COSE474 Deep Learning

Project #1: MLP Implementation

Seungryong Kim

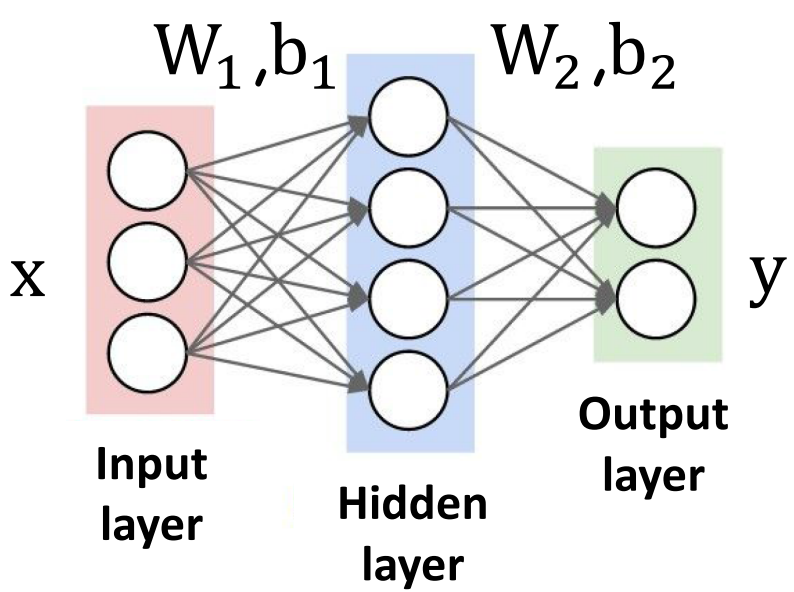
Computer Vision Lab. (CVLAB)

Department of Computer Science and Engineering

Korea University

MLP Implementation

Implement 2-Layer Neural Net with Sofmax Classifier



- Perform the image classification using “CIFAR-10” dataset.
- Two weights W_1, W_2 with biased b_1, b_2.
- Predicted output $y' = W_2\big(\mathrm{relu}(W_2 x + b_1)\big) + b_2$.
- Total loss = data loss (softmax+log likelihood loss) + L-2 regularization loss (to W_1, W_2, not b_1, b_2).
- The Ipython Notebook “two_layer_net.ipynb” will walk you through the implementation of a two-layer neural network classifier.

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Requirements

- Need to install some python libraries to run two_layer_net.ipynb
- Run the following command on prompt (cmd)
  - cd (path of assignment folder)
  - pip install –r requirements.txt
- CIFAR-10 Dataset
  - http://www.cs.toronto.edu/~kriz/cifar-10-python.tar.gz
  - Unzip above file to (Assignment folder)/datasets

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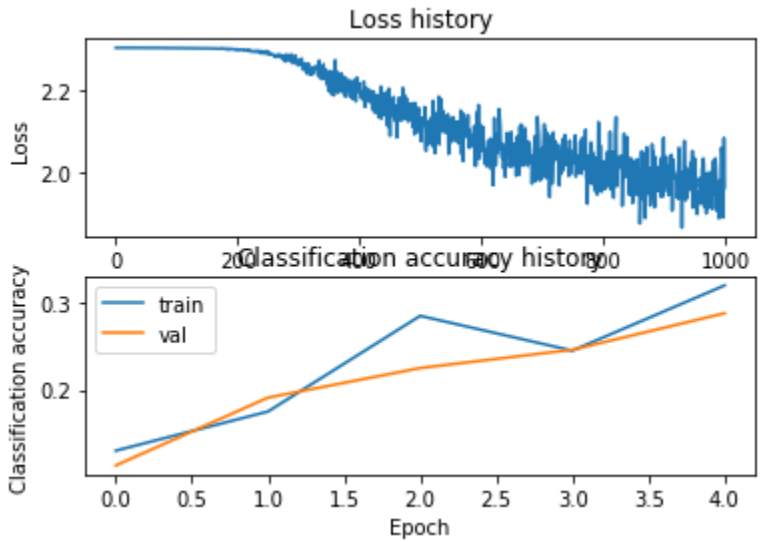
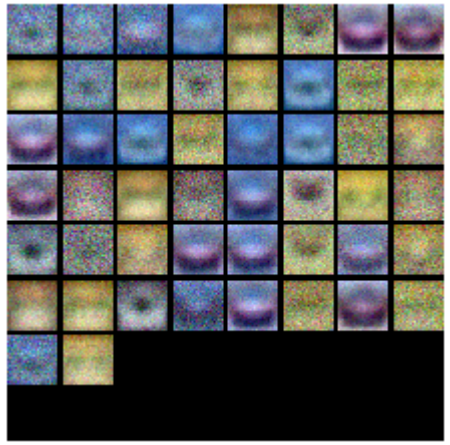
Do the following!

- Fill the codes following the instruction in markdown cells
  - **two_layer_net.ipynb, classifier/neural_net.py**
- There are "***#START OF YOUR CODE***" / "***#END OF YOUR CODE***" tags denoting the start and end of code sections you should fill out.

```
iteration 0 / 1000: loss 2.302954
iteration 100 / 1000: loss 2.302551
iteration 200 / 1000: loss 2.297649
iteration 300 / 1000: loss 2.259604
iteration 400 / 1000: loss 2.204187
iteration 500 / 1000: loss 2.118602
iteration 600 / 1000: loss 2.051566
iteration 700 / 1000: loss 1.988489
iteration 800 / 1000: loss 2.006616
iteration 900 / 1000: loss 1.951511
Validation accuracy:  0.287
```





MLP Implementation

Due on Oct. 25 (Sun.), 11:59 pm (in Blackboard)

(late policy: 25% off per a day late)

You must submit the **code** with the **report**.
(1 page with free format, including the description of your code, results, and discussions)

The report should be written in **English**.

Please do NOT copy your friends' and internet sources.

Please start your project EARLY.

Thank you!
Q & A