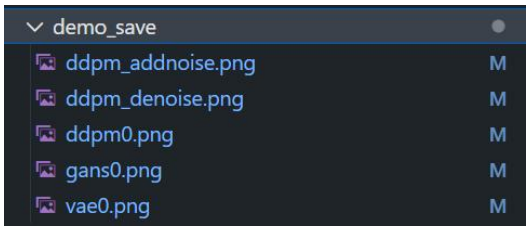
1. Demo

Run the **demo.py.**

The demo contains two parts: 1) **Sampling,** 2) **FID_Calculation** shown as screenshots below.

Samples are saved in the **folder demo_save.** **FID scores** are displayed in the terminal.

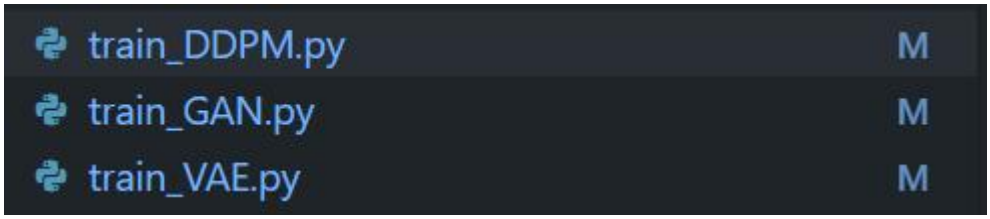


2. Training

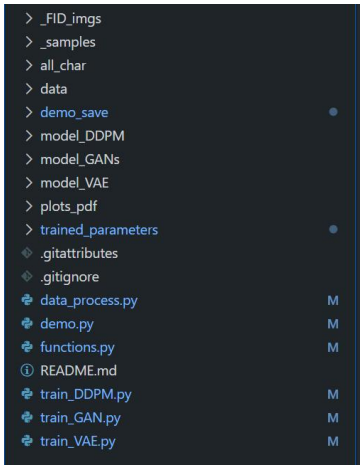
For each model training named as **train_MODEL.py**,

run the code to reproduce our training processes.

Var **model_name** is required in those codes to load our trained model saved in **folder trained_parameters**. You may change the **model_name** to train a new model, but please make sure the name is not duplicated in the folder **trained_parameters.**



3. Structure Explain



_FID_img: This folder is generated when calculating FID scores. The images used in this process are saved here.

_samples: Training samples are saved here as grid images, named according to the model and epoch.

_all_char: This contains the handwritten images we selected from the handwritten dataset (as mentioned in our report). These images were preprocessed using our functions and converted into numpy files stored in the data folder.

data: The data used for training (handwriting, CIFAR-10) is stored here.

demo_save: Demo pictures are saved in this folder.

model_DDPM, model_GANs, model_VAE: These folders contain the implementations of each respective model.

plot_pdf: Training loss plots are saved here as PDF files.

trained_parameters: Model parameters saved as .pth files are stored here.

data_process: Implementations for data processing, such as customizing our handwritten dataset and encapsulating data-related functions.

functions: Reusable encapsulated functions, including:# **load_model**,

saving training samples, # **generating images for FID calculation**, # **calculating FID, and others.**