Pedestrians using mobility aids are:
- the most vulnerable group of traffic participants,
- highly underrepresented to not represented at all in commonly available datasets for detection.

We provide a dataset for detection and classification of pedestrians using mobility aids from a traffic monitoring viewpoint, together with baseline evaluations for common classification and detection approaches.

The dataset consists of 12186 frames in total, with official training, validation, and test splits without temporal overlap. All classes are well represented in each split, visible from the table below listing the number and relative distribution of class annotations per split.

The splits represent the dataset well, it does not exhibit bias towards preferred locations for any class relative to the others. Distribution of bounding box centers for the complete dataset (left) and each split:

Distribution of bounding box sizes for the complete dataset (left) and the respective splits.

Distribution of labels (centers of respective annotation bounding boxes) per class.

Distribution of annotations, color coded for bounding box size (equivalent length of a square of same area).

Dataset and Code Available Online

Baselines: Classification

All models have been fine-tuned on our dataset using the official weights trained on COCO for a maximum of 200 epochs using default hyperparameters of YOLO. Models prefixed with h are trained using a hierarchical class structure.

Detection performance of selected YOLOv5 models in terms of mean average precision (mAP) metrics mAP@50 and mAP@50-95:

Baselines: Detection

All models have been fine-tuned on our dataset using the official weights trained on COCO for a maximum of 200 epochs using default hyperparameters of YOLO. Models prefixed with h are trained using a hierarchical class structure.

Detection performance in terms of accuracy (ACC), misclassification rate (MCL) and missed (MIS) detections for each class as well as overall false negative (FN) and false positive (FP) detections: