UCSD Data

Contents

UCSD Pedestrian dataset.

class **anomalib.data.video.ucsd_ped.UCSDped(*root='./datasets/ucsd', category='UCSDped2', clip_length_in_frames=2, frames_between_clips=10, target_frame=VideoTargetFrame.LAST, task=TaskType.SEGMENTATION, image_size=None, transform=None, train_transform=None, eval_transform=None, train_batch_size=8, eval_batch_size=8, num_workers=8, val_split_mode=ValSplitMode.SAME_AS_TEST, val_split_ratio=0.5, seed=None*)**

Bases: `AnomalibVideoDataModule`

UCSDped DataModule class.

Parameters:

- **root** (*Path | str*) – Path to the root of the dataset
- **category** (*str*) – Sub-category of the dataset, e.g. “UCSDped1” or “UCSDped2”
- **clip_length_in_frames** (*int, optional*) – Number of video frames in each clip.
- **frames_between_clips** (*int, optional*) – Number of frames between each consecutive video clip.
- **target_frame** (*VideoTargetFrame*) – Specifies the target frame in the video clip, used for ground truth retrieval
- **task** (*TaskType*) – Task type, ‘classification’, ‘detection’ or ‘segmentation’
- **image_size** (*tuple[int, int], optional*) – Size to which input images should be resized. Defaults to `None`.
- **transform** (*Transform, optional*) – Transforms that should be applied to the input images. Defaults to `None`.
- **train_transform** (*Transform, optional*) – Transforms that should be applied to the input images during training. Defaults to `None`.
- **eval_transform** (*Transform, optional*) – Transforms that should be applied to the input images during evaluation. Defaults to `None`.
- **train_batch_size** (*int, optional*) – Training batch size. Defaults to 32.
- **eval_batch_size** (*int, optional*) – Test batch size. Defaults to 32.
- **num_workers** (*int, optional*) – Number of workers. Defaults to 8.
- **val_split_mode** (*ValSplitMode*) – Setting that determines how the validation subset is obtained.
- **val_split_ratio** (*float*) – Fraction of train or test images that will be reserved for validation.
- **seed** (*int | None, optional*) – Seed which may be set to a fixed value for reproducibility.

`prepare_data()`

Download the dataset if not available.

Return type:

`None`

class anomalib.data.video.ucsd_ped.UCSDpedClipsIndexer(*video_paths*,

mask_paths, clip_length_in_frames=2, frames_between_clips=1)

Bases: `ClipsIndexer`

Clips class for UCSDped dataset.

get_clip(*idx*)

Get a subclip from a list of videos.

Parameters:

idx (*int*) – index of the subclip. Must be between 0 and num_clips().

Return type:

`tuple`[`Tensor`, `Tensor`, `dict`[`str`, `Any`], `int`]

Returns:

video (torch.Tensor) audio (torch.Tensor) info (dict) video_idx (int): index of the video in *video_paths*

get_mask(*idx*)

Retrieve the masks from the file system.

Return type:

`ndarray` | `None`

class anomalib.data.video.ucsd_ped.UCSDpedDataset(*task, root, category, split, clip_length_in_frames=2, frames_between_clips=10, target_frame=VideoTargetFrame.LAST, transform=None*)

Bases: `AnomalibVideoDataset`

UCSDped Dataset class.

Parameters:

- **task** (*TaskType*) – Task type, 'classification', 'detection' or 'segmentation'
- **root** (*Path* | *str*) – Path to the root of the dataset
- **category** (*str*) – Sub-category of the dataset, e.g. "UCSDped1" or "UCSDped2"
- **split** (*str* | *Split* | *None*) – Split of the dataset, usually Split.TRAIN or Split.TEST
- **clip_length_in_frames** (*int, optional*) – Number of video frames in each clip.
- **frames_between_clips** (*int, optional*) – Number of frames between each consecutive video clip.
- **target_frame** (*VideoTargetFrame*) – Specifies the target frame in the video clip, used for ground truth retrieval.
- **transform** (*Transform, optional*) – Transforms that should be applied to the input images. Defaults to `None`.

anomalib.data.video.ucsd_ped.make_ucsd_dataset(*path*, *split=None*)

Create UCSD Pedestrian dataset by parsing the file structure.

The files are expected to follow the structure:

path/to/dataset/category/split/video_id/image_filename.tif path/to/dataset/category/split/video_id_gt/mask_filename.bmp

Parameters:

- **path** (*Path*) – Path to dataset
- **split** (*str* | *Split* | *None, optional*) – Dataset split (ie., either train or test). Defaults to None.

Example

The following example shows how to get testing samples from UCSDped2 category:

```
>>> root = Path('./UCSDped')
>>> category = 'UCSDped2'
>>> path = root / category
>>> path
PosixPath('UCSDped/UCSDped2')
```

```
>>> samples = make_ucsd_dataset(path, split='test')
```

```
>>> samples.head()
   root             folder image_path                    mask_path
0  UCSDped/UCSDped2 Test   UCSDped/UCSDped2/Test/Test001 UCSDped/UCSDped2/Test/
1  UCSDped/UCSDped2 Test   UCSDped/UCSDped2/Test/Test002 UCSDped/UCSDped2/Test/
...
```

Returns:

an output dataframe containing samples for the requested split (ie., train or test)

Return type:

DataFrame

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