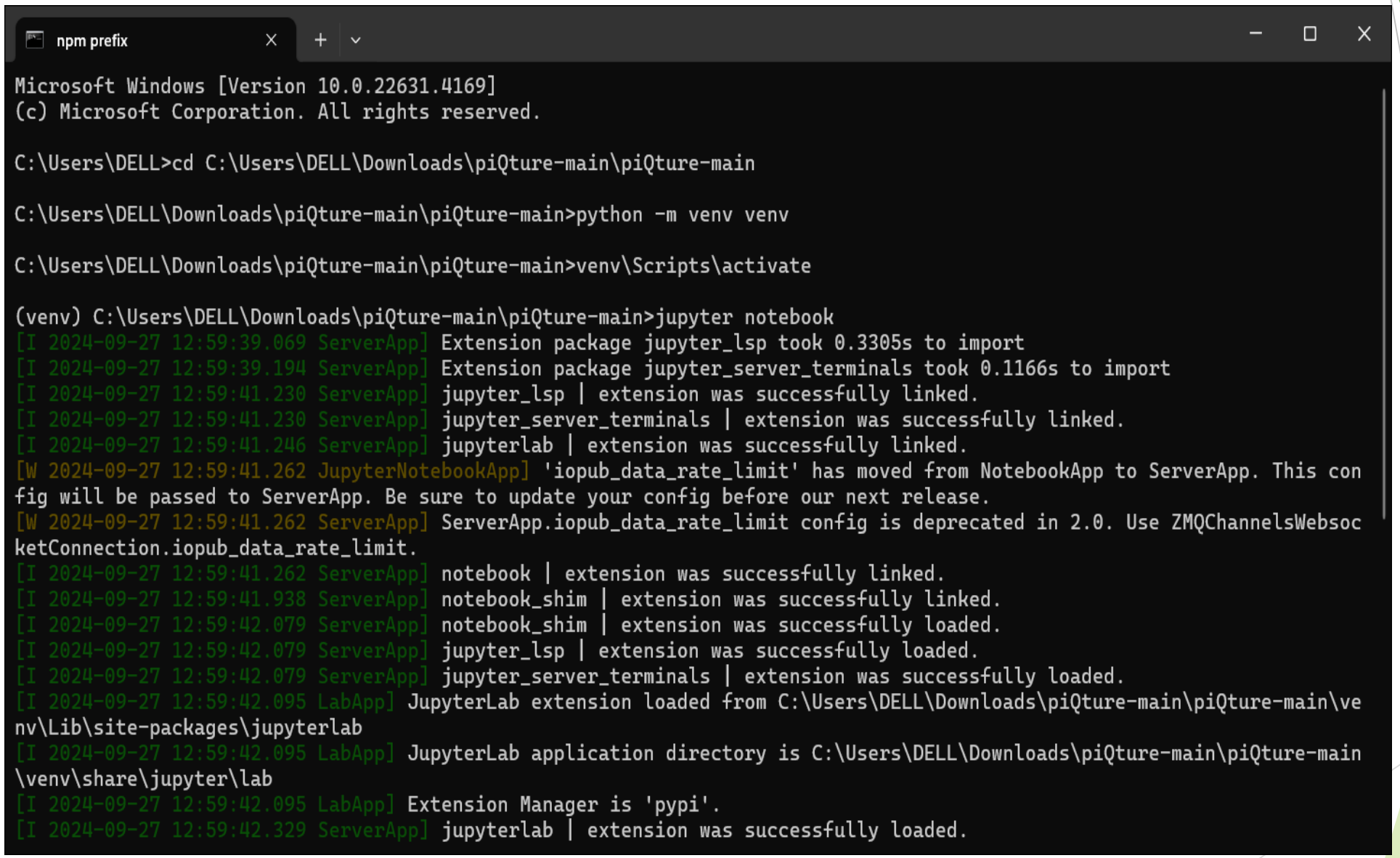
