Homework 3

Due: 2020-10-25

Introduction

In this assignment you will master basic neural network adjustment skills and try to improve deep neural networks: Hyperparameter tuning, Regularization and Optimization.

- this time you will be given three subtasks in folder "Improving Deep Neural Networks: Initialization, Gradient Checking, and Optimization".

• Setup

- **Start IPython**

  you should start the IPython notebook from the `homework_3` directory, with the jupyter notebook command.

• Experiments

There are `### START CODE HERE` / `### END CODE HERE` tags denoting the start and end of code sections you should fill out. Take care to not delete or modify these tags, or your assignment may not be properly graded.

- **Q1: Initialization (30 points)**
  The IPython Notebook Initialization.ipynb will walk you through implementing the weight Initialization.
- **Q2: Gradient Checking (30 points)**
  The IPython Notebook Gradient Checking.ipynb will walk you through implementing the Gradient Checking.
- **Q3: Optimization (40 points)**
  The IPython Notebook Optimization methods.ipynb will walk you through implementing the optimization algorithms.

- **See the code file for details.**

• Submission

You need to accomplish the following files:

1) **Improve deep neural networks**

   ➢ Initialization.ipynb
   ➢ Gradient Checking.ipynb
   ➢ Optimization methods.ipynb

2) **Report**

   ➢ Please convert your experiment report to PDF format
   ➢ You just need to upload all your code and report and do not upload datasets.