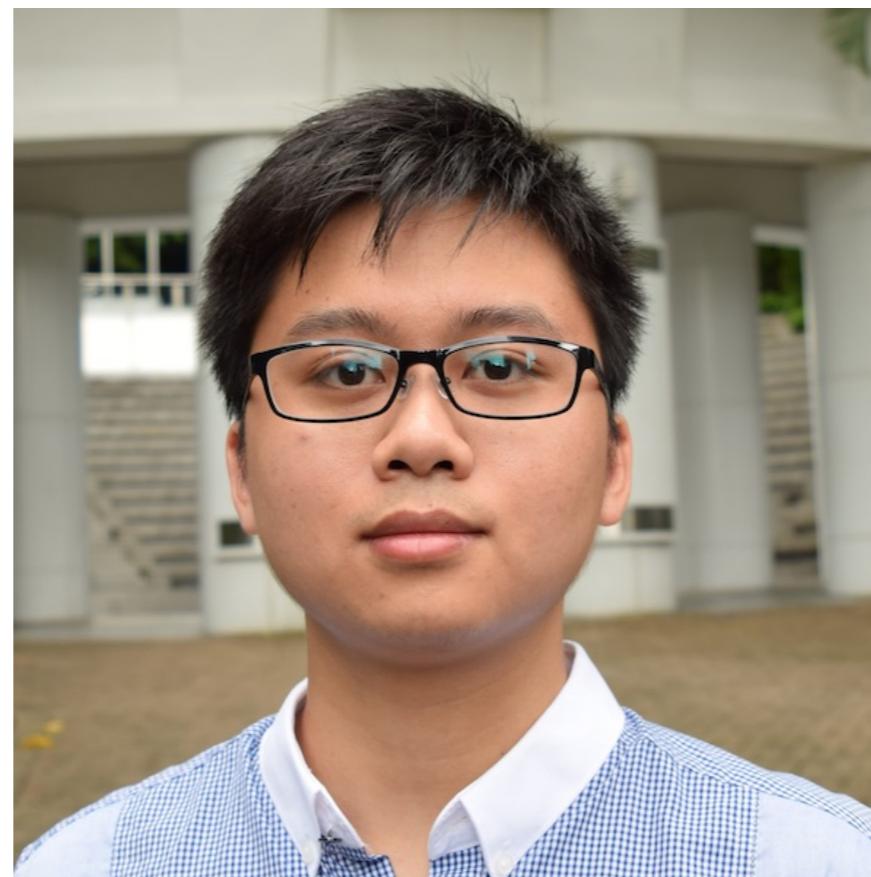
