

# Lab Report 1

## Objective

For this lab about image recognition, I used flickr30 and I chose the category about animals because there is so much detail in animals images and doing image recognition will be a challenge that I wanted. I had to scrub the database photos by the application called NLP tokenization and they provided information about every image which I used to extract the images to categories.

For this lab report I used the Flickr30 dataset provided by Mayanka in the documentation. The category I choose was animals, which meant I had to scrub the Flickr30 dataset for pictures which made sense to our category. Then perform NLP tokenization and SIFT image feature extraction on the remaining dataset.

## NLP Features

The application provided captions which determined keywords I can you like cat ,dog, etc. I edited the code to accommodate the captions for each image.

I went through the captions and searched for the keywords using the Stanford Core NLP tokenization, the words I choose where: cat, dog and horse. I modified the code so that it would read the captions file into the main class:

```
// read some text in the text variable
//String text = "This is a sample text"; // Add your text here!

//Reading a file
File captions = new File( pathname: "C:\\Users\\Red\\Desktop\\CS5542\\Tutorial 3 Source Code\\NLP\\Tutorial-2-CoreNLP\\src\\Data\\caption.txt");
BufferedReader bf = new BufferedReader(new FileReader(captions));
String caption;

//initialiaxiotn
List<String> keywordList = new ArrayList<>();
List<String> catImageList = new ArrayList<>();
List<String> dogImageList = new ArrayList<>();
```

I made the code to provide a function to take the image and the caption to move the images to the correct category.

I also had to modify the code so that it would push our images according to their caption ID into tour desired categories for image extraction:

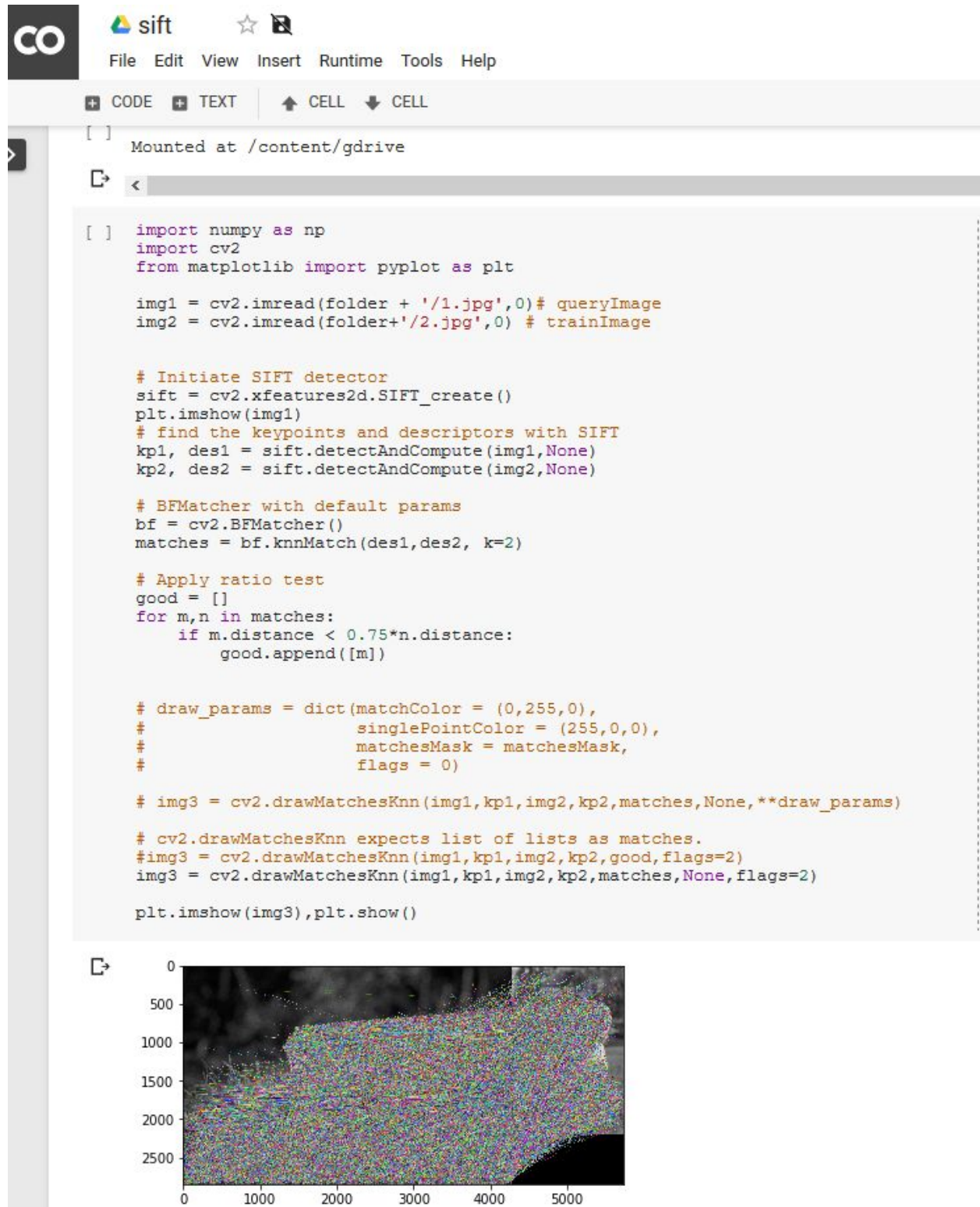
```
f (keywordmap.containsKey(lemma)) {  
  
    if (lemma.equals("cat")) {  
  
        Pattern pattern = Pattern.compile("[0-9]+\\.jpg");  
        Matcher matcher = pattern.matcher(caption);  
        if (matcher.find()) {  
            catImageList.add(matcher.group(0));  
            System.out.println("Working");  
            Path temp = Files.copy(Paths.get( /*sh "C:\\Users\\Red\\Desktop\\CS5542\\lab\\flickr30k_images.tar\\flickr30k_images\\flickr30k_images\\" + matcher.group(0)), Paths.get( /*sh "src/Data/cat/" + matcher.gr  
        }  
    }  
    if (lemma.equals("dog")) {
```

for some reason I was not getting correct outcome here.

### **SIFT Image feature extraction**

The professor Mayanka provided the SIFT extraction and I used it to for image and I can determine where it is noticing where the dog is and environment \_

Using the SIFT extraction features provided by Mayanka, I did SIFT extraction on the dog dataset with one of the training images. The results of which can be found below:



The SIFT feature focuses on the kids clothes and the way she js getting set to hit the ball. The hat and ball are key factors to determine which animal is this for. The cirles in the image show where the key factors in determining which Category this should go in.

As you can see from the SIFT feature extraction for dog, the feature extraction focuses on the persons clothing and posture, a little bit of attention is focused on the hard hat and ball, but unfortunately it looks like the bat is almost completely ignored.