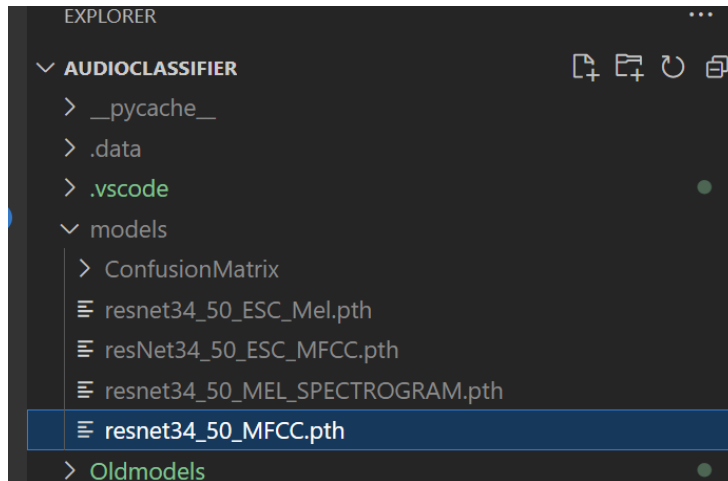Instructions for project download:

1. Download submission code from Ublearns and unzip it.

2. Download pretrained models from the link:
   https://buffalo.box.com/s/y6fo4w7cixytrjeebb2io0pb41pobgak

3. Unzip them into the folder models/ so that the folder structure look like this:

Instruction for Dataset Download

1. UrbanSound8K:
   - First, create a .data folder in your project directory. This is where you will save the downloaded dataset.
   - Download the UrbanSound8K dataset from the following URL: https://urbansounddataset.weebly.com/urbansound8k.html. You will need to fill out a form to request access to the dataset. Once you have access, you can download the dataset as a ZIP file.
   - Extract the contents of the ZIP file to .data/ folder in your project directory. The extracted folder should contain 10 subfolders, each representing a different sound class.

2. ESC-50
   - First, create a .data folder in your project directory. This is where you will save the downloaded dataset.
   - Download the ESC-50 dataset from the following URL: https://github.com/karolpiczak/ESC-50/archive/master.zip.
   - Extract the contents of the ZIP file to .data/ folder in your project directory. The extracted folder should contain a subfolder called audio.

Here is the directory structure:
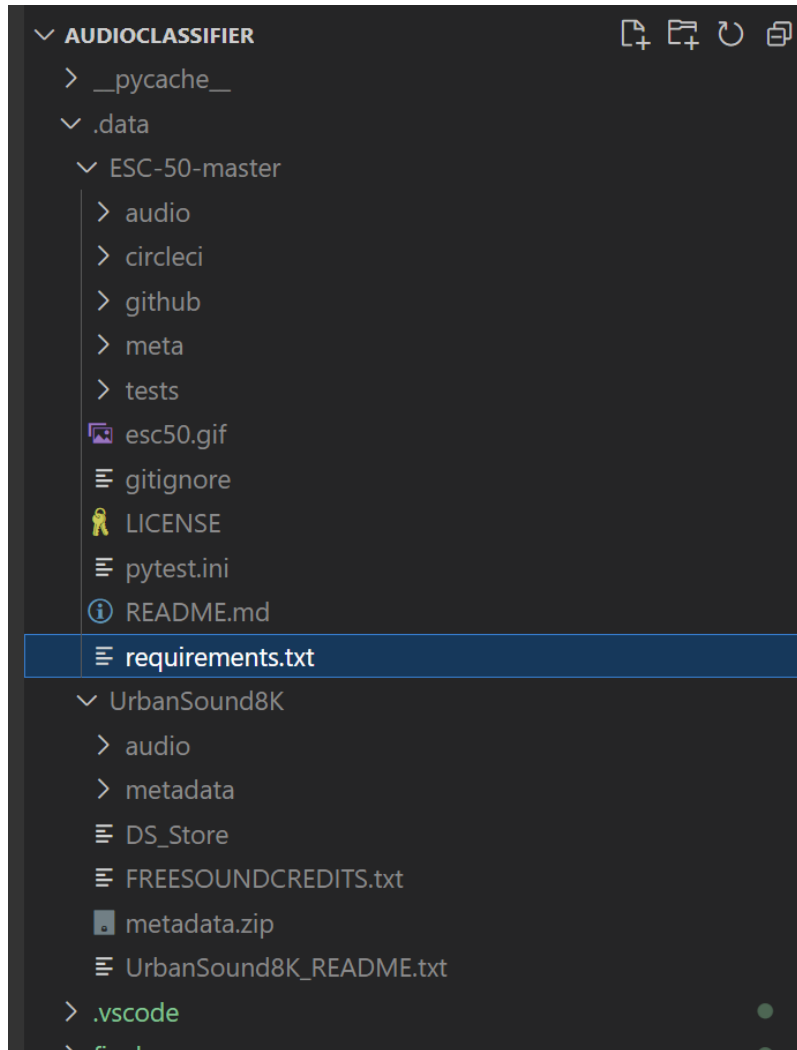
Instructions for Training the Model

1. Cd into the project directory.
2. Install dependencies using the requirements.txt file. `pip install -r requirements.txt`

UrbanSound8K

3. Train using UrbanSound8K dataset and Mel_spectrogram data transformation by running the command: `python urban_train_Mel_spectrogram.py`
4. Train the model using UrbanSound8K dataset and MFCC data transformation by running the command: `python urban_train_MFCC.py`
5. Test using UrbanSound8K dataset and Mel_spectrogram data transformation by running the command: `python urban_test_mel_spect.py`

6. Test the model using UrbanSound8K dataset and MFCC data transformation by running the command: `python urban_test_mfcc.py`

ESC-50

7. Train using ESC-50 dataset and Mel_spectrogram data transformation by running the command: `python esc_train_Mel.py`
8. Train the model using ESC-50 dataset and MFCC data transformation by running the command: `python esc_train_MFCC.py`
9. Test using ESC-50 dataset and Mel_spectrogram data transformation by running the command: `python esc_test_mel_spect.py`
10. Test the model using ESC-50 dataset and MFCC data transformation by running the command: `python esc_test_mfcc.py`

Data Visualization using Transformations on UrbanSound8K Dataset

11. Run the file urban_dataset_visualization.py using the command:
    `python urban_dataset_visualization.py`.
12. This will generate images in `spectograms/` folder which has self explanatory labels.
13. Viewing those images explains what we generated using MEL-spectograms and MFCC transformations to train the Image Detection model resnet-34.

Graphs

Graphs of model training and testing are available in the runs folder which can be seen by running the command : `tensorboard --logdir=finalruns/`
These runs will not include any training or testing that has been done from your end.
To check those runs in tensorboard command is : `tensorboard --logdir=runs/`