# ADAS: A Direct Adaptation Strategy for Multi-Target Domain Adaptive Semantic Segmentation (Supplementary Material)

Seunghun Lee, Wonhyeok Choi, Changjae Kim, Minwoo Choi, and Sunghoon Im
Department of Electrical Engineering & Computer Science, DGIST, Daegu, Korea
{lsh5688, smu06117, chang5434, subminu, sunghoonim}@dgist.ac.kr

## 1. Network Details

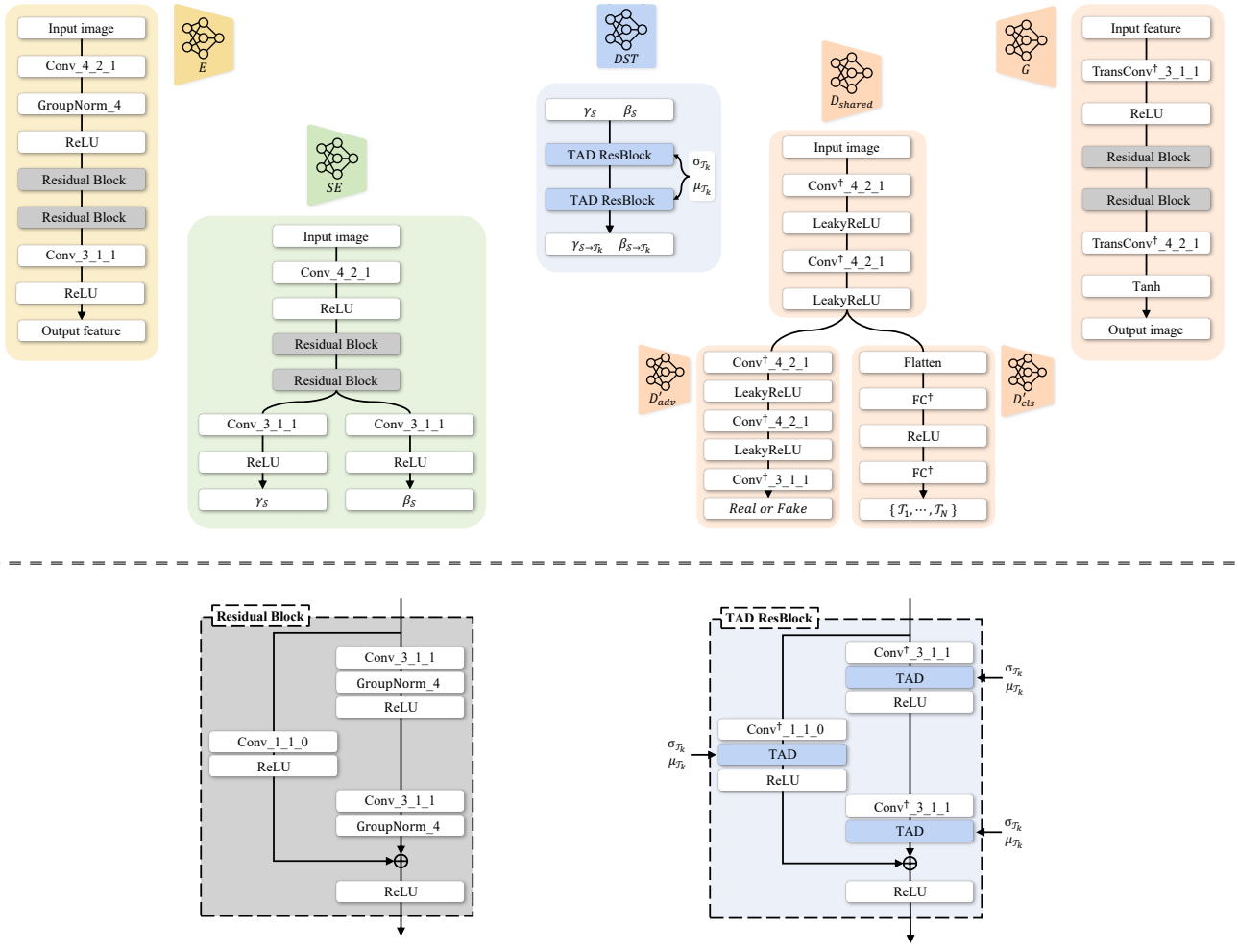


Figure 1. Our network details. To each convolutional layer (Conv) and transposed convolutional layer (TransConv), we attach an additional indicator that consists of three numbers separated with an underscore (_), and each number denotes the kernel, stride, and padding size respectively. We use group normalization layer (GroupNorm_k) [4] that normalizes a feature with k groups. The layer with upper script † indicates that spectral normalization [2] is applied.