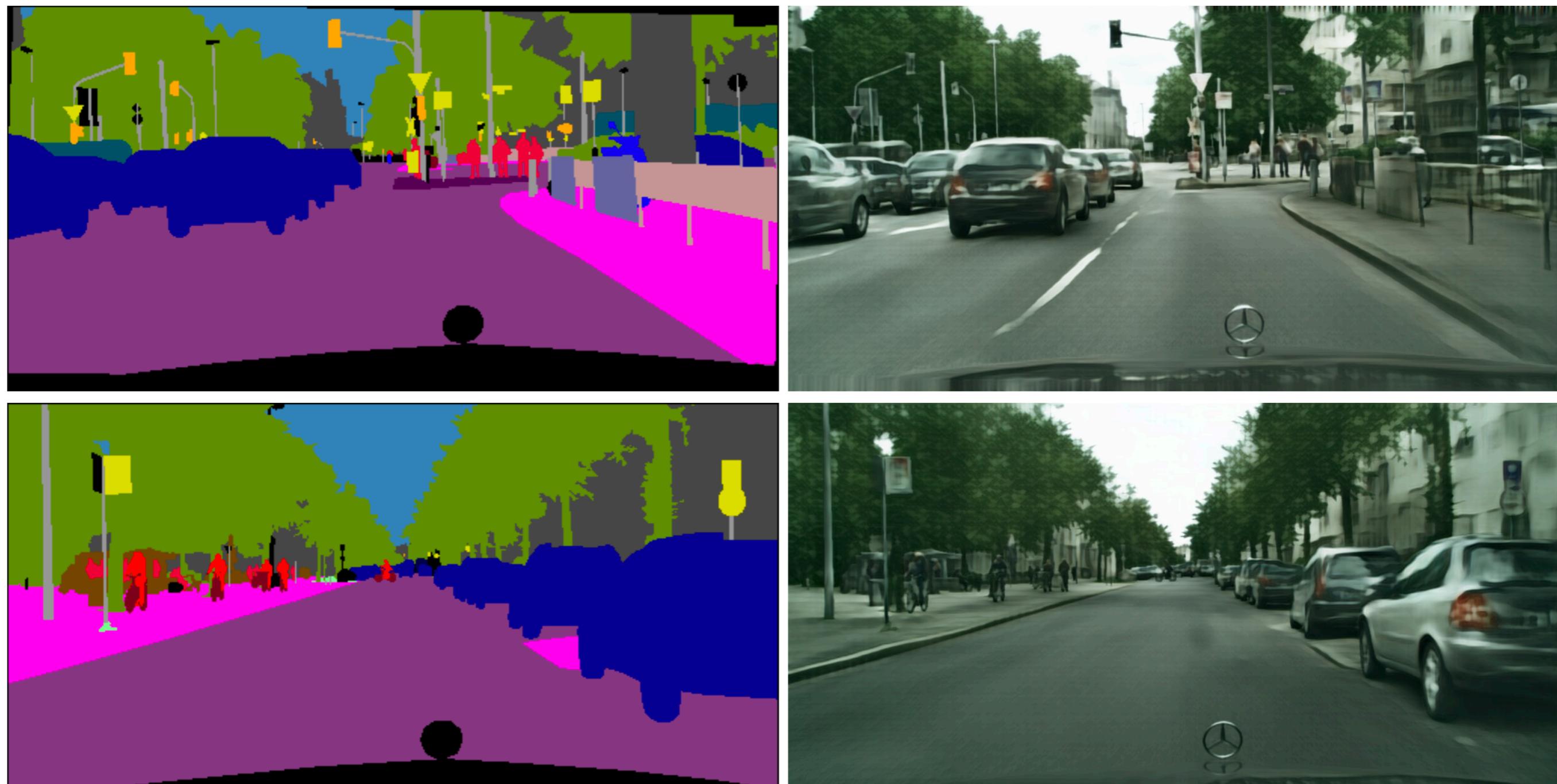