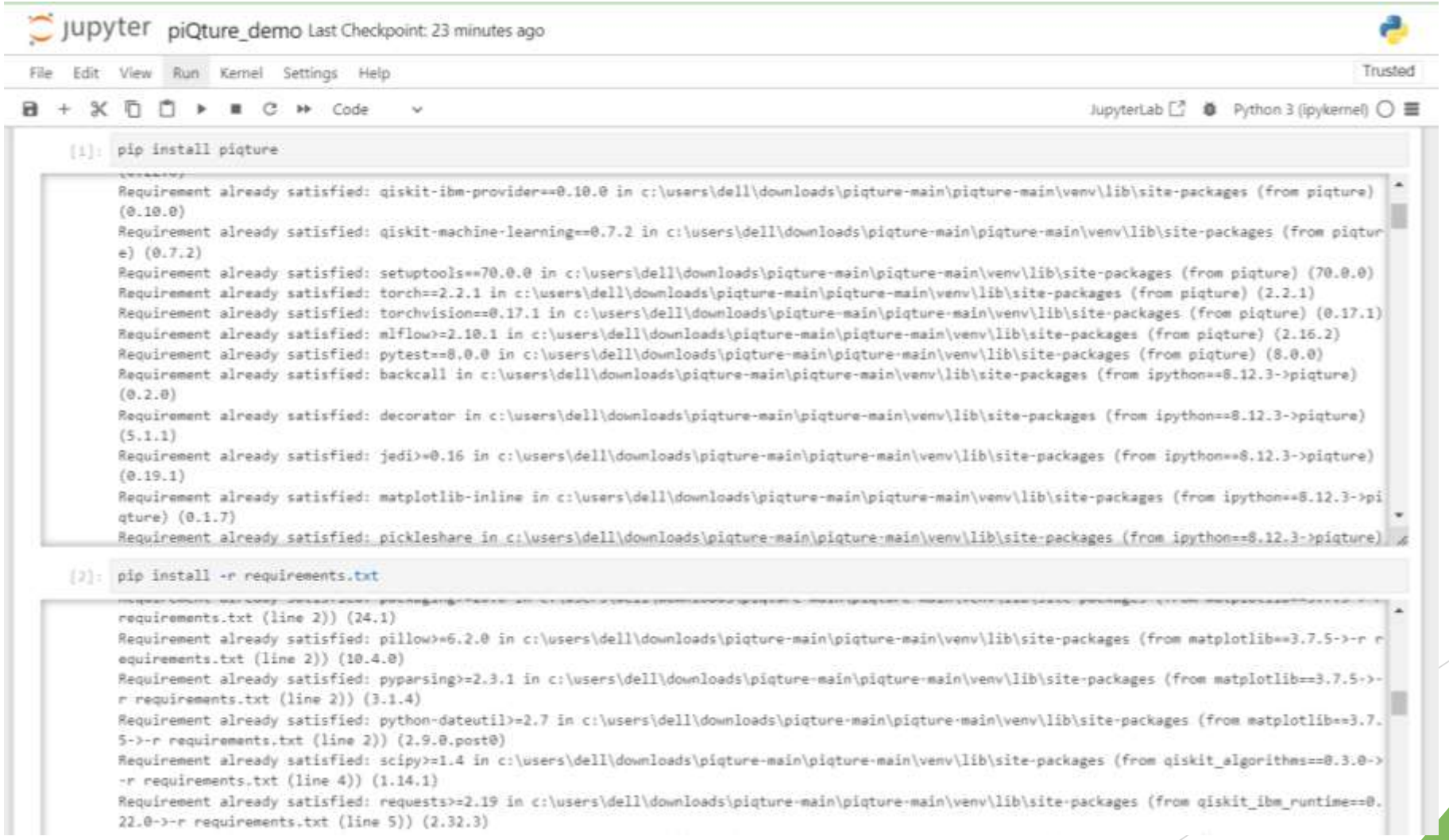
Installation Steps for piQture:

