Directory Structure

```
high-res-stereo

├── configs                          # Training & Inference config argument
├── dataloader
│       ├── Carlaloader.py           # Load Carla dataset
│       ├── KITTIloader2012.py       # Load KITTI2012 dataset
│       ├── KITTIloader2015.py       # Load KITTI2015 dataset
│       ├── Listfiles.py             # Load inference data
│       └── MiddleburyLoader.py      # Training dataset preprocess
├── dataset                          # Dataset
├── models
│       ├── hsm.py                   # Our network Architecture
│       └── utils.py                 # HSM, SegNet Architecture
├── utils
├── weights                          # Our network pretrained weight
├── requirements.txt
├── submission.py                    # Inference script
└── train.py                         # Training script
```

Environment setup

Python: 3.7, Pytorch: 1.9.1, CUDA: 11.1

Requirements

tensorflow-gpu==1.15

tensorboardX>=1.4

networkx==2.3

scipy==1.2

opencv-python

Create environment

conda create -n HR-stereo python=3.7 anaconda

conda activate HR-stereo

pip install torch==1.9.1+cu111 torchvision==0.10.1+cu111 torchaudio==0.9.1 -f

https://download.pytorch.org/whl/torch_stable.html

pip install -r requirements.txt

Train
conda activate HR-stereo

python train.py --config './configs/train_argument.yml'

train_argument.yml parameter introduction

--maxdisp   # maxium disparity

--logname   # log name

--database   # dataset path

--epochs   # number of epochs to train

--batchsize   # samples per batch

--loadmodel   # pretrained model path

--savemodel   # save model path

Training Dataset Directory Structure

```
all_dataset
├── dataset1
│       ├── left images        # left image files
│       ├── right images       # right image files
│       ├── left semantic      # left semantic files
│       ├── right semantic     # right semantic files
│       ├── left semantic      # left instance files
│       ├── right instance     # right instance files
│       └── disp               # Disparity ground truth
└── dataset2
```

Inference

```
conda activate HR-stereo

python submission.py --config './configs/inference_argument.yml'
```

inference_argument.yml parameter introduction

```
--datapath              # test data path

--loadmodel             # pretrained model path

--outdir                # output direction

--clean                 # clean up output using entropy estimation

--testres               # test time resolution ratio

--max_disp              # maximum disparity to search for
```

Inference Directory Structure

```
inference directory
├── scence_0
│       ├── im0.png          #left image
│       ├── im1.png          # right image
│       ├── im2.png          # left semantic
│       ├── im3.png          # right semantic
│       ├── im4.npy          # left instance
│       └── im5.npy          # right instance
    ⋮
    ⋮
└── scence_N
```

Evaluation

conda activate HR-stereo

python eval.py --evalpath './eval' --GTpath './data-my'

Hyperparameter

-- evalpath   # evaluation data path

-- GTpath   # ground truth path