



Applied Deep Learning for Computer Vision with PyTorch

Syllabus

- Overview and getting your feet wet
 - Lightning fast Python primer
 - Package managers (pip and conda)
 - Virtual environments (conda)
- Working with data
 - Numpy
 - scikit-learn
 - opencv
- Data visualization
 - tsne
 - umap
 - matplotlib
 - seaborn

- How to design neural network
 - Linear layers
 - Convolution layers
 - Batch normalization
 - Instance normalization
 - Skip connection
 - Residual blocks
 - Attention
 - Local
 - Global
 - Pooling
 - Dropout
- How to train a neural network
 - Optimizer
 - Loss function
 - Training loop
 - Validation
 - Saving and loading weights
 - Generating stats
 - Passing arguments
- Dataset preparation
 - Web scraping and data collection
 - Dataloaders
 - Transforms
- Babysitting the training
 - tmux
 - ssh

- scp
- sshfs
- Tensorboard
- glances/htop/nvidia-smi
- Development environment and cloud GPUs
 - Jupyter notebook
 - Colab
 - Paperspace

Schedule

1. Lightning fast Python Primer
2. Package managers and virtual environments
3. Jupyter notebooks, Colab, and cloud GPUs
4. Numpy
5. Scikit-learn
6. OpenCV
7. Matplotlib and Seaborn
8. TSNE and UMAP
9. Web Scrapping
10. PyTorch 1 (Intro, CNN)
11. Tensorboard, model, result, loss visualization
12. PyTorch 2 (Autoencoders, Unet)
13. PyTorch 3 (Resnet)
14. PyTorch 4 (GAN with attention)
15. tmux, ssh, scp, sshfs, glances, htop, nvidia-smi