- 1. Download https://github.com/SaashaJoshi/piQture as a zip file
- 2. Extract this file.

- 3. Create Virtual environment


npm prefix
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.
C:\Users\DELL>cd C:\Users\DELL\Downloads\piQture-main\piQture-main
C:\Users\DELL\Downloads\piQture-main\piQture-main>python -m venv venv
C:\Users\DELL\Downloads\piQture-main\piQture-main>venv\Scripts\activate
(venv) C:\Users\DELL\Downloads\piQture-main\piQture-main>jupyter notebook
[I 2024-09-27 12:59:39.069 ServerApp] Extension package jupyter_lsp took 0.3305s to import
[I 2024-09-27 12:59:39.194 ServerApp] Extension package jupyter_server_terminals took 0.1166s to import
[I 2024-09-27 12:59:41.230 ServerApp] jupyter_lsp | extension was successfully linked.
[I 2024-09-27 12:59:41.230 ServerApp] jupyter_server_terminals | extension was successfully linked.
[I 2024-09-27 12:59:41.246 ServerApp] jupyterlab | extension was successfully linked.
[W 2024-09-27 12:59:41.262 JupyterNotebookApp] 'iopub_data_rate_limit' has moved from NotebookApp to ServerApp. This con
fig will be passed to ServerApp. Be sure to update your config before our next release.
[W 2024-09-27 12:59:41.262 ServerApp] ServerApp.iopub_data_rate_limit config is deprecated in 2.0. Use ZMQChannelsWebsoc
ketConnection.iopub_data_rate_limit.
[I 2024-09-27 12:59:41.262 ServerApp] notebook | extension was successfully linked.
[I 2024-09-27 12:59:41.938 ServerApp] notebook_shim | extension was successfully linked.
[I 2024-09-27 12:59:42.079 ServerApp] notebook_shim | extension was successfully loaded.
[I 2024-09-27 12:59:42.079 ServerApp] jupyter_lsp | extension was successfully loaded.
[I 2024-09-27 12:59:42.079 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I 2024-09-27 12:59:42.095 LabApp] JupyterLab extension loaded from C:\Users\DELL\Downloads\piQture-main\piQture-main\ve
nv\Lib\site-packages\jupyterlab
[I 2024-09-27 12:59:42.095 LabApp] JupyterLab application directory is C:\Users\DELL\Downloads\piQture-main\piQture-main
\venv\share\jupyter\lab
[I 2024-09-27 12:59:42.095 LabApp] Extension Manager is 'pypi'.
[I 2024-09-27 12:59:42.329 ServerApp] jupyterlab | extension was successfully loaded.

4. Install the required dependencies:
   - A. pip install piqture
   - B. pip install -r requirements.txt
   - C. pip install -e .



After installation, execute code

```
[3]: pip install -e .
```

```
Obtaining file:///C:/Users/DELL/Downloads/piQture-main/piQture-main
  Installing build dependencies: started
  Installing build dependencies: finished with status 'done'
  Checking if build backend supports build_editable: started
  Checking if build backend supports build_editable: finished with status 'done'
  Getting requirements to build editable: started
  Getting requirements to build editable: finished with status 'done'
  Preparing editable metadata (pyproject.toml): started
  Preparing editable metadata (pyproject.toml): finished with status 'done'
Requirement already satisfied: ipython==8.12.3 in c:\users\dell\downloads\piqture-main\piqture-main\venv\lib\site-packages (from piqture==0.1.1) (8.12.3)
Requirement already satisfied: matplotlib==3.7.5 in c:\users\dell\downloads\piqture-main\piqture-main\venv\lib\site-packages (from piqture==0.1.1) (3.7.5)
Requirement already satisfied: qiskit>=1.0.0 in c:\users\dell\downloads\piqture-main\piqture-main\venv\lib\site-packages (from piqture==0.1.1) (1.2.1)
Requirement already satisfied: qiskit-algorithms==0.3.0 in c:\users\dell\downloads\piqture-main\piqture-main\venv\lib\site-packages (from piqture==0.1.1) (0.3.0)
Requirement already satisfied: qiskit-ibm-runtime==0.22.0 in c:\users\dell\downloads\piqture-main\piqture-main\venv\lib\site-packages (from piqture==0.1.1) (0.22.0)
```

- Link for ineqr:

https://github.com/SaashaJoshi/piQture-demos/blob/main/INEQR.ipynb

- Execute this code:

[10]:
```
import torch
from piqture.data_loader.mnist_data_loader import load_mnist_dataset
from piqture.embeddings.image_embeddings.ineqr import INEQR
```

[11]:
```
# Resize images to 2x2
img_size = 2
train_dataset, test_dataset = load_mnist_dataset(img_size)

# Retrieve a single image from the dataset
image, label = train_dataset[187]
image_size = tuple(image.squeeze().size())
```

[12]:
```
# Change pixel values from tensor to list
pixel_vals = (image * 255).round().to(torch.uint8)
pixel_vals = pixel_vals.tolist()
print("Label: ", label, "\nPixel values: ", pixel_vals)
```

```
Label:  2
Pixel values:  [[[53, 67], [74, 60]]]
```

[13]:
```
embedding = INEQR(image_size, pixel_vals).ineqr()
embedding.draw("mpl", style="iqp")
```