Home Work (1) - Deep Learning

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1 IDE Install

Assuming you have Windows 7/10 on your computer, you can download the recommended Pycharm (any other IDE is fine too) at the following link: https://www.jetbrains.com/pycharm/download/download-thanks.html?platform=windows

Just download the file, double-click it and click "next" and "I agree" until the software is installed. Then, open Pycharm and make a new project. You may define an interpreter. Just download it from: https://www.python.org/downloads/release/python-374/ Now, reset Pycharm and you should find the interpreter. Just use it for now. Read about virtual environment in Python - it will save you a lot of time.

2 Submission

You must submit your Homework ntil the 19.3.2020, 23:59 pm [Israel time]. Include your full name and ID number. A work without full name and ID number won't be excepted. You must submit your home work with all the questions answered. The submitting is by email. Please submit your work as a single PDF file (with the texts, graphs, and calculation plots) and all the code files. The email address is: lazebnik.teddy@gmail.com. Note: this is also my personal email, please do not abuse it. In case of reserve or illness, please send me an email in advance

3 Home Work

- implement in Python the k-Nearest Neighbor classifier. Generate random set of points in 2 and 3 dimensions with size bigger then 100 points and plot there clusters.
- implement in Python the k-mean segmentation with random seed.
- Find a way to find the optimal 'k' hyper-parameter in the k-means algorithm and implement it. In which cases your method is not working?

- Implement in Python a Softmax classifier. Show a demo performance on a random data you generate.
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- Repeat the first task, but don't use loops at all. Hint: you should use vectorized code with the numpy package in Python.