Photographic Image Synthesis with Cascaded Refinement Networks

Qifeng Chen and Vladlen Koltun



Photographic Image Synthesis



Input semantic layouts

Synthesized images

Motivation

Computer graphics

- Alternative route to photorealism
- Capture photographic appearance
- Fast image synthesis



CARLA
Dosovitskiy et al., CoRL 2017

Motivation

Artificial intelligence

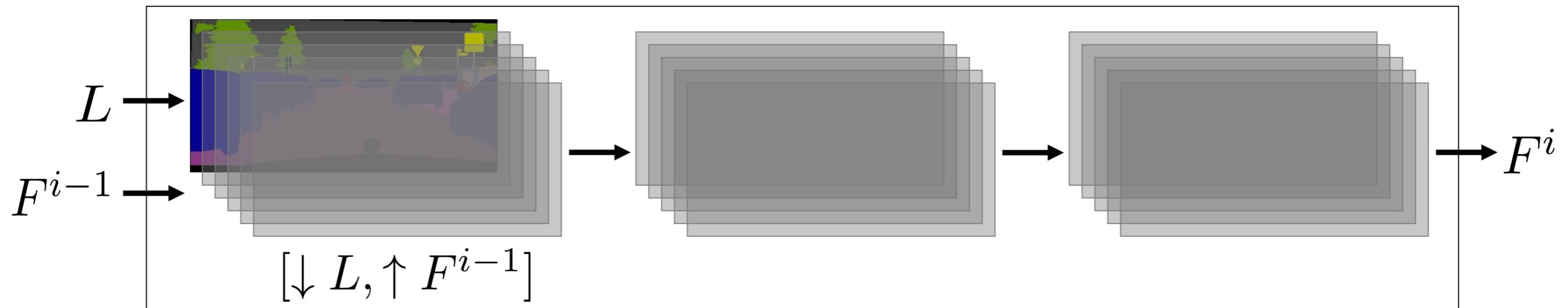
- Imagination
- Mental imagery



Our approach

- Cascaded Refinement Network (CRN)
- Perceptual loss
- Diversity

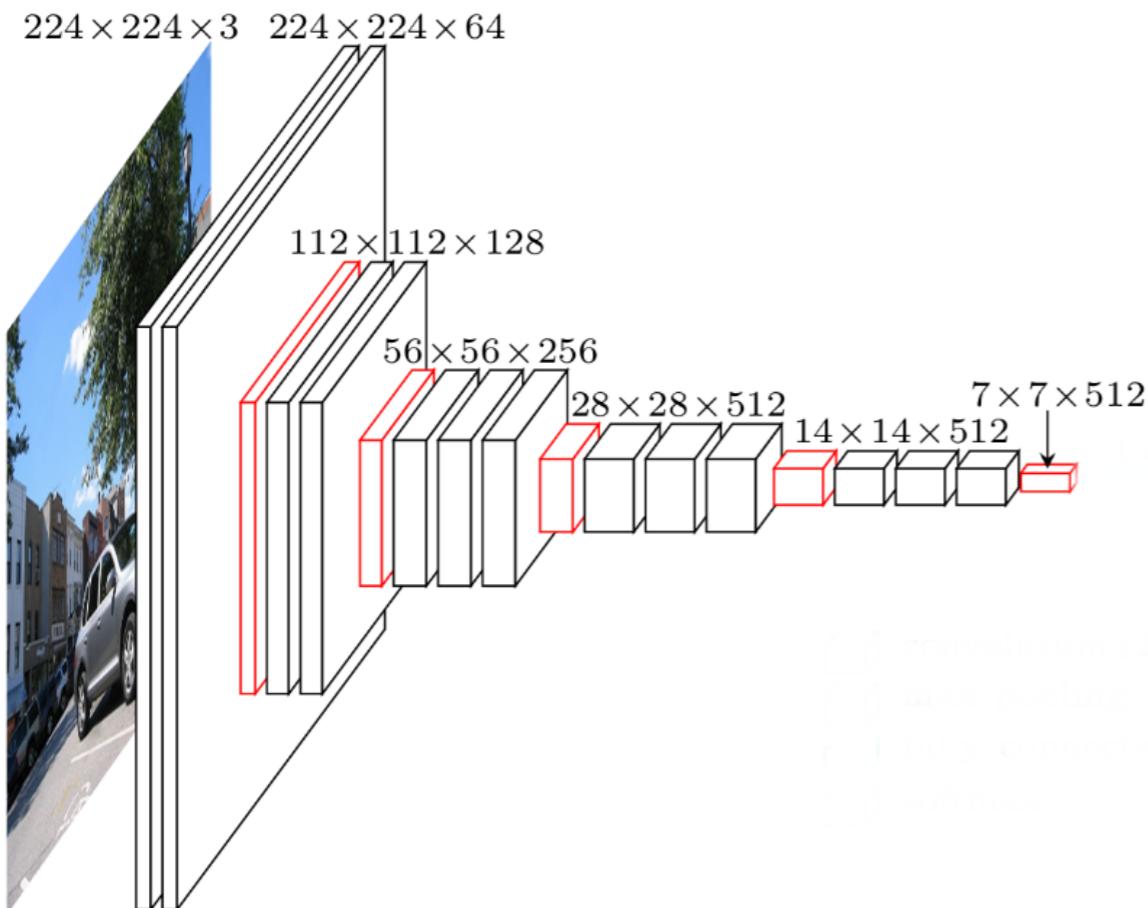
Cascaded Refinement Network



Perceptual Loss

Match activations in a pretrained visual perception network.

