Lecture 2: Course Project Introduction

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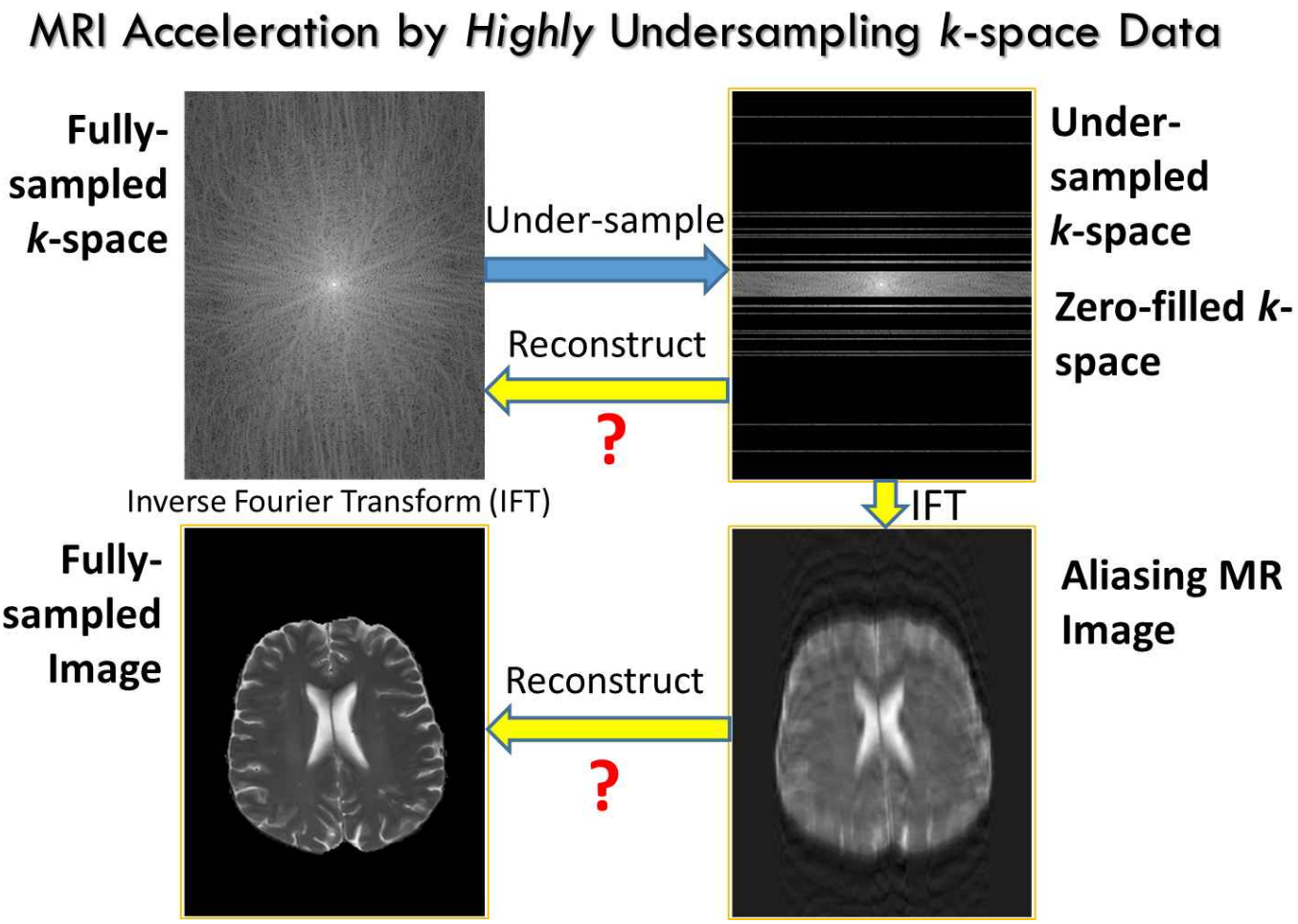
1. Basic Knowledge