## 2. Addittional Results

### 2.1. Synthetic-to-real Domain Transfer

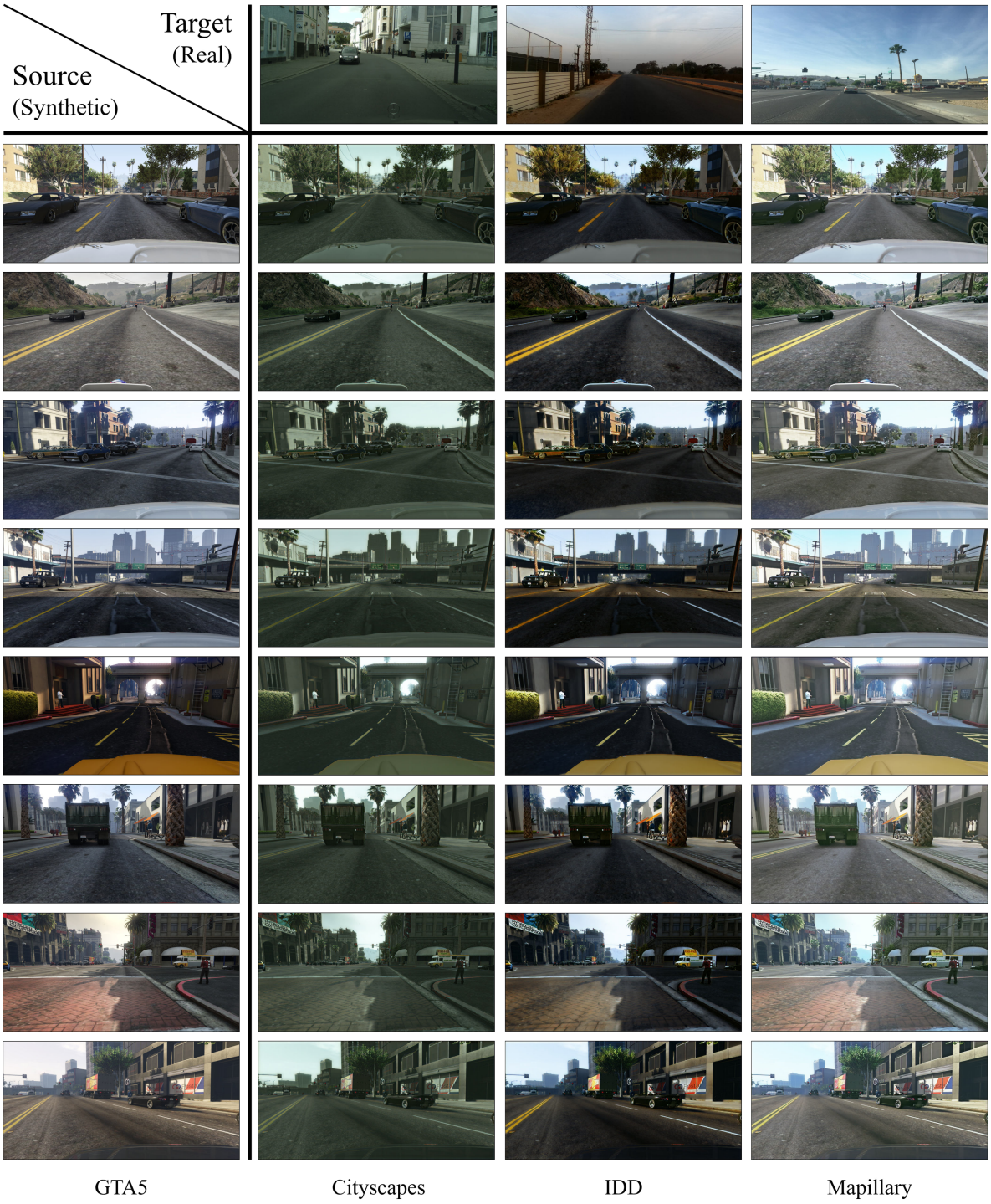


Figure 2. Synthetic-to-real qualitative results of MTDT-Net in the driving scenes. The leftmost column and top row represent source domain images and multiple target domain images, respectively. The other images are the domain transferred images generated by passing the source image at each row through our MTDT-Net.

## 2.2. Real-to-real Domain Transfer


Figure 3. Real-to-real qualitative results with Cityscapes (C), IDD (I) and Mapillary (M). Red boxed images are the inputs.

## 2.3. Comparison with Other Domain Transfer Methods


Figure 4. Visual comparison of domain transferred images with color transfer algorithm(CT) [3], DRANet [1] and ours in synthetic-to-real adaptation scenario. Images in the top row are the input and the others are the domain transfer results with each method.

