

## Project 2 Week 5

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The purpose of this project is to reproduce the Figure 1, which is from the paper "Long, et al. Fully Convolutional Networks for Semantic Segmentation, Figure 4."

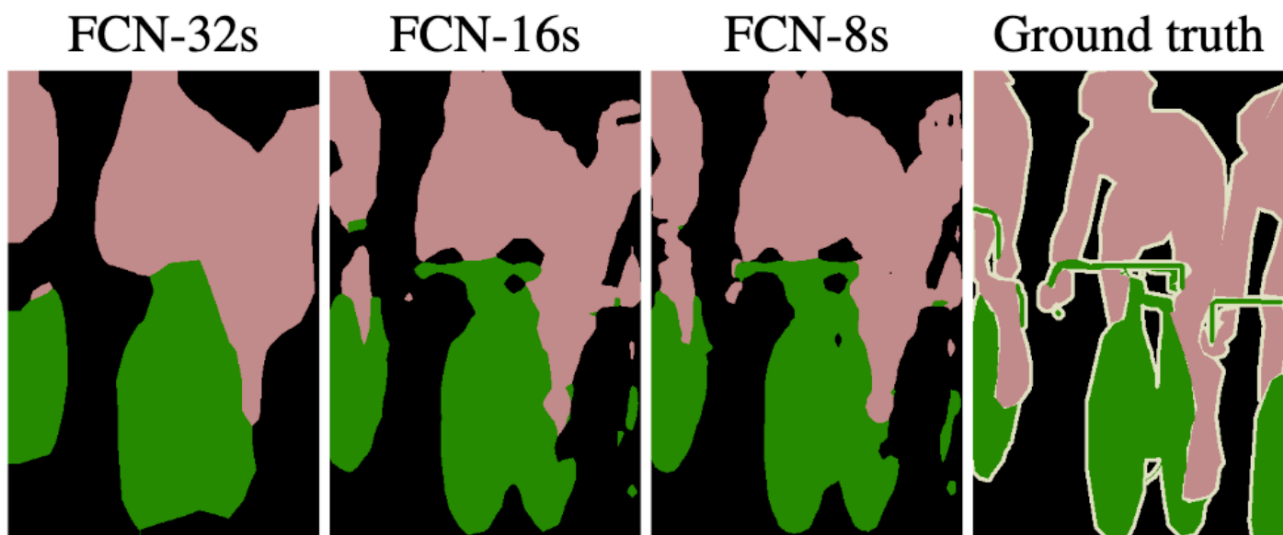
