Machine Learning

Please keep in mind that Machine Learning (ML) is an entire course by itself. This segment covers the overview of ML in the hope that you can comprehend the subject matter and be able to explore more on your own.

Please read chapter 15 of the class textbook and practice the example programs given in the chapter to get a better understanding of the subject.

Your Assignments

Question #1

a) Explain what is Machine Learning? How does it work? What does it do?

b) There are three types of Machine Learning Algorithms; Supervised Learning, Unsupervised Learning, and Reinforcement Learning? Describe each one of them and provide some examples on each algorithm.

Question #2

The following exercises shown below are taken from your textbook on chapter 15. Please complete the exercise. The dataset for exercise 15.6 is available on class blackboard.

15.3 (SEABORN `PAIRPLOT` GRAPH) Create a Seaborn `pairplot` graph (like we showed for Iris) for the California Housing dataset. Try the Matplotlib features for panning and zooming the diagram. These are accessible via the icons in the Matplotlib window.

15.6 (SIMPLE LINEAR REGRESSION WITH AVERAGE YEARLY NYC TEMPERATURES TIME SERIES) Go to NOAA's Climate at a Glance page (`https://www.ncdc.noaa.gov/cag`) and download the available time series data for the New York City average *annual* temperatures from 1895 through present (1895–2017 at the time of this writing). For your convenience, we provided the data in the file `ave_yearly_temp_nyc_1895-2017.csv`. Reimplement the simple linear regression case study of **Section 15.4** using the average yearly temperature data. How does the temperature trend compare to the average January high temperatures?

Write a Learning Report Summary (LRS)

Using Microsoft Word, write a summary report (not a bullet items) with a minimum of 100 words explaining how you completed your assignment. *Please describe your responses, not just yes/no answers.*

1. Did you successfully get your assignment done? Did it run? Any error? Did you get the correct result? Did you test your program thoroughly?
2. How much time did you spend to complete your assignment?
3. Did you find the assignment easy or challenging for you?
4. Did you write the program yourself? Did you get any help from anyone?
5. When you encountered obstacles to complete your program, how did you resolve the issues? Did you use Google to get help? Describe how Google was abled or not able to assist you?
6. What did you learn from doing this assignment?
7. Any other information you would like to share with your instructor? Make sure you provide program output on each option.

What to submit on blackboard

Your program source code.
Your program output.
Your LRS.