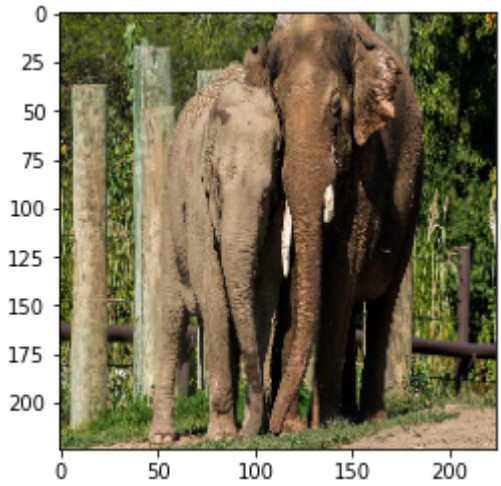
In [23]:
```
def classify_image(img_path):
  img = image.load_img(img_path, target_size = (224, 224))

  # visualize image
  plt.imshow(img)
  plt.show()

  # convert image to numpy array
  image_array = image.img_to_array(img)
  image_array = np.expand_dims(image_array, axis = 0)
  image_array = preprocess_input(image_array)

  preds = model.predict(image_array)

  with open('results/ResNet50/results.txt', 'a') as f:
        f.writelines(str(preds))

  print('Predicted:', decode_predictions(preds, top = 3)[0])
```

In [24]:
```
# Coyote
classify_image('images/coyote.jpg')
```




```
1/1 [==============================] - 0s 232ms/step
Predicted: [('n02114855', 'coyote', 0.8491309), ('n02114712', 'red_wolf', 0.0745702
8), ('n02114367', 'timber_wolf', 0.043620877)]
```

In [25]:
```
# Elephant
classify_image('images/elephant.jpg')
```

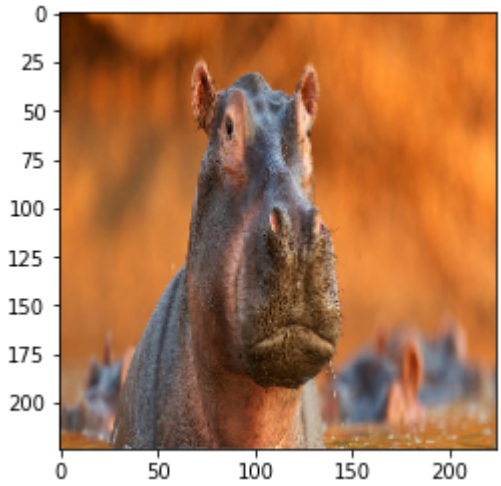



```
1/1 [==============================] - 0s 209ms/step
Predicted: [('n01871265', 'tusker', 0.6884622), ('n02504013', 'Indian_elephant', 0.28
768483), ('n02504458', 'African_elephant', 0.023851536)]
```

In [26]:
```
# Flamingo
classify_image('images/flamingo.jpg')
```

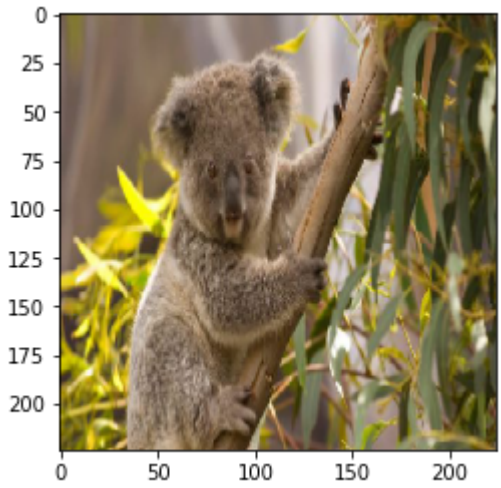

```
1/1 [==============================] - 0s 213ms/step
Predicted: [('n02007558', 'flamingo', 0.9844238), ('n12985857', 'coral_fungus', 0.006
7736832), ('n13040303', 'stinkhorn', 0.005378745)]
```