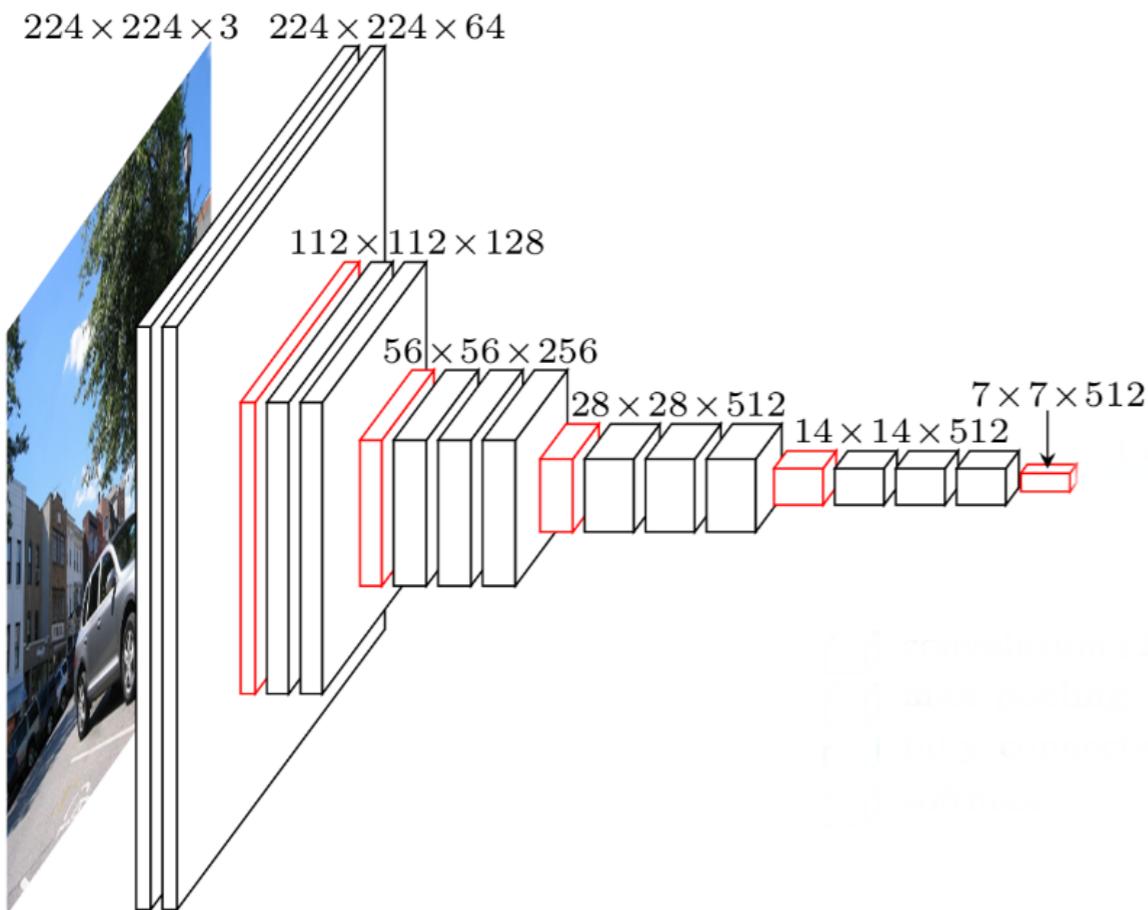
$$\mathcal{L}_{I,L}(\theta) = \sum_l \lambda_l \|\Phi_l(I) - \Phi_l(g(L; \theta))\|_1$$



