Problem set 1

Name : Talha Javed

Email : tjvc4@mail.umkc.edu

**Question 1**

**public** **class** myclass {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

**int**[] arr={1,3,2,1,3};

HashMap<Integer,Integer> map=**new** HashMap();

**for**(**int** i=0;i<arr.length;i++){

**if**(!map.containsKey(arr[i])){ // if int not in map

map.put(arr[i],1);

}

**else**{

map.put(arr[i],2); // if int in map increase count

}

}

**for** (Map.Entry<Integer,Integer> entry : map.entrySet()) {

**int** key = entry.getKey();

**int** value = entry.getValue();

**if**(value==1){

System.***out***.println(key); // Integer appearing once

**break**;

}

}

}

**Question 2**

We want to identify chimps somehow and their activities. For this we need some training data in which all the activities will be correctly labeled. We will then make our system learn using this test data. Also, we will use facial recognition to identify individual chimps.

1. We need to extract the chimpanzees’ faces to extract different features from them. As we also need to identify their activities we need to extract the pose which the chimp is in. after we have extracted the chimps from the frames of the video. It depends on us what kind of features we want to extract something that will give us a unique template for identification.
2. We will install video cameras all over the place to capture their movements. We will use the video feed to collect all this data. The video recordings will trigger if the camera detects any motion
3. Big data will help us train our system better, it will identify the likelihood of future outcomes and hidden patterns in our data. It will also reduce errors in identification.
4. With improved learning our system will be able to identify use cases with more accuracy. We will be able to identify chimps faster

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Extract features

Apply any required filters

Classification

Show Statistics and histograms

Collect frames from video

Training set

The figure depicts an overview of our system. We will use frames from our videos to identify chimps using facial recognition. For this we will extract their faces and any features we desire to get a unique template. We will also extract features to detect the pose a chimp is in. After feature extraction we will apply any image processing techniques that we see fit and then using a classifier classify chimps and their poses. To show our output we will use histograms and graphs to show our chimps’ behavior to the user.