Supplementary Material for 'AutoPedestrian: an Automatic Data Augmentation and Loss Function Search Scheme for Pedestrian Detection'

We place some detailed description about the data augmentation search space here, followed by the visualization of more detection results.

TABLE A-1
SEARCH SPACE DETAILS FOR DATA AUGMENTATION OPERATIONS.

	Operations	Magnitudes
Intensity and Color Data Augmentation	Auto-contrast	None
	Equalization	None
	Equalization in bounding boxes	None
	solarization	0, 2, 4, 6, 8, 10
	solarization-Add	0, 2, 4, 6, 8, 10
	Posterize	0, 2, 4, 6, 8, 10
	Color balance	0, 2, 4, 6, 8, 10
	Contrast	0, 2, 4, 6, 8, 10
	Brightness	0, 2, 4, 6, 8, 10
	Sharpness	0, 2, 4, 6, 8, 10
	Cutout	0, 2, 4, 6, 8, 10
	Cutout in bounding boxes	0, 2, 4, 6, 8, 10
Geometrical Data Augmentation	Flip	None
	Flip in bounding boxes	None
	Resize operation	0.5, 0.75, 1.0, 1.25, 1.5, 1.75, 2.0
	Horizontal translation	0, 2, 4, 6, 8, 10
	Vertical translation	0, 2, 4, 6, 8, 10
	Horizontal shear	0, 2, 4, 6, 8, 10
	Vertical shear	0, 2, 4, 6, 8, 10
	Horizontal translation in bounding boxes	0, 2, 4, 6, 8, 10
	Vertical translation in bounding boxes	0, 2, 4, 6, 8, 10
Occlusion Simulation Augmentation	Mean value occlusion	1,2,3,4 (Indexes)
	Inter-class Occlusion	1,2,3,4 (Indexes)
	Intra-class Occlusion	1,2,3,4 (Indexes)

A. Search Space Details of Data Augmentation

The details of data augmentation search space are listed in Table A-1. Intensity and color data augmentation candidates include auto-contrast, equalization, equalization in bounding boxes, solarization, solarization-add, posterization, color balance, contrast, brightness, sharpness, cutout and cutout in bounding boxes. Details of their major corresponding magnitudes are in the range of [0, 2, 4, 6, 8, 10] for fair comparison. Geometrical data augmentation candidates consist of flip, flip in bounding boxes, resize operation, horizontal translation, vertical translation, horizontal shear, vertical shear, horizontal translation in bounding boxes, and vertical translation in bounding boxes, and their related magnitudes are listed in the third column of this table. As for occlusion simulation augmentation, the related details are listed in the last row of this table.

B. Detection Results Visualization

We illustrate more typical detection results in Fig B-1. As can be seen from these illustrations, the searched data augmentation policy and loss function lead to better pedestrian detection results than those of the baselines, further validating the effectiveness of the proposed scheme.

Fig. B-1. Visualization of our detection results. The red bounding boxes represent the detection bounding boxes predicted by F-RCNN baseline, while the green bounding boxes represent the detection bounding boxes predicted by adding our method. The blue dashed bounding boxes are the missed detection ones.