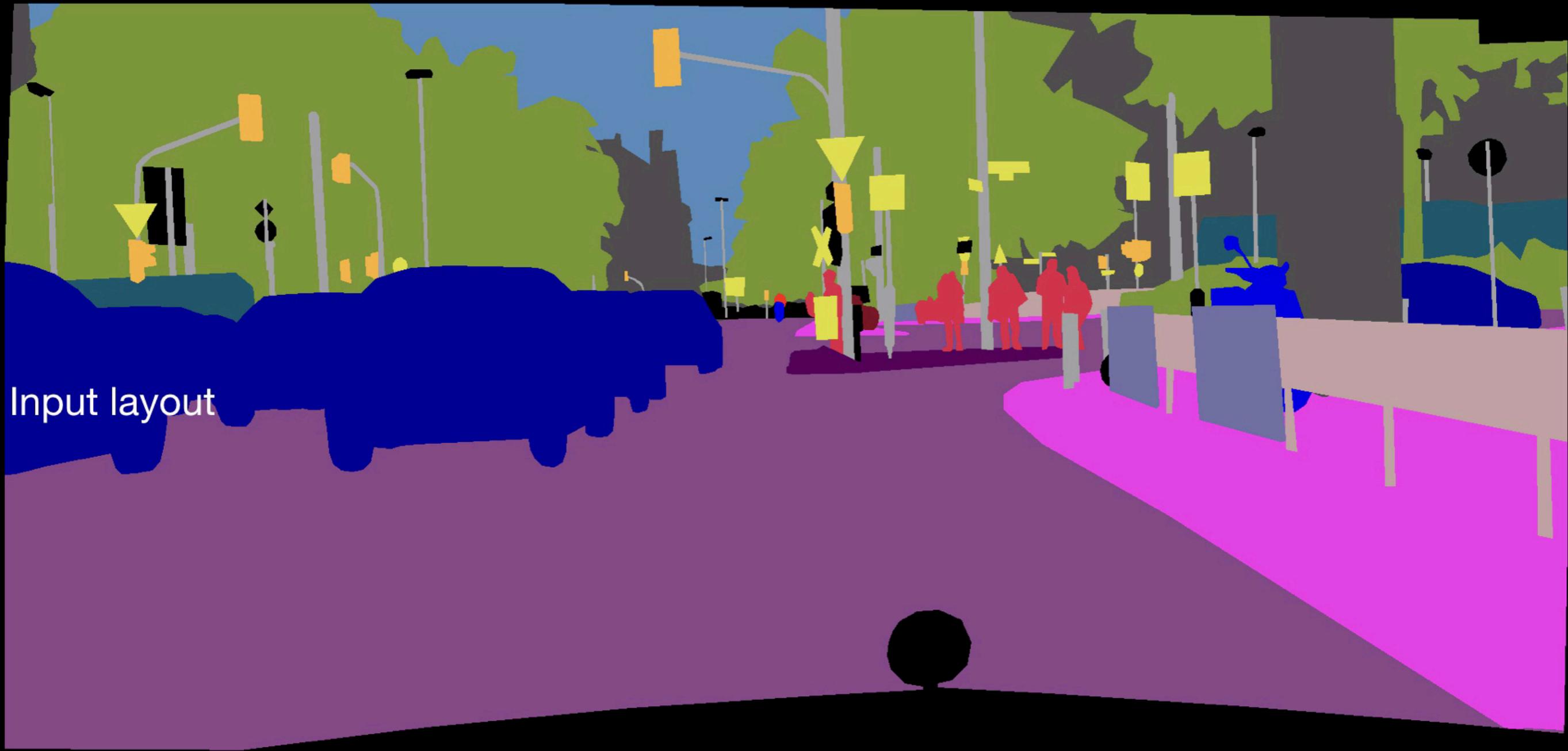
Perceptual Loss

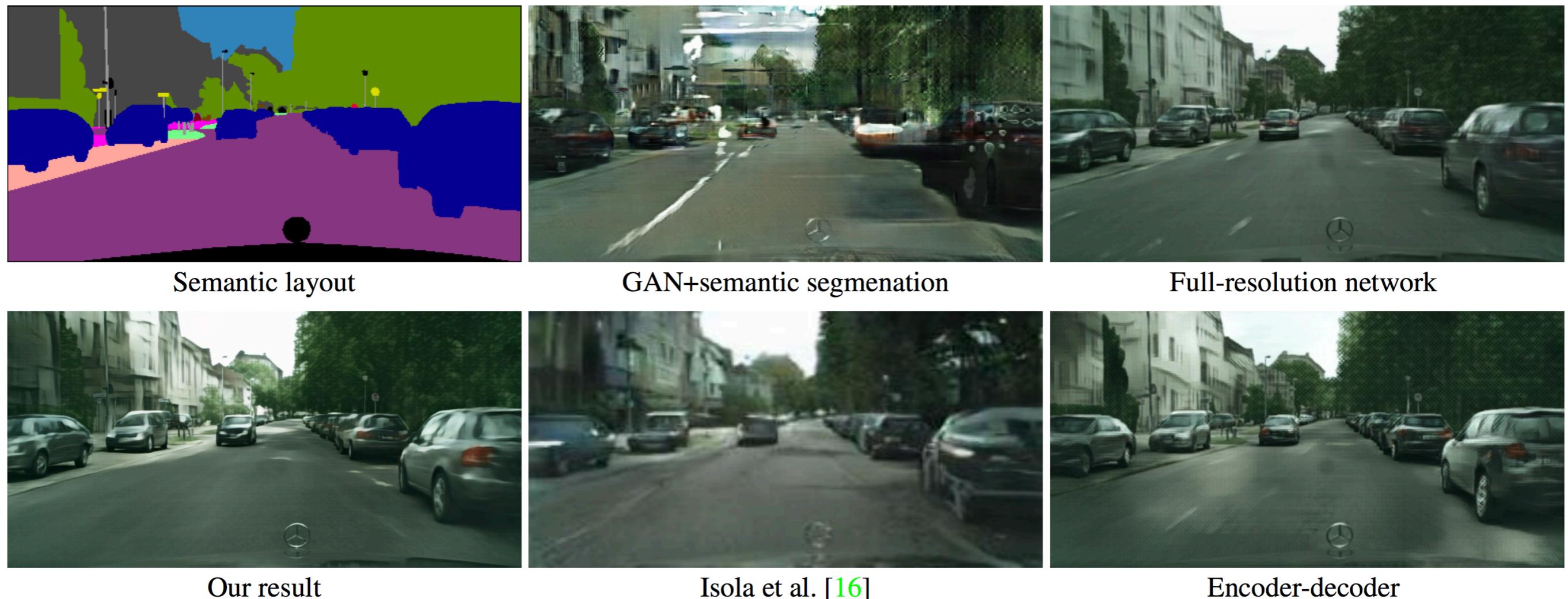
Match activations in a pretrained visual perception network.

$$\mathcal{L}_{I,L}(\theta) = \sum_l \lambda_l \|\Phi_l(I) - \Phi_l(g(L; \theta))\|_1$$



Gatys et al., CVPR 2016
Johnson et al., ECCV 2016
Bruna et al., ICLR 2016
Dosovitskiy and Brox, NIPS 2016
Nguyen et al., NIPS 2016





