README - GRAINS: Trajectory Prediction Model

English Version

This repository provides an implementation of GRAINS (Goal Refinement and Interaction-aware Social LSTM) for pedestrian trajectory prediction.
The code includes data preprocessing, graph-based data structures, and the main Social-LSTM with interaction and goal refinement modules.

Requirements

- torch
- numpy
- matplotlib
- scikit-learn
- tqdm

Quick Setup

1. Set PROJECT_ROOT in TRAJECTORY_PREDICTION.py
2. Ensure directories: preprocessed_data/, log/, save/, cpkl_basic/
3. Place data under preprocessed_data/ (e.g., eth/att-train.csv, att-validation.csv, att-test.csv)

How to Train

Example training command:
python TRAJECTORY_PREDICTION.py --mode train --data_root preprocessed_data/eth --train_files att-train --val_files att-validation --use_cuda

How to Test

Example test command:
python TRAJECTORY_PREDICTION.py --mode test --data_root preprocessed_data/eth --

test_files att-test --use_cuda

Training Protocol (Leave-One-Out)

We train using a Leave-One-Out strategy: the model is trained on the training/validation sets and evaluated on another scenario that is not used during training.

This repository is set up for the ETH scenario by default.

Note

The code includes suggestions for future extensions, such as Soft-DTW for trajectory similarity.
It may also require installing Soft-DTW (e.g., pip install soft-dtw).