2. 安装所需要的 Python 包

2.1 安装 PyTorch

官网：https://pytorch.org/get-started/locally/

命令行：`pip install torch torchvision torchaudio`

2.1.1 主要问题

> 直接安装可能非常困难，即使换源，下载速度也很慢，我失败了5次！

```
    raise ReadTimeoutError(self._pool, None, "Read timed out.")
pip._vendor.urllib3.exceptions.ReadTimeoutError: HTTPSConnectionPool(host='files.pytho
nhosted.org', port=443): Read timed out.
```

2.1.2 解决方案

可以直接从官网下载轮子，用轮子安装。

1. 下载地址（怎么知道需要下载哪个版本的 torch？在执行 `pip install` 命令时，命令响应会给出答案。）：

   > https://download.pytorch.org/whl/torch/
   >
   > https://download.pytorch.org/whl/torchvision/
   >
   > https://download.pytorch.org/whl/torchaudio/

2. 安装方法：

```
$ pip install torch-1.13.1-cp39-none-macosx_10_9_x86_64.whl
$ pip install numpy-1.24.2-cp39-cp39-macosx_10_9_x86_64.whl
$ pip install torchvision-0.14.1-cp39-cp39-macosx_10_9_x86_64.whl
$ pip install torchaudio-0.13.1-cp39-cp39-macosx_10_9_x86_64.whl
```

2.1.3 测试是否安装成功

```
$ pip install /Users/xxli/Downloads/torch-1.13.1-cp39-none-macosx_10_9_x86_64
Looking in indexes: https://pypi.tuna.tsinghua.edu.cn/simple, https://pypi.mi
Processing ./Downloads/torch-1.13.1-cp39-none-macosx_10_9_x86_64.whl
Collecting typing-extensions
  Downloading typing_extensions-4.5.0-py3-none-any.whl (27 kB)
Installing collected packages: typing-extensions, torch
Successfully installed torch-1.13.1 typing-extensions-4.5.0
(python3.9)
$ python
Python 3.9.10 (v3.9.10:f2f3f53782, Jan 13 2022, 17:02:14)
[Clang 6.0 (clang-600.0.57)] on darwin
```

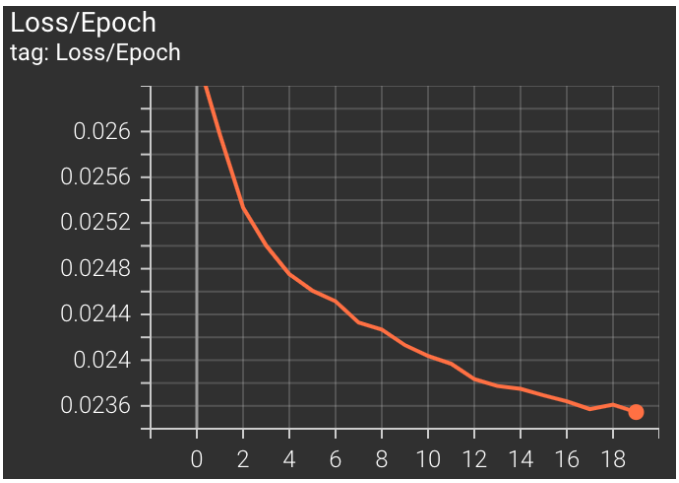
```
Type "help", "copyright", "credits" or "license" for more information.
>>> import torch
>>> print(torch.__version__)
1.13.1
>>> exit()
```

