

Computer Vision - Assignment 3

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Q1: Image classification

The data is available online and downloaded. Move it to the 'data' directory.

We make a simple 2 layer network for image classification.

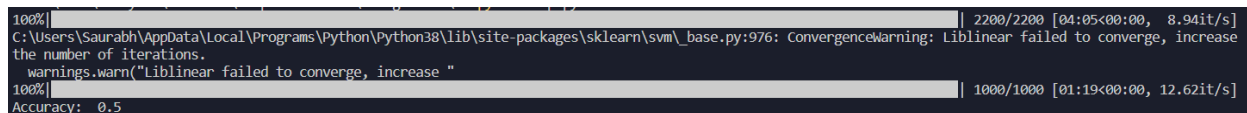
- We use HOG features of all images to train the model. To get HOG features we have the function 'gethog'. Available in file imgclass.py.
- We use SIFT features of all images to train the model. To get SIFT features we have the function 'getsift'. Available in file imgclass.py.

Q2: Face verification

The LFW Dataset is available [here](#). Please download it, extract and move it into the 'data' directory.

LBP features are extracted from the image and the histograms are saved in a list of training data. The array is reshaped to be used in our model. The model we are using is a simple linear SVC and we train it on the training images and labels. Similarly, we test our model using our test data. We save the predictions in an array to calculate accuracy.

From our model we get around 50% accuracy for face verification.



```
100%|████████████████████████████████████████████████████████████████████████████████| 2200/2200 [04:05<00:00, 8.94it/s]
C:\Users\Saurabh\AppData\Local\Programs\Python\Python38\lib\site-packages\sklearn\svm\_base.py:976: ConvergenceWarning: Liblinear failed to converge, increase
the number of iterations.
  warnings.warn("Liblinear failed to converge, increase "
100%|████████████████████████████████████████████████████████████████████████████████| 1000/1000 [01:19<00:00, 12.62it/s]
Accuracy: 0.5
```

The pretrained Light CNN (29 features) is available [here](#). It is a caffe model that can be downloaded and used using standard instructions from caffe. We can replace our model with this model and train it.

Q3: Semantic Segmentation

References

- https://scikit-image.org/docs/dev/auto_examples/features_detection/plot_local_binary_pattern.html
- https://scikit-image.org/docs/dev/auto_examples/features_detection/plot_hog.html
- https://pytorch.org/tutorials/beginner/blitz/neural_networks_tutorial.html
- https://github.com/AlfredXiangWu/face_verification_experiment

Code

The code for this report is available in the zip folder named "B18CSE050assignment3".