## 2.4. BARS Examples

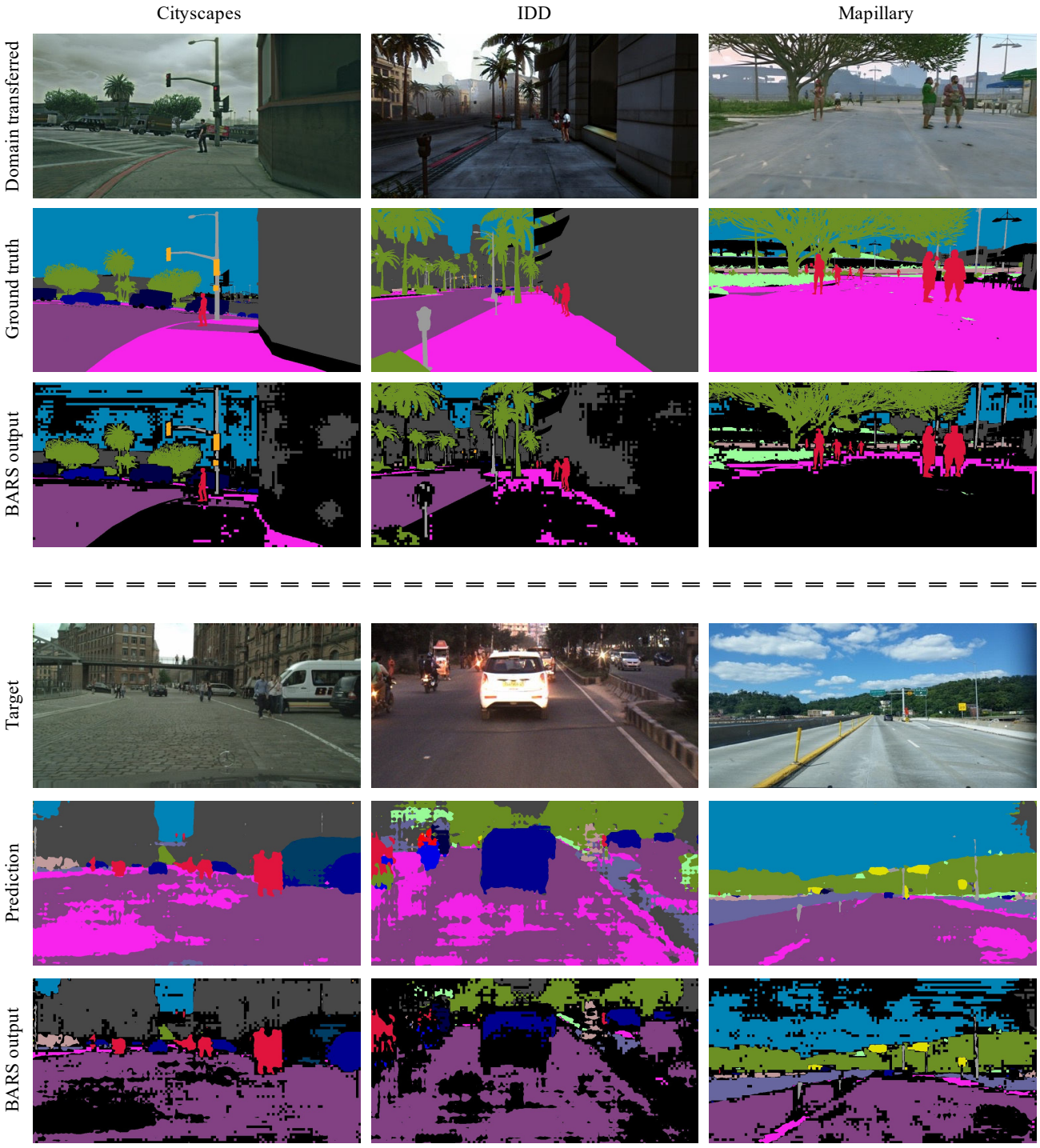


Figure 5. Examples of BARS for domain transferred images (upper part) and target images (lower part) in synthetic-to-real adaptation scenario that adapts GTA5 to Cityscapes, IDD, and Mapillary.

## References


[1] Seunghun Lee, Sunghyun Cho, and Sunghoon Im. Dranet: Disentangling representation and adaptation networks for unsupervised cross-domain adaptation. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, pages 15252–15261, 2021. 4

[2] Takeru Miyato, Toshiki Kataoka, Masanori Koyama, and Yuichi Yoshida. Spectral normalization for generative adversarial networks. *International Conference on Learning Representations (ICLR)*, 2018. 1

[3] Erik Reinhard, Michael Adhikhmin, Bruce Gooch, and Peter Shirley. Color transfer between images. *IEEE Computer graphics and applications*, 21(5):34–41, 2001. 4

[4] Yuxin Wu and Kaiming He. Group normalization. In *Proceedings of the European conference on computer vision (ECCV)*, pages 3–19, 2018. 1