Face Detection with HoG features

Task description:

You are going to have a training dataset for images which contains non-face images and face images. Use **HoG algorithm** to extract features from them, and build a classification model of non-face/face based on these HoG features with **Python.** Please summarize your **workflow** and **findings** for your work in a report format. Besides, attach your model and all your scripts for submission. The score you have will be evaluate by two criteria: **A clear and reasonable report** and **how your model performs in our unreleased data**.

Report format:

1. You should write in Microsoft words and export it as ".pdf" format.
2. Font size: 12, Font type: Times New Roman.
3. No more than 5 pages.
4. Best divide it into several parts with titles to show your work.
5. Some visualizations will make your report clear and beautiful. (Like HoG visualization)
6. For workflow, you should write how you tune the parameters and get a reasonable ones.

Data format:

1. Dataset is set in "train_data.zip". "train\p*.jpg" means the positive image which contains a face, while "train\n*.jpg" means the negative image which contains images without complete face.
2. Images are collected with various sizes, uniform sizes of images will make normalized inputs for classifier

Scripts:

1. You should also zip your files with these files: "train.py" (the workflow you get your model), "test.py" (there is a function inside: **evaluate(image_files)** where image_files is a list of image paths), "report.pdf" (your report) "your model file" contains your model which

"test.py" will use.

The final zip file will be named by your group number.

CAUTION: if there exists general problem (not caused by machines or running environment) in running "evaluate()" in "test.py", your score of model performance will be heavily reduced.

2. Selection of classifier will be free, but you can only use four extra modules of python:
   CV2, sklearn, tensorflow, numpy.

EXTRA:

You can use cv2.HOGdescriptor() to extract features. However, if you can build HoG algorithm by yourself, you can earn **extra score** of this work.

You can take online resources as reference, but pirating directly will be strictly punished.

DEADLINE:

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