정보통신대학원 GITA315: Python Machine Learning

Spring 2022

Homework No. 1

Due 11:59 pm, Thursday April 14, 2022

Submit the paper **by email** before the deadline. Notice that the delayed submission will entail a cut in evaluation by 30% for each delayed day.

Instruction for the submission of the paper:

- Your work should be *your own*.
- Your work can be either in English or Korean.
- Your work can be handwritten or typed.
- *Only* pdf file will be accepted.
- *File name* for the paper submitted *must* start with your **student number** followed by **student name**, for example, **A58005 홍길동** or **A58005honggildong**.
- Make sure that your paper includes homework number, name, student number, and the submission date.
- Your work should ***not*** include any type of '**cut and paste**'
- You should submit the paper via **email** at **pbg6567@sogang.ac.kr** and be sure to include "**gita315**" in the subject field of the email (for example, subject: gita315 homework 1).
- If you have any problem with submitting the paper, you may contact the teaching assistant 박병건 at the above email address.

Warning: When it is found that your work is not your own work, your paper won't get any credit and it may be considered in determining your final grade.

Problems:

1. How many times the weights are updated for each iteration (or when n_interation = 1) in the Perceptron learning implementatin in Python discussed in the class? Here assume that X: 100 × 2, y: 100 × 1. Your should explain your answer.
2. list_x = ([1, 2, 3], [4, 5, 6], [7, 8, 9], [10, 11, 12]) and X = np.array(list_x). Determine X.shape[0].
3. list_x = ([1, 2, 3], [4, 5, 6], [7, 8, 9], [10, 11, 12]) and X = np.array(list_x). list_y = ([1], [0], [0], [1]) and y = np.array(list_y). Describe the returned object of zip(X, y).
4. Explain df.iloc[0:100, 4].values used in the part of loading the Iris dataset in the class.
5. Explain df.iloc[0:100, [0, 2]].values used in the part of loading the Iris dataset in the class.
6. Explain np.where(y == 'Iris-setosa', -1, 1)
7. Describe key inputs and the return values for np.meshgrid
8. x = ([1], [0], [0], [1], [0]), and y = np.array(x). Describe the returned object of enumerate(np.unique(y))?