Paper Reading

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Last update: April 22, 2019

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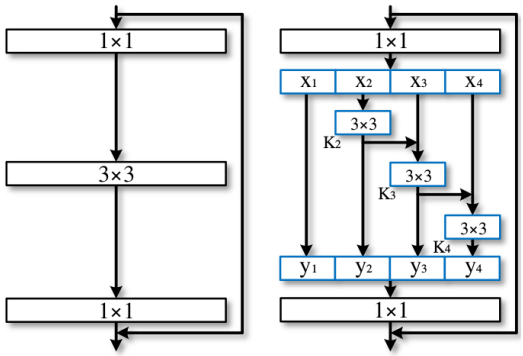
Chapter 1

Classification

1.1 Res2Net: A New Multi-scale Backbone Architecture, arxiv, 2019.



(a) Bottleneck block (b) Res2Net module

Figure 1.1: Residual Learning.

This paper is mainly a promotion of residual network, which seems to be similar to cardinality, only adding more connections.

Chapter 2

Salient Object Detection

2.1 DNA: Deeply-supervised Nonlinear Aggregation for Salient Object Detection. arxiv, 2019.

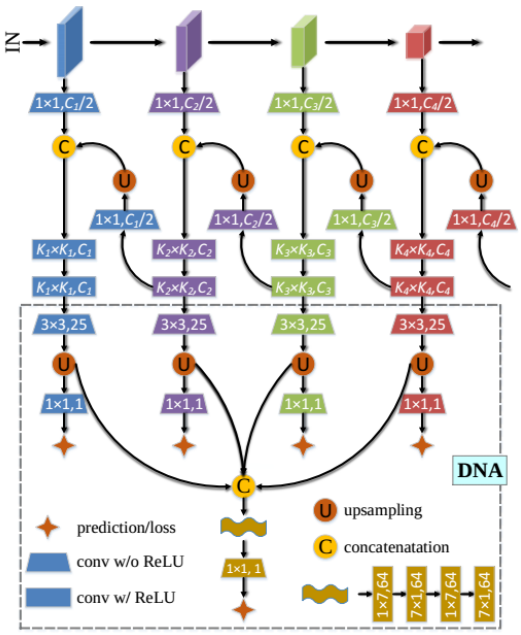


Figure 2.1: Residual Learning.

This paper has two contributions: (1) theoretically and experimentally analyzes the natural limitaion of traditional side-output aggregration which can only make limited use of multi-scale side-ouput informantion; (2) proposes Deeply-supervised nonlinear aggregration (DNA) for side-output features. (3) as experience, in DNA, convolution layers with kernels of $n \times 1$ and $1 \times n$ are used, which is proved to be effective. Moreover, authers claim that large kernel size in DNA can improve performance.

Chapter 3

Object Detection

3.1 What Object Should I Use? - Task Driven Object Detection. CVPR, 2019.

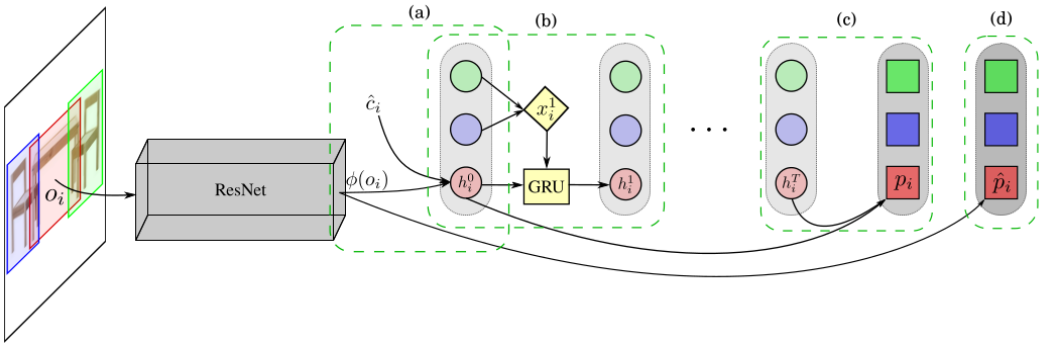


Figure 3.1: GGNN.