Cityscapes dataset, Cordts et al., CVPR 2016



Semantic layout

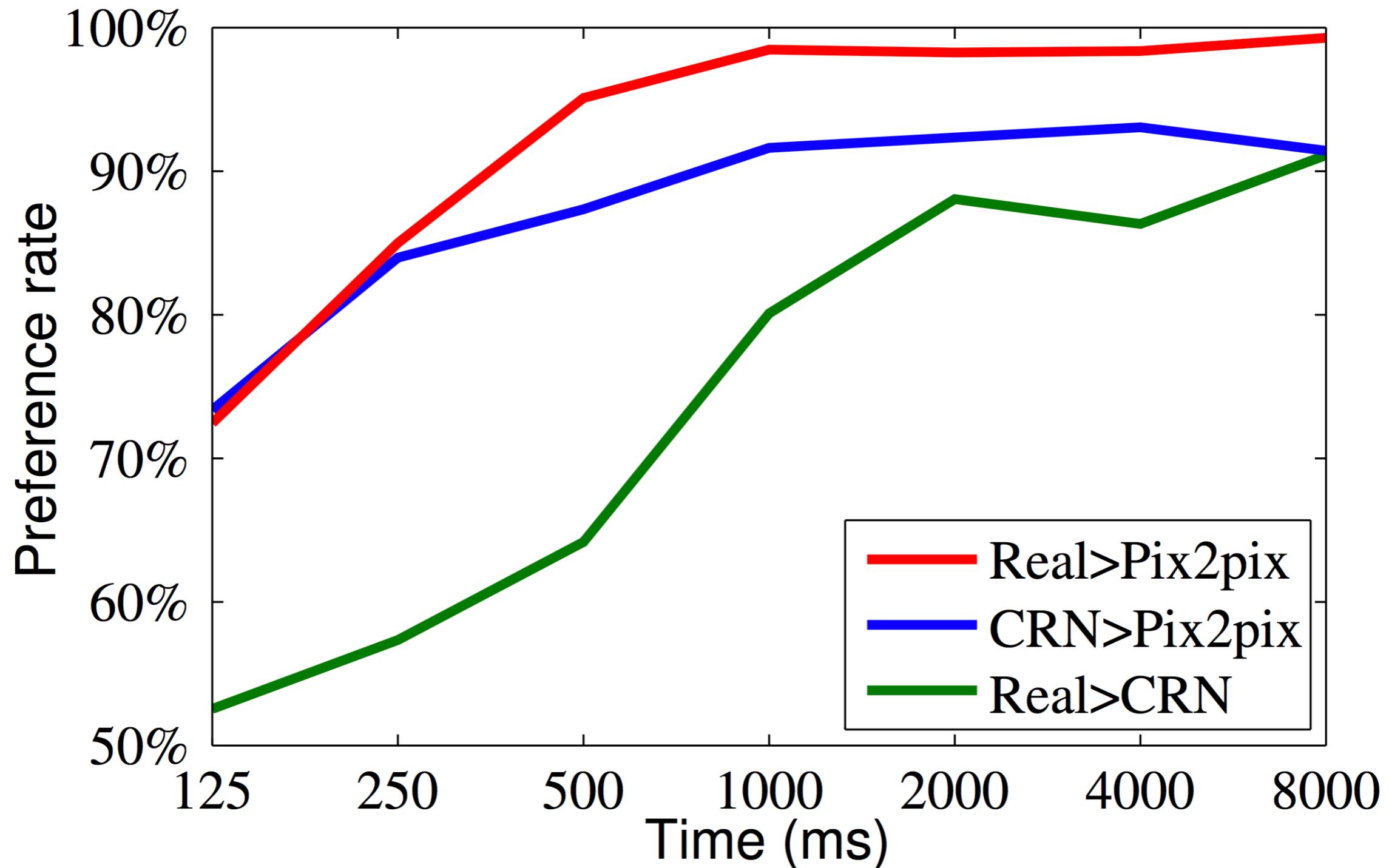
Our result

Isola et al. [16]

Full-resolution network

Encoder-decoder

	Image-space loss	GAN+SemSeg	Isola et al. [16]	Encoder-decoder	Full-resolution network
Cityscapes	99.7%	98.5%	96.9%	78.3%	67.7%
NYU	91.4%	82.3%	77.2%	71.2%	65.8%



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25 commits

1 branch

0 releases

1 contributor

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cqf-PC\cqf	update a model trained on GTA5	Latest commit 047b50c 10 days ago
VGG_Model	Upload source code	3 months ago
data	update a model trained on GTA5	10 days ago
datasets	Upload source code	3 months ago
extract_cityscapes_input_data	add the code to extract input data (labels and color images)	2 months ago
mturk_scripts	rename files	a month ago
optional_preprocessing	make the code to clear.	3 months ago
result_1024p	Upload source code	3 months ago
result_256p	Upload source code	3 months ago
result_512p	Upload source code	3 months ago
result_GTA	update a model trained on GTA5	10 days ago

Thank you