1. **Environment Setup**
   Create a new environment with specified Python version 3.7
   ```
   conda create --name pdiot python=3.8
   ```

   Activate the environment
   ```
   conda activate pdiot
   ```

   Install pip in the Conda environment
   ```
   conda install pip
   ```

   Install the packages in the requirements.txt
   ```
   pip install -r requirements.txt
   ```

2. **Data Extraction**
   Open *data_preprocessing.py* from *ml_code* folder and input the released dataset
   "anonymized_dataset_2023", the dataset should be in the same path as
   data_preprocessing.py:
   ```
   process_all_subfolders('./anonymized_dataset_2023/Respeck/')
   process_all_subfolders('./anonymized_dataset_2023/Thingy/')
   respeck_df =
   merge_all_into_dataframe('./anonymized_dataset_2023/Respeck/')
   thingy_df =
   merge_all_into_dataframe('./anonymized_dataset_2023/Respeck/')

   # Save the DataFrame as a CSV file
   respeck_df.to_csv('respeck_dataset.csv', index=False)
   thingy_df.to_csv('thingy_dataset.csv', index=False)
   ```

   'respeck_dataset.csv' is a extracted raw dataset that require for next step.

3. **Dive into the Jupyter Notebooks**
   We use Jupyter Notebook to store the code of our model builder since it provides a
   cell-by-cell interactive programming feature that makes reading code more
   user-friendly.
   The steps of data preprocessing, training and LOO evaluation for the model are
   clearly specified in the markdown cells. There are three notebooks in total to handle
   three different tasks: "HAR_Task1_Model_Builder.ipynb",
   "HAR_Task2_Model_Builder.ipynb", "HAR_Task3_Model_Builder.ipynb"

4. **Evaluation Script**
   - Task 1 Evaluation on test dataset:
     ```
     python ./evaluate_models.py --model_path ./ml_models/Task1_CNN_Model_v3.h5 --test_data_path ./Data/sample_test_dat.csv
     ```

   - Task 2 Evaluation on test dataset:
     ```
     python ./evaluate_models.py --model_path ./ml_models/Task2_CNN_Model_v3.h5 --test_data_path ./Data/sample_test_dat.csv
     ```

   - Task 3 Evaluation on test dataset:
     ```
     python ./evaluate_models.py --model_path ./ml_models/Task3_CNN_Model_v2.h5 --test_data_path ./Data/sample_test_dat.csv
     ```