Review on Group 7

Summary

Report format was adopted by group 7 to complete the first project. In this report, both MNIST and Raphael's painting datasets were used but treated with different feature extraction method: scattering net was applied to extract features of MINIST dataset while pre-trained deep neural network VGG19 was used to extract features of Raphael's painting dataset. To apply VGG19, the image size of Raphael's paintings have been resized. Unsupervised learning methods such as PCA/MDS, Manifold learning (Diffusion Map, ISOMAP, LLE) and t-SNE are used to visualize the features. The results show that MDS, Diffusion Maps and ISOMAP can successfully separate these paintings as Raphael's and not Raphael's. Finally, SVM model was performed on both MNIST dataset and Raphael's' painting dataset to make the classification. The result shows 96.3% accuracy of image classification for MNIST dataset and all 7 disputed paintings are Raphael's work.

Strengths

Both MINIST and Raphael's painting datasets were used in the project. Many unsupervised learning methods were applied to visualize the extracted features. The SVM result on MNIST dataset show relatively high accuracy.

Weaknesses

No validation of the prediction result of VGG19 on Raphael's painting in this report. Scattering net and pretrained deep neural network VGG19 were used on two different datasets in the project, no comparison or conclusion can be done on the result of these two methods. No preprocess of the image except resize to fulfill VGG19's requirement was used in this project to increase the accuracy.

Clarity and quality of writing

5

The report is clearly written. It is well organized with good examples and proper figures. No obvious grammar problems or typos are found.

Technical quality

3

It seems the prediction result on Raphael's paintings that all 7 disputed painting belong to Raphael's work is not convincing. As mentioned before, no validation is shown in the report.

Overall rating

3

Confidence on my assessment

2