

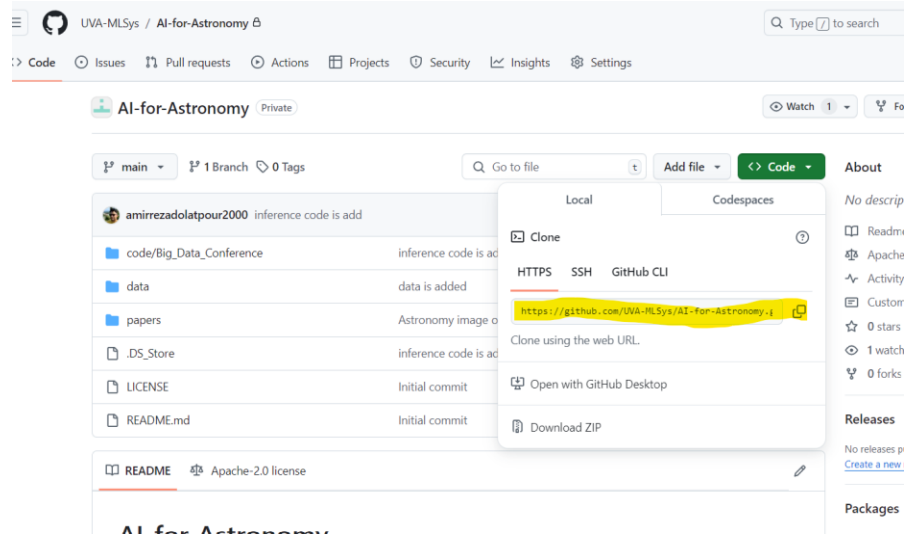
Inference Step – by – Step Instructions

Note: Screenshots and instructions are from a Windows computer. Not much should differ on a Mac.

1. Clone this GitHub repository. [UVA-MLSys/AI-for-Astronomy \(github.com\)](https://github.com/UVA-MLSys/AI-for-Astronomy) Two options a and b below.

- a. In the terminal

- i. Copy the web url



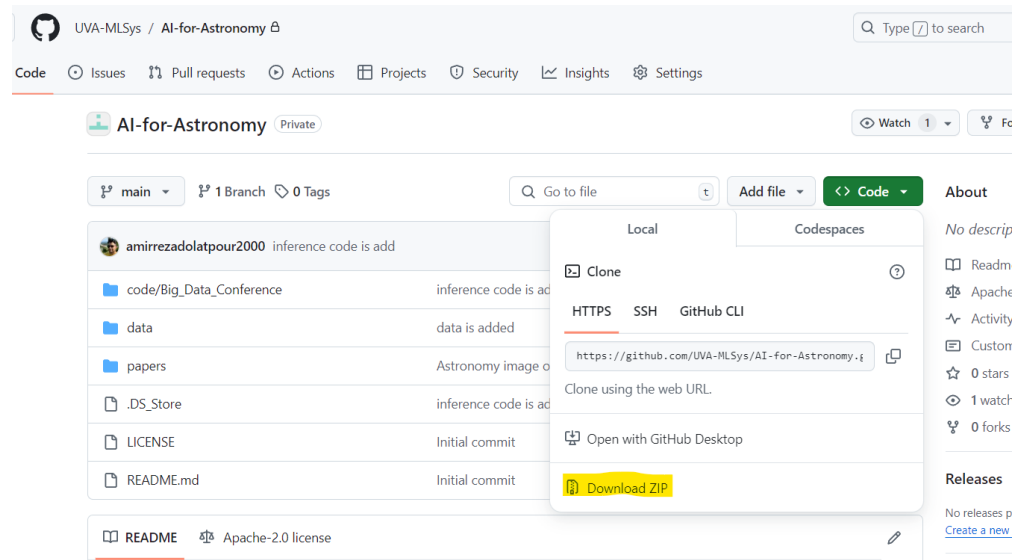
- ii. Navigate to the terminal and enter: `git clone https://github.com/UVA-MLSys/AI-for-Astronomy.git`

```
bash-4.4$git clone https://github.com/UVA-MLSys/AI-for-Astronomy.git
Cloning into 'AI-for-Astronomy'...
```

