CENG 463 Homework 1 due to 17 October 2022 at 13.00.

**Implement a KNN classifier with Python.**

**Description:**

Implement both *fit()* and *predict()* functions in the same function: y\_pred = *fitAndPredict(X\_train, y\_train, X\_test, n\_neighbors )*. You may use other sklearn function such as accuracy and train/test data splitting.

Start with the Lecture 2 Jupyter Notebook then code your own implementation.

Replace these lines:

knn = KNeighborsClassifier(n\_neighbors=5)

knn.fit(X\_train, y\_train)

y\_pred = knn.predict(X\_test)

with

y\_pred = fitAndPredictKNN(X\_train, y\_train, X\_test, n\_neighbors, test\_ratio )

where test\_ratio is between 0.1 to 1 selecting tested samples randomly.

**Tests:**

All features and individual features. 5 tests are required with K = 1,3,…,9 and 11 for test\_ratio = 1. Compare these findings with Sklearn.

Moreover, test the effect of test ratio for best performing K.

Measure and report computation times and classification accuracies in your notebooks.

You may group with another student, teams of 2 students are allowed.

Only your notebooks for your group will be submitted.

Add code comments and discuss your findings in the notebook.

Lecture2 Colab Link: <https://colab.research.google.com/drive/12R1uRQkMs6bWFA-ZeCmtK9xBVil-uaUP?usp=sharing>

Please make a copy to your account.

Good Luck

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