Acknowledgement:
Our code is based on the KAIR library: https://github.com/kairproject/kair_algorithms_draft. The involved authors from the codebase are: Seungjae Ryan Lee, Curt Park, DH Kim, Kh Kim, whikwon, Seungjae Ryan Lee. We also used some robot codes. The involved authors are Michael Ferguson, VCGLab, and Blender User. We do not remove those author names from our codes. These names have nothing to do with us.

Introduction of the Code Structure:
All configurations are in the folder "kair_algorithms_draft/scripts/config/agent/fetch_serl_push_v0" and "kair_algorithms_draft/config/*.yaml". The former has all hyper-parameters and model configurations, and the latter has environment configurations in all yaml files. All environment files are in the folder "kair_algorithms_draft/scripts/envs/fetch". All algorithms are in the folder "kair_algorithms_draft/scripts/algorithms".

Installation prerequisites:
1. Install PyBullet via pip: https://pybullet.org/wordpress/
2. Install wandb and set up an account: https://docs.wandb.ai/quickstart
3. Install PyTorch 1.6.0: https://pytorch.org/get-started/previous-versions/

Environment:
Python 3.6

Dataset:
Push-v2 has all demonstrations for the Robot-Push domain.
Push-v0 has all demonstrations for the Robot-Push-Simple domain.
Please put them in a proper location and the path would be used as an argument for "--demo-path" (see below).

Robot-Push Domain:
Run TD3fD+SE:
python3 run_fetch_push_v2p.py --algo setd3fd_v2_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2

Run TD3fD+SE+SE+nu:
python3 run_fetch_push_v2p.py --algo setd3fd_v2_nu_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2

Run TD3fD+SE+nrs:
python3 run_fetch_push_v2p.py --algo setd3fd_v2_nrs_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2 --log

Run TD3fD:
python3 run_fetch_push_v2p.py --algo td3fd_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2 --log

Run SA-GAN-GCL+TD3:
python3 run_fetch_push_v2p.py --algo td3fd_airl_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2 --log

Run SACfD+SE:
python3 run_fetch_push_v2p.py --algo sesacfd_v2_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2

Run SACfD+SE+SE+nu:
python3 run_fetch_push_v2p.py --algo sesacfd_v2_nu_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2

Run SACfD+SE+nrs:
python3 run_fetch_push_v2p.py --algo sesacfd_v2_nrs_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2 --log

Run SACfD:
python3 run_fetch_push_v2p.py --algo sacfd_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2 --log

Run SA-GAN-GCL+SAC:
python3 run_fetch_push_v2p.py --algo sacfd_airl_s --mode DIRECT --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v2 --log

Robot-Push-Simple Domain:
Run TD3fD+SE:

Run TD3fD+SE+SE+nu:
python3 run_fetch_push_v0p.py --algo setd3fd_v2_nu_s --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run TD3fD+SE+nrs:
python3 run_fetch_push_v0p.py --algo setd3fd_v2_nrs_s --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run TD3fD:
python3 run_fetch_push_v0p.py --algo td3fd_s --episode-num 3000 --off-render --max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run SA-GAN-GCL+TD3:

python3 run_fetch_push_v0p.py --algo td3fd_airl_s --episode-num 3000 --off-render
--max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run SACfD+SE:
python3 run_fetch_push_v0p.py --algo sesacfd_v2_s --episode-num 3000 --off-render
--max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run SACfD+SE+SE+nu:
python3 run_fetch_push_v0p.py --algo sesacfd_v2_nu_s --episode-num 3000 --off-render
--max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run SACfD+SE+nrs:
python3 run_fetch_push_v0p.py --algo setd3fd_v2_nrs_s --episode-num 3000 --off-render
--max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run SACfD:
python3 run_fetch_push_v0p.py --algo sacfd_s --episode-num 3000 --off-render
--max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log

Run SA-GAN-GCL+SAC:
python3 run_fetch_push_v0p.py --algo sacfd_airl_s --episode-num 3000 --off-render
--max-episode-steps 50 --demo-path /data/datasets/SERL/Fetch/Push-v0 --log