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Lab7

1. For Mandatory part 1 Image Classification with PCA and KNN:
   (1) To write my code, lines 35 to 38, I take https://stackoverflow.com/questions/12201577/how-can-i-convert-an-rgb-image-into-grayscale-in-python as a reference; lines 41 to 56, I take https://zhuanlan.zhihu.com/p/36775341 as a reference
   (2) To run "knn_9817961224.py", the following command should be entered:
   python3 knn_9817961224.py 5 100 770 ./cifar-10-batches-py/data_batch_1

2. For Mandatory part 2 Seeds Classification with Gaussian Naïve Bayes:
   (1) To write my code, lines 106 to 114, I take https://blog.csdn.net/churximi/article/details/61415254?depth_1-utm_source=distribute.pc_relevant.none-task&utm_source=distribute.pc_relevant.none-task as a reference; lines 15 to 26, I take https://github.com/spiritwiki/codes/blob/master/data_seeds/template.py https://hackernoon.com/implementation-of-gaussian-naive-bayes-in-python-from-scratch-c4ea64e3944d as a reference.
   (2) To run "naive_bayes_9817961224.py", the following command should be entered:
   python3 naive_bayes_9817961224.py
   (3) So far, my naïve bayes training will return "Rosa" for all testing data, according to the calculated joint distribution. I haven't figured out what's the problem for my implementation.
   (4) Result:

```
(venv) ➜  part2 git:(master) ✗ python3 naive_bayes_9817961224.py
My Naive Bayes:
Training acc: 100.00%. Traing time:  0.0010650190000003334 s
Testing acc:  42.86 %. Traing time:  0.008338788000000097 s
Sklearn Naive Bayes:
Training acc: 100.00%. Traing time:  0.0018150569999999533 s
Testing acc:  88.1 %. Traing time:  0.00018377999999996675 s
Sklearn KNN:
Training acc: 100.00%. Traing time:  0.0005474550000004186 s
Testing acc:  85.71 %. Traing time:  0.001821276999999899 s
(venv) ➜  part2 git:(master) ✗
```