

Lab 5 - Introduction to Deep learning

Computer Vision (10224)

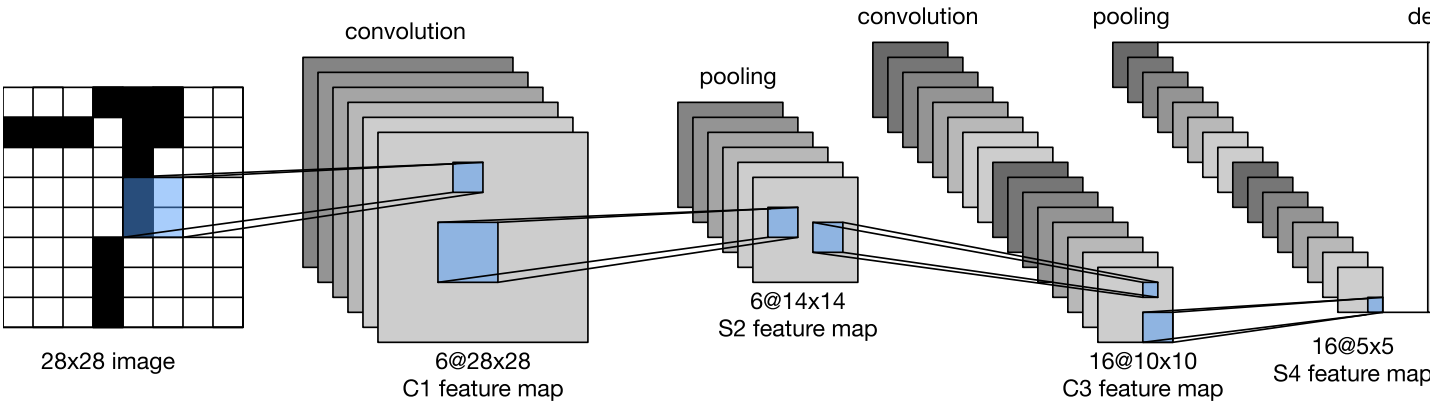


Goals

- Motivation to use nn frameworks such as pytorch, tensorflow etc.

Lab Session

- what is pytorch
- Basic Deep learning
 - Fully Connected layers
 - Activation functions
- MNIST
 - Download the MNIST Dataset
 - Initialize a torchvision pre-defined MNIST dataset class
- Single Fully connected model
 - Build a model using single fully connected layer
 - Demo evaluation of the randomly initialized weights
 - A little bit about torch.nn.functional
 - A little bit about softmax activation function
- Three FC-Layer model
 - concatenate 3 FC layer with the following dimensions:
 - FC-1: input: size of the image in pixels, output: 128
 - FC-2: input: 128, output: 64
 - FC-3: input: 64, output: number of classes to predict from (in this case 10)
- Convolution layer
- Pooling layer
- MNIST Model with convolution layers
- Class Exercise build LeNet Architecture.



Final Report

- Complete the unfinished lab session tasks.
- Write a short TL;DR (too long didn't read) summary and describe your work and what you understood in the lab.

Guidelines

- Code written in the assignments MUST follow the PEP-8 guidelines, we will deduct points of code not following this guideline, points will be accumulated.
- You may use either Google Colab or Local Jupyter notebook session.
- Use Markdown cells in-between your code cells to explain what you've done.
- Assignments must be submitted as .html with all the required plots. Some exercises will require online reading, you may use Google and stackoverflow for inspiration, although if you use it make sure to attach the reference link.
- Add as much comments you need to explain yourself, you wouldn't want to assume we fully understand your intuition.
- Code should be well ordered, formatted and readable.

Further Reading:

[DEEP LEARNING WITH PYTORCH: A 60 MINUTE BLITZ](#)