Task 2: Self-study Machine Learning End to End Project

- Machine Learning (ML) plays an important role in big data analytics today. We have spent a considerable time studying its basics. In order to have a better understanding its principle and general steps for its applications, you are requested to complete this task, as a summary.

- In this task, you will go through an example project end to end, pretending to be a recently hired data scientist in a real estate company. Here are the main steps you will go through:

    Look at the big picture

    Get the data

    Discover and visualize the data to gain insights.

    Prepare the data for Machine Learning algorithms.

    Select a model and train it.

    Fine-tune your model.

    Present your solution.

    Launch, monitor, and maintain your system.

Actions:

1) Following the text in End-to-End Project.pdf, presented in folder …/Assigments/Task_2, read them one section by one section and understand the contents, including the codes.

2) Create a notebook, say, Real_estate_project.ipynb, and copy all the codes in text into the notebook (cells) in sequence. You must copy/paste the codes one piece by one piece from very beginning to end of the text. Each time when you copy/paste a piece of code from a section, you should run them and see what happens and understand them.

Once you finish this text review and running the codes, you will have a better understanding of a machine learning project end-to-end in general. Now, by using the housing dataset, do the following actions:

Actions:

1. Try a Support Vector Machine regressor (sklearn.svm.SVR), with various hyper- parameters such as kernel="linear" (with various values for the C hyperpara- meter) or kernel="rbf" (with various values for the C and gamma hyperparameters). Don't worry about what these hyperparameters mean for now. How does the best SVR predictor perform?

2. Try replacing GridSearchCV with RandomizedSearchCV.

Note:

a) You must add some comments into the cells, which may demonstrate your understanding each part of the codes.

b) You must present your created notebook to the subject assessor for his evaluating your performance.