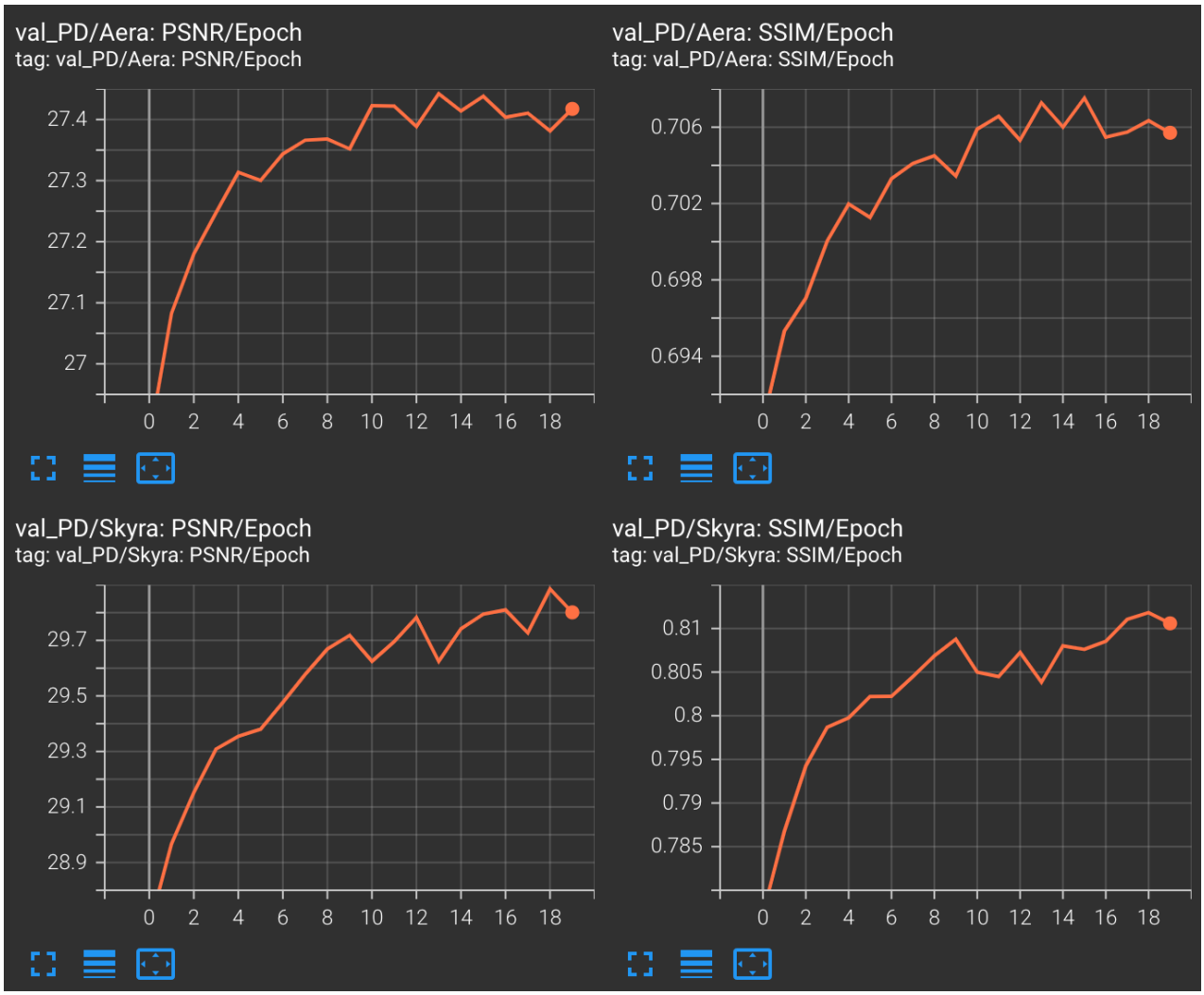
2.2 安装其它包

```
pip install scikit-image
pip install tensorboard
pip install matplotlib
```

3. 使用 TensorBoard 观察网络在训练过程中的性能变化

`tensorboard --logdir="/Users/xxli/work/PythonOOP/#TrainedModels/"`




val_PD/Aera: PSNR/Epoch
tag: val_PD/Aera: PSNR/Epoch
27.4
27.3
27.2
27.1
27
0 2 4 6 8 10 12 14 16 18
val_PD/Aera: SSIM/Epoch
tag: val_PD/Aera: SSIM/Epoch
0.706
0.702
0.698
0.694
0 2 4 6 8 10 12 14 16 18
val_PD/Skyra: PSNR/Epoch
tag: val_PD/Skyra: PSNR/Epoch
29.7
29.5
29.3
29.1
28.9
0 2 4 6 8 10 12 14 16 18
val_PD/Skyra: SSIM/Epoch
tag: val_PD/Skyra: SSIM/Epoch
0.81
0.805
0.8
0.795
0.79
0.785
0 2 4 6 8 10 12 14 16 18