UC Irvine, Division of Continuing Education
Deep Learning Using TensorFlow

Spring 2019
Homework#1

Date Given: April 8, 2019 Due Date: April 14, 2019

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The prerequisite for this course is knowledge of Python programming language. I assume that all of you have installed Python on your computer.

If you do not have Python, please install Python's Anaconda distribution software on your computer. Anaconda distribution software comes with the following packages which we will use throughout this course.

- Pandas
- NumPy
- Matplotlib
- Scikit-Learn
- Seaborn
- SymPy

Beside the above mentioned 6 packages, Anaconda comes with many other packages. **After Python's Anaconda installation, install TensorFlow software on your computer.**

There are 8 problems in this homework assignment related to simple Python programming. Use Jupyter, Spyder or PyCharm IDE to answer these questions.

I want to make sure that everybody has Python/TensorFlow language environment set up on their computer. From next week onwards, homework assignment will use TensorFlow software.

Pandas' Series

Problem#1: Create a Python List with the following data.

1. Golden State
2. 49ers
3. Giants
4. Cavaliers
5. Lakers
6. Rams
7. Yankees

Create a Pandas' Series 'teams_series1' from the above list.

Problem#2: Create a Python Dictionary with the following data.

1. Oakland-Basketball	Golden State
2. SF-Football	49ers
3. SF-Baseball	Giants
4. Cleveland-Basketball	Cavaliers
5. LA-Basketball	Lakers
6. LA-Football	Rams
7. NY-Baseball	Yankees

Create a Pandas' Series 'team_series2' from the above dictionary.

Problem#3: Access the 5th and 7th elements of the Series named 'teams_series1' and 'teams_series2' (which were created in the previous 2 problems) using 'loc' and 'iloc' features of series.

Problem#4: Create a Pandas Series 'num' which contains numbers from 1 to 100. Add these series numbers using a Python's 'for' loop.

Next add the same numbers using NumPy vectorized 'np.sum(<series>)' command.

Problem#5: Add number 5 to all the elements of a series 'num' (which was created in problem#4) using the 'Broadcasting' feature of Pandas.

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Pandas' Data Frame

Problem#6: Create a Pandas' Data Frame with the following data.

	TV	Radio	Newspaper	Sales
1	230.1	37.8	69.2	22.1
2	44.5	39.3	45.1	10.4
3	17.2	45.9	69.3	9.3
4	151.5	41.3	58.5	18.5
5	180.8	10.8	58.4	12.9
6	8.7	48.9	75	7.2
7	57.5	32.8	23.5	11.8
8	120.2	19.6	11.6	13.2
9	8.6	2.1	1	4.8

Problem#7:

a) Read the "00 kc_house_data.csv" file in a Pandas' Data Frame.
b) Compute the number of observations in this file.
c) Compute the average house price.
d) Compute the number of houses which are priced greater than $500,000 (use Boolean Masking).

Problem#8:
Install TensorFlow on your computer. Verify that TensorFlow is running properly. Print the version number of TensorFlow installation. Use your choice of IDE (Jupyter, Spyder, PyCharm etc.) to submit your homework assignment.