

Instance-sensitive Fully Convolutional Networks

Qilei Zhang

Jun 26 2018

Abstract

Fully convolutional networks have been proven very successful for semantic segmentation, but the FCN outputs are unaware of object instances.

efficiency for semantic segmentation. Each output pixel is a classifier corresponding to the receptive field of the network. The networks can thus be trained end-to-end, pixel-to-pixel, given the category-wise semantic segmentation annotation. But this can not distinguish object instances.

1. Introduction

Fully convolutional networks have been proven an effective end-to-end solution to semantic image segmentation. An FCN produces a score map of a size proportional to the input image, where every pixel represents a classifier of objects. Despite good accuracy and ease of usage, FCNs are not directly applicable for producing instance segments [1].

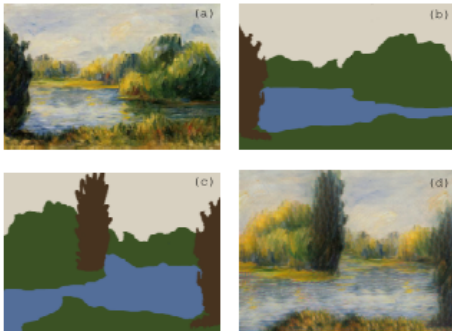


Figure 1. Methodological comparisons between: (top) FCN for semantic segmentation; (bottom) our Instance FCN for instance segment proposal.

2. Related Work

For the convolution neural network, the sliding window does not necessarily run on the image domain, but runs on the feature mapping [2], and the feature mapping can be re-convoluted into a convolution filter on the feature mapping [3]. FCNs have shown compelling quality and



Figure 2. Methodological comparisons between DeepMask and InstanceFCN for instance segment proposal.

3. Conclusion

FCN is driven by classifying pixels based on their relative positions, which leads to a set of instance-sensitive score maps. A simple assembling module is then able to generate segment instances from these score maps [4].

References

- [1] M. A. Carson and G. Lajoie. Some constraints on the severity of landslide penetration in sensitive deposits. *Geographie Physique Et Quaternaire*, 35(3):301, 1981. 1
- [2] C. A. Heimer. Disarticulated responsiveness: the theory and practice of responsive regulation in multi-layered systems. *University of British Columbia Law Review University of British Columbia*, 44(3):663–693, 2011. 1
- [3] A. Ljungqvist and M. A. Habib. Firm value and managerial incentives. *Journal of Business*, 78(6):2053–2094, 2000. 1

- [4] A. Pereira, J. Antoni, and Q. Leclre. Empirical bayesian regularization of the inverse acoustic problem. *Applied Acoustics*, 97:11–29, 2015. [1](#)