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In [1]: from keras.applications.xception import Xception
from keras.applications.xception import preprocess_input
from keras.preprocessing.image import load_img
from keras.preprocessing.image import img_to_array
from keras.models import Model
from keras.models import load_model
def image_feature(filename):
    model=Xception(include_top=True,weights='imagenet')
    lastlayer=model.layers[-2].output
    model=Model(inputs=model.input,outputs=lastlayer)
    image = load_img(filename,target_size=(299,299))
    image = img_to_array(image)
    image = image.reshape(1,299,299,3)
    image = preprocess_input(image)
    feature = model.predict(image)
    return feature
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In [2]: def load_set(filename):
    dataset=[]
    file=open(filename, 'r')
    text=file.read()
    file.close()
    for line in text.split('\n'):
        identifier = line.split('.')[0]
        dataset.append(identifier)
    return(dataset)
```

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In [13]: from pickle import load
from keras.preprocessing.sequence import pad_sequences
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In [17]: def word_mapping(number,tokenizer):
    for word,int_id in tokenizer.word_index.items():
        if int_id==number:
            return word
    return None
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In [7]: def caption_generate(model,tokenizer,image,max_length):
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caption='startseq'
for i in range(max_length):
    sequence=tokenizer.texts_to_sequences([caption])[0]
    sequence=pad_sequences([sequence], maxlen=max_length)
    word_id=argmax(model.predict([image,sequence]), verbose=0))
    word=word_mapping(word_id,tokenizer)
    if word is None:
        break
    caption += ' ' + word
    if word=='endseq':
        break
return caption

```

In [29]:

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tokenizer=load(open('C:/Users/mahid/M.Tech Project/Xception_Model/tokenizer.pkl','rb'))
max_length=34
model=load_model('C:/Users/mahid/M.Tech Project/Xception_Model/caption_model_10.h5')
filename = 'C:/Users/mahid/M.Tech Project/Data Set/Flickr8k_text/Flickr_8k.testImages.txt'
test_dataset = load_set(filename)
print(len(test_dataset))

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2001

In [22]:

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import matplotlib.pyplot as plt
import numpy as np
from numpy import argmax
import cv2

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In [30]:

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for i in range(20):
    no=np.random.randint(0,2000,(1,1))[0,0]
    image=image_feature('C:/Users/mahid/M.Tech Project/Data Set/Images/'+str(test_dataset[no])+'.jpg')
    caption=caption_generate(model,tokenizer,image,max_length)
    test_img=cv2.imread('C:/Users/mahid/M.Tech Project/Data Set/Images/'+str(test_dataset[no])+'.jpg')
    test_img = cv2.cvtColor(test_img, cv2.COLOR_BGR2RGB)
    plt.figure()
    plt.imshow(test_img)
    plt.xlabel(caption)

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startseq boy in red shirt is climbing on the monkey bars endseq



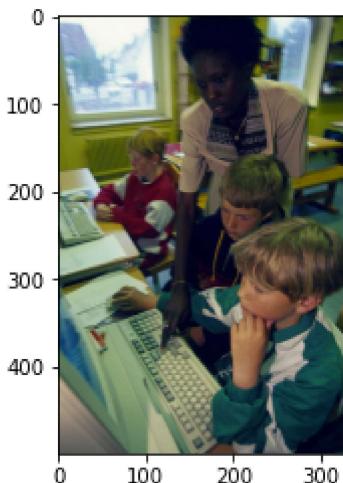
startseq woman in black and white hat is standing on the sidewalk endseq



startseq man in red shirt is skating on the ice endseq



startseq two young girls are sitting on the sidewalk endseq



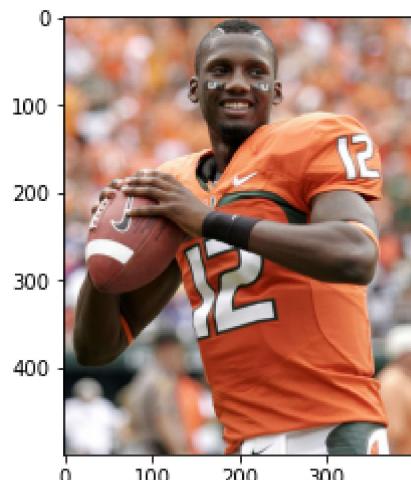
startseq two young boys are playing with red and red ball endseq



startseq jeep is driving through the woods endseq



startseq woman in black and white is holding baby in her face endseq



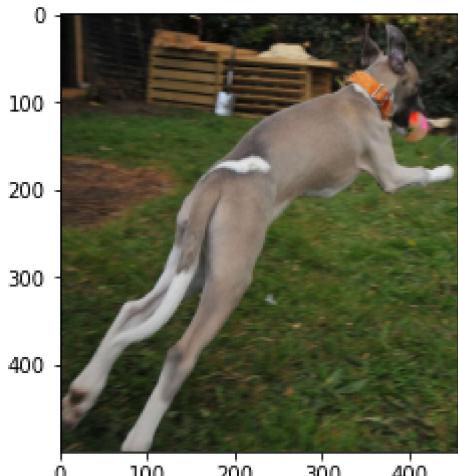
startseq two men play hockey endseq



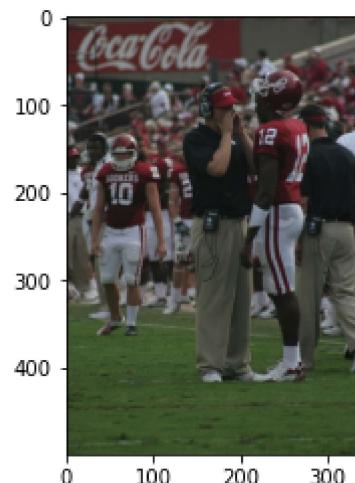
startseq man in red shirt is guiding his eye endseq



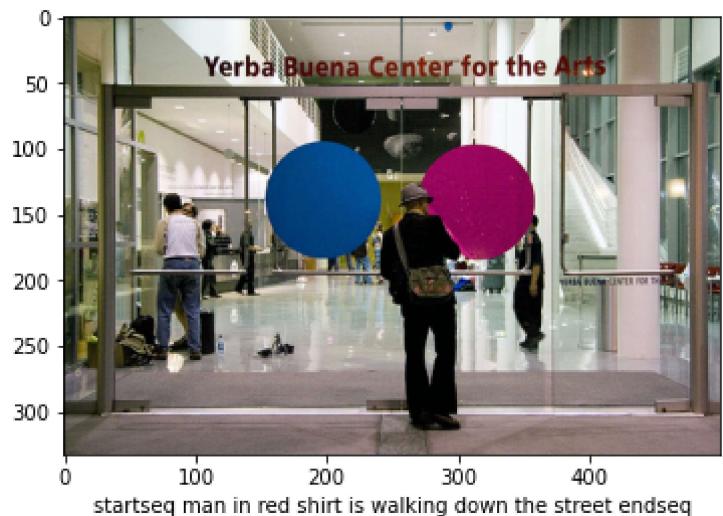
startseq boy in pink shirt swinging on swing endseq



startseq two dogs are playing with red ball endseq



startseq two hockey players are playing hockey endseq





startseq dog is running through the grass endseq



startseq dog is running through the woods endseq



startseq child is jumping on bed endseq



startseq boy in pink shirt is jumping upside down from the playground endseq



startseq boy in red shirt is jumping on wooden bridge endseq



startseq boy in red and blue soccer uniform is kicking soccer ball endseq