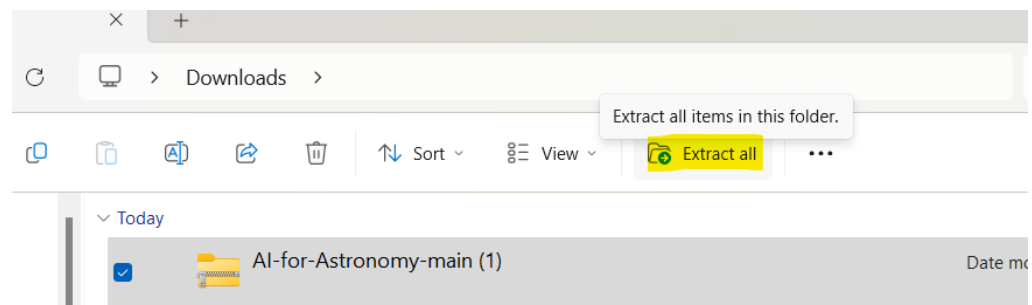
- iii. Follow the prompted instructions regarding entering GitHub username, password, etc.

- b. If you have issues with option a, download ZIP file

- i. From the GitHub page, click “Download ZIP”



- ii. From your file explorer, “Extract all” It is important that all files and their structure are maintained.



- iii. Save the elements of the folder to the desired directory that you will be running the python script. Add the unzipped folder to Rivanna directory or make sure they can be properly accessed by whichever IDE you will be using. Again, it is important that all files and their structure are maintained.
- iv. Navigate to the directory path on your machine: C:\....AI-for-Astronomy-main\AI-for-Astronomy-main\code\Big_Data_Conference\Inference
- v. Notice the inference.py file. There are three places in the file that you will have to update the directory based on the path on your machine: lines 3, 65, and 69. See below that lines 3 and 65 navigate to the “Big_Data_Conference” folder and line 69 navigates to the “Inference.pt” dataset.

```

1 import sys
2 import argparse
3 sys.path.append('/home/ear3cg/conference/code/Big_Data_Conference/') #adjust based on your system's directory
4 import torch
5 import numpy as np
6 import Plot_Redshift as plt_rdshft
7 from torch.utils.data import DataLoader
8 from torchvision.transforms import Compose, CenterCrop
9 from blocks.model_vit_inception import ViT_Astro
10
11
12 # Paths and other inference hyperparameters can be adjusted below
13 if __name__ == '__main__':
14     prj_dir = '/home/ear3cg/conference/code/Big_Data_Conference/' #adjust based on your system's directory
15     parser = argparse.ArgumentParser()
16     parser.add_argument('--batch_size', type=int, default=1024)
17     parser.add_argument('--image_size', type=int, default=32)
18     parser.add_argument('--data_path', type=str, default = '/home/ear3cg/conference/data/inference.pt')
19     parser.add_argument('--model_path', type = str, default = prj_dir + 'Fine_Tune_Model/Mixed_Inception_2_VITAE_Base_Img_Full_New_Full.pt')
20     parser.add_argument('--device', type = str, default = 'cuda')
21
22     parser.add_argument('--plot_path', type = str, default = prj_dir + 'Plots/inference.png')
23     args = parser.parse_args()
24
25     engine(args)
26
27
28

```

- vi. In the terminal, run the inference using: `python inference.py`
 This may take about one minute to run completely.

```
bash-4.4$python inference.py
```

- vii. You may receive errors prompting you to pip install libraries. Note that the timm library version must be 0.4.12

```
bash-4.4$pip install timm==0.4.12
```

- viii. Once the run is complete, navigate to the directory path on your machine: `C:\...AI-for-Astronomy-main\AI-for-Astronomy-main\code\Big_Data_Conference\Plots`
 Open the “inference.png” and “inference.png_Results.json” files to view the results.