In [27]:
```
# Hippo
classify_image('images/hippo.jpg')
```



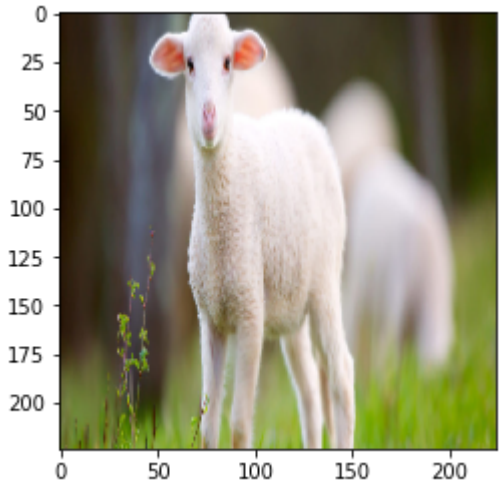

```
1/1 [==============================] - 0s 214ms/step
Predicted: [('n02398521', 'hippopotamus', 0.9729689), ('n02397096', 'warthog', 0.0098
67576), ('n03388043', 'fountain', 0.003795223)]
```

In [28]:
```
# Koala
classify_image('images/koala.jpg')
```



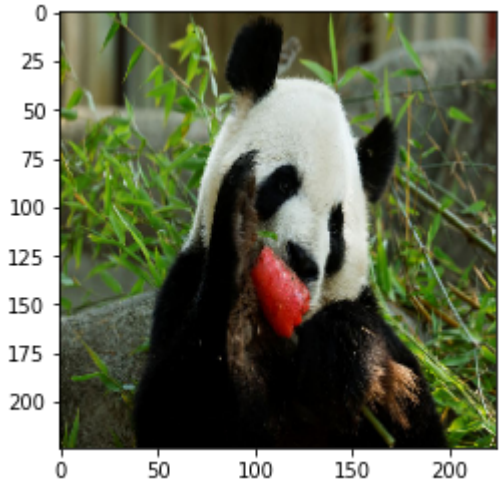
```
1/1 [==============================] - 0s 223ms/step
Predicted: [('n01882714', 'koala', 0.9990355), ('n02356798', 'fox_squirrel', 0.000137
90106), ('n02363005', 'beaver', 0.0001132672)]
```

In [29]:
```
# Lamb
classify_image('images/lamb.jpg')
```



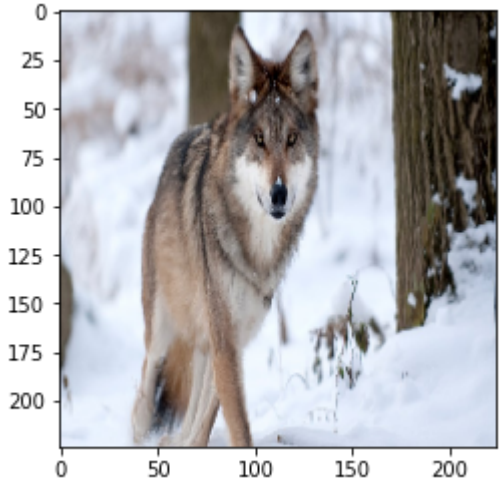
```
1/1 [==============================] - 0s 234ms/step
Predicted: [('n02412080', 'ram', 0.4040686), ('n02423022', 'gazelle', 0.1512145), ('n
02091244', 'Ibizan_hound', 0.07354219)]
```

In [30]:
```
# Panda
classify_image('images/panda.jpg')
```




```
1/1 [==============================] - 0s 195ms/step
Predicted: [('n02510455', 'giant_panda', 0.994145), ('n02509815', 'lesser_panda', 0.0
0036552706), ('n01843383', 'toucan', 0.00036164964)]
```

In [31]:
```
# Wolf
classify_image('images/wolf.jpg')
```




```
1/1 [==============================] - 0s 215ms/step
Predicted: [('n02114367', 'timber_wolf', 0.5616778), ('n02109961', 'Eskimo_dog', 0.29
799035), ('n02114712', 'red_wolf', 0.033185024)]
```