Pokemon Analysis

The goal of the project was to detect and classify Pokemon ID, CP, HP, Stardust for power up and the level of the Pokemon. The same has been implemented using below mentioned pseudo-code:

Template matching {

1. Set the base template
2. Read the image
3. Convert the image to gray scale
4. Use norm2corr to find the region which matches the base template
5. Then we use region props to find the fully connected regions
6. The bounding box will give us the enclosed region
7. Once we have this region, we will perform template matching on the individual numbers again and send that back as the result

}

Pokemon ID {

*** Implementing BOVW

1. For ID detection we will used the Bag of Visual words implementation.
2. We extract HOG features of each image
3. Generate the Dictionary
4. Save the result in model.mat file

*** Train

1. We call the model.mat
2. We then use KNN to train the descriptors NN=1;

*** Test

1. Pass the image
2. Get the descriptor
3. Predict the label

}

CIR {
1. We use Hough transform for this
2. imfindcircle is used to find the circle with 200<R<500
3. If circles are not found, we use estimation based on geometry.

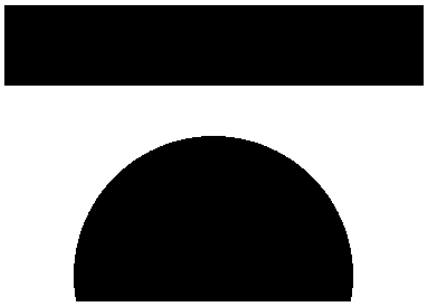
}

Level Detection {
1. For level detection we make use of BRISK features of image.
2. We convert the image to Gray scale
3. Increase the contrast
4. Mask it with an existing mask
5. Get the result of the mask and pass it to brisk feature
6. Apply k-means to get where the most features were. Ideally most features would be detected at the power level
7. Return that

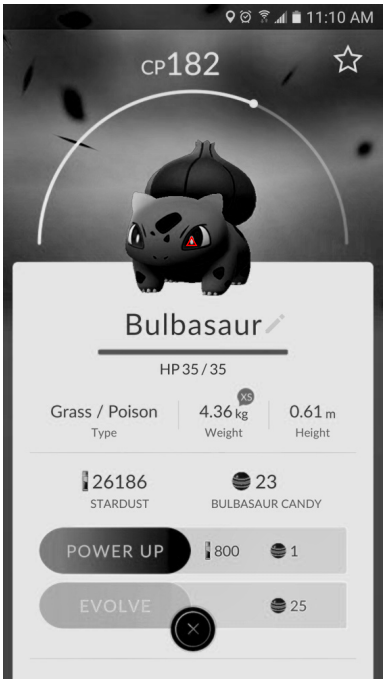
}

Level Detection Result:

Level Detection mask used:

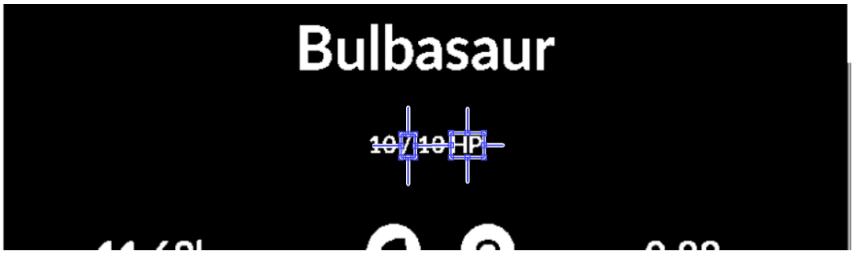


CIR result:



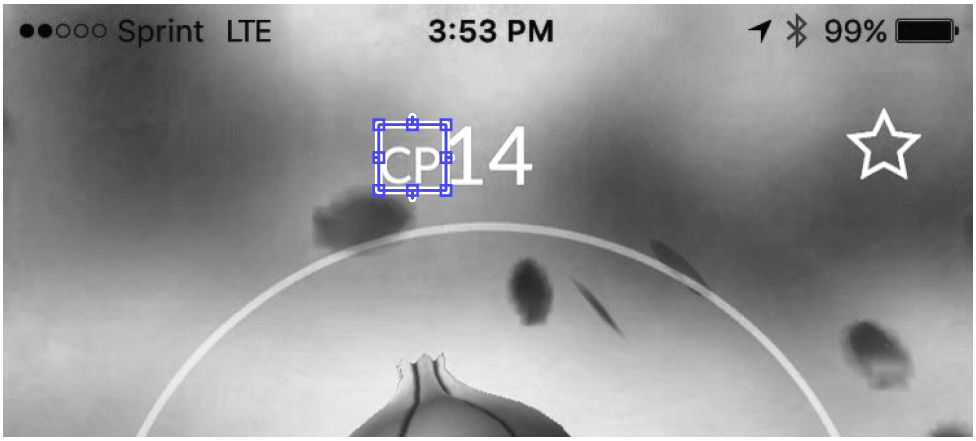
<u>HP Number detection:</u>

Detection of the "/" and **HP**

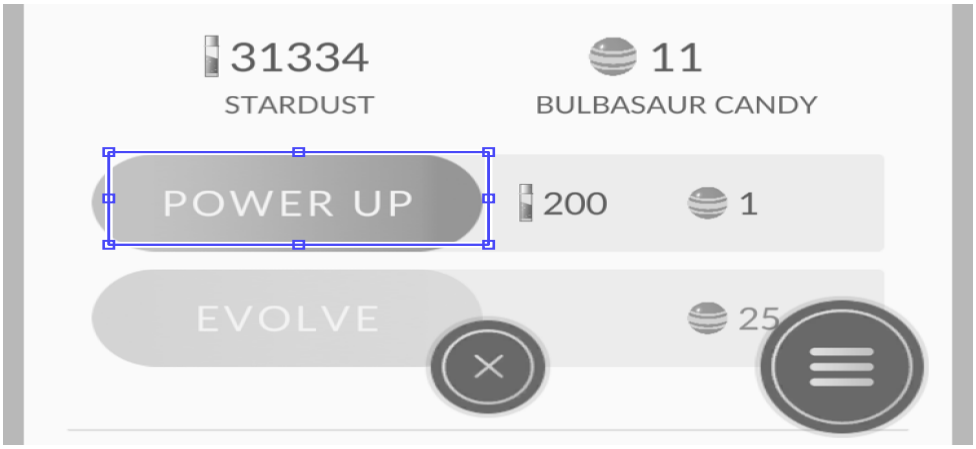


Detection of the number:

CP Detection:



Stardust:



Detected Number This will be suffixed by 00:

Accuracy:

Train set

Name	Value
accuracy_CP	0.7626
accuracy_HP	0.7967
accuracy_ID	1
accuracy_stard...	0.7549

Val set

Workspace

Name	Value
accuracy_CP	0.7482
accuracy_HP	0.8561
accuracy_ID	0.7266
accuracy_stard...	0.6835