

R&D meeting

January 19, 2018

Semantic Segmentation using Resource Efficient Deep Learning

1 Approach selection:

1.1 Semantic segmentation models:

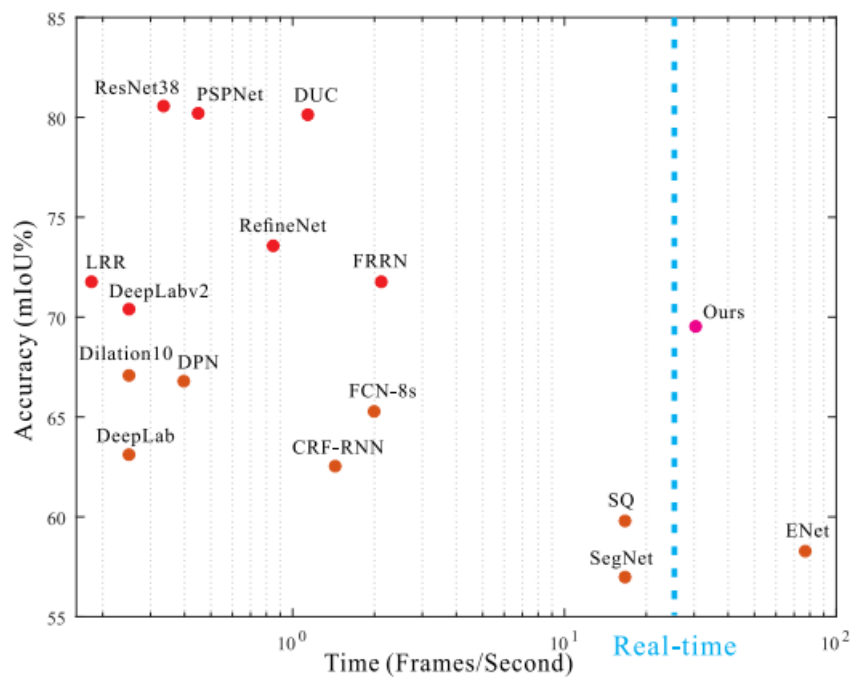


Figure 1. Inference speed and mIoU performance on Cityscapes [5] test set. Methods involved are ResNet38 [30], PSPNet [33], DUC [29], RefineNet [14], LRR [6], FRRN [22], DeepLabv2 [3], Dilation10 [32], DPN [18], FCN-8s [19], DeepLab [2], CRF-RNN [34], SQ [28], ENet [21], SegNet [1], and our ICNet.

Leaderboard changes in Cityscapes testset. (DeepLabv3)

1.2 Resource efficiency:

- Pruning.
- Depthwise separable convolutions like in MobileNet.
- Hashing trick.
- Rank regularization.

2 Annotation tools:

- LabelMe: web based tool is public and data would also be public.
- LabelMe Matlab toolbox: yet to try..
- University bonn annotation tool:
- Pixel annotation tool (using watershed algorithm): works in windows. Seems to be useful.
- Ratsnake: tool dint seem to be useful although the website had options like superpixel suggestions.
- LabelImg: Can be used but time consuming.
- Figi: used in medical image segmentation. Has many options. Still exploring.

3 Dataset:

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- Are the images expected to be common for the deep learning R&D (same dataset images but different annotations specific to be R&D)..?

4 Paper collection:

- Many relavant papers.. All of them need to be read?