

Semantic Segmentation

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Abstract—The abstract goes here.

Index Terms—Semantic Segmentation, Deep Learning, Pixel-wise Segmentation

1 INTRODUCTION

THIS

1.1 Semantic Segmentation

Semantic means "meaning in language or logic", and when we talk about semantically segmenting an image we mean to divide the image into meaningful parts, such as physical objects. For example, the Figure 1 has been segmented into 4 different categories (Cat, Table, Chair, and Background). As it might be

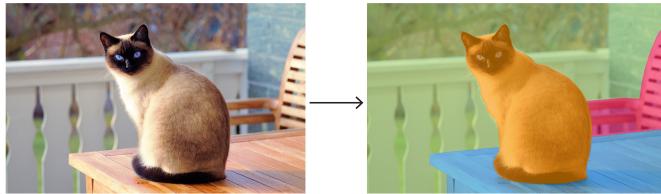


Fig. 1: Semantic Segmentation

evident, this task is not achievable using unsupervised methods. We need to define the desired segmentation categories, as an image with infinite detail could be segmented into an infinite number of categories.

2

2.1 Fully Convolutional Networks

Fully Convolutional Networks (FCNs) are what one gets on building a neural network using only convolutional-type layers. They keep the spatial information of an image intact.

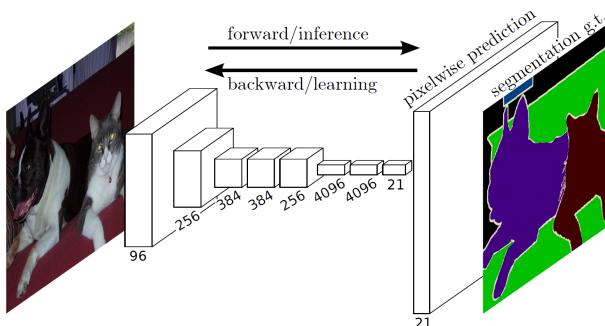


Fig. 2: Representation of a Fully Convolutional Network [Credits: J. Long et al., 2015 []]

2.2 Deconvolution Networks

3 DATA USED

3.1 Cityscapes

The Cityscapes Dataset offers pixel-wise segmented images from stereo videos recorded in street scenes from 50 different cities. It contains 5,000 fine quality and a larger set of 20,000 weakly annotated images. The images have a resolution of 2048 x 1024 pixels. For our purpose, we use the set of finely annotated images from the left camera.



Fig. 3: Cityscapes Dataset

3.2 Stanford Scene Understanding Dataset

The dataset contains a total of 534 images (400 training and 134 test), with labels comprising of 9 classes (un-known, sky, tree/bush, road/path, grass, water, building, mountain, foreground object). Resolution of the images is 240 x 320 pixels. This served as a testing dataset to check for convergence of our models.

4 CONCLUSION

The conclusion goes here.

APPENDIX A

PROOF OF THE FIRST ZONKLAR EQUATION

Appendix one text goes here.

APPENDIX B

Appendix two text goes here.

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REFERENCES



Michael Shell Biography text here.

John Doe Biography text here.

Jane Doe Biography text here.