This paper has two contributions: (1) construct a COCO-Tasks dataset which comprises about 40,000 images where the most suitable objects for 14 tasks have been annotated; (2) proposes a method buliding on Gated Graph Neural Network to detect the most suitable objects for a given task.

Chapter 4

Semantic Segmentation

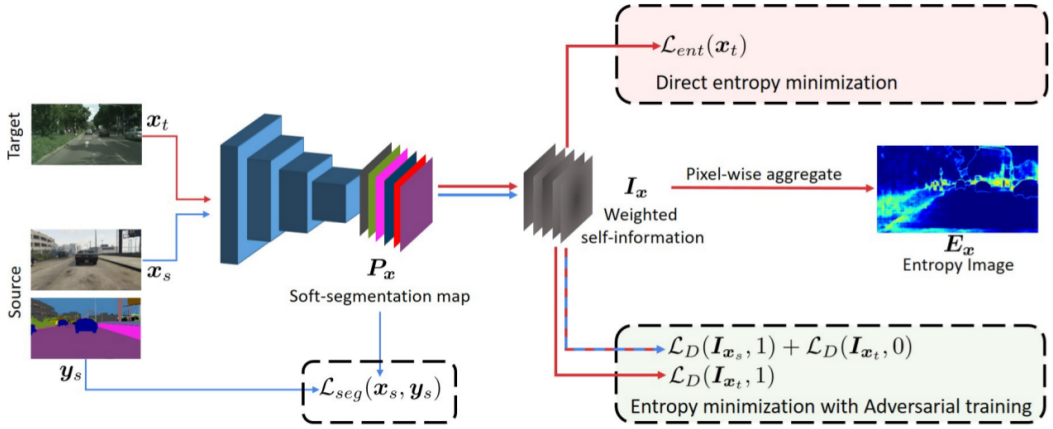


Figure 4.1: Advsarial entropy.

This paper focuses on the problem of domain adapation in semantic segmentation. In detail, the contributions are as follows: (1) propose to minimize the pixel-level entropy of target domain to penalize low-confident predictions on target domain; (2) propose a entropy-based adversarial traing approach to privide the structure adaptation; (3) extra two trick: a) training on specific entropy ranges and b) add class-ratio priors.

Chapter 5

Others

5.1 Single Image Haze Removal Using Dark Channel Prior. CVPR, 2009. Best paper.

This paper introduces dark channel prior that is an observation -most local patches in haze-free outdoor images contain some pixels which have very low intensities in at least one color channel. This is the one of most famous papers in the domain of dehazing.

Some formulas in this paper are easy to understand. One can refer to `https://www.cnblogs.com/Imageshop/p/3281703.html` for more understanding.

The unofficial python code can be found in `https://github.com/su526664687/dark-channel-prior-dehazing`.

5.2 Single Image Dehazing Using Ranking Convolutional Neural Network. TMM, 2018.

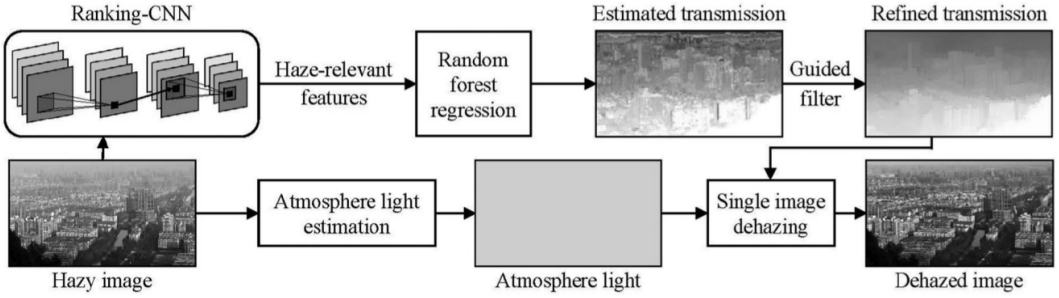


Figure 5.1: GGNN.

This paper presents a ranking cnn to deal with dehazing. The ranking-cnn mainly means a ranking layer. In this layer, the values in a feature map are ranked, and the same operation is conducted for each feature map. Moreover, this paper introduce a method to synthesize haze images.

[1]

Bibliography

[1] Jinming Su. For convenient compile. In Nothing, 2019.