CENG5030 Lab 01

Introduction to PyTorch

1 Intro to PyTorch

1.1 PyTorch

Outline

- Install **miniconda3** for python package
- Install Pytorch Deep Learning Framework by **conda** or **pip**
- Learn tutorial about deep learning with PyTorch A 60 min blitz:
    - What is PyTorch?
    - What is Autograd?
    - How to use PyTorch to construct neural networks?
    - How to train a classifier by PyTorch?
- Learn PyTorch by example
    - What is **torch.nn** really?
- Visuailizing Models, Data and Training with TensorBoard

2 Sample Code:

- Go to the `./Lab01-code/pytorch_basics/`
- Run `python main.py` in your terminal
    - Read `Table of Contents` to learn the basic operations in PyTorch
- Go to the `./Lab01-code/linear_regression/`
- Run `python main.py` in your terminal
    - Learn how to use PyTorch to build a linear regression model

Q1 Build and train a logistic regression model from scratch

- Dataset: MNIST
- Network: Logistic Regression Model
    - Num_Layers: 1 (one fully connected layer)
- Test your model and get the accuracy on test dataset

Q2 Build and train a MLP(Multi-Layer Perceptron) model from scratch

- Dataset: MNIST
- Network: MLP
  - Hidden_Size: 500
  - Num_Layers: 3 (one input layer + two fully connected layer)
- Test your model and get the accuracy on test dataset

Useful Materials:

- Installing PyTorch
- MNIST Dataset
- Deep Learning with PyTorch
- Learning PyTorch with Examples
- Useful Tools for Building Neural Network

Tips: You should learn the code style from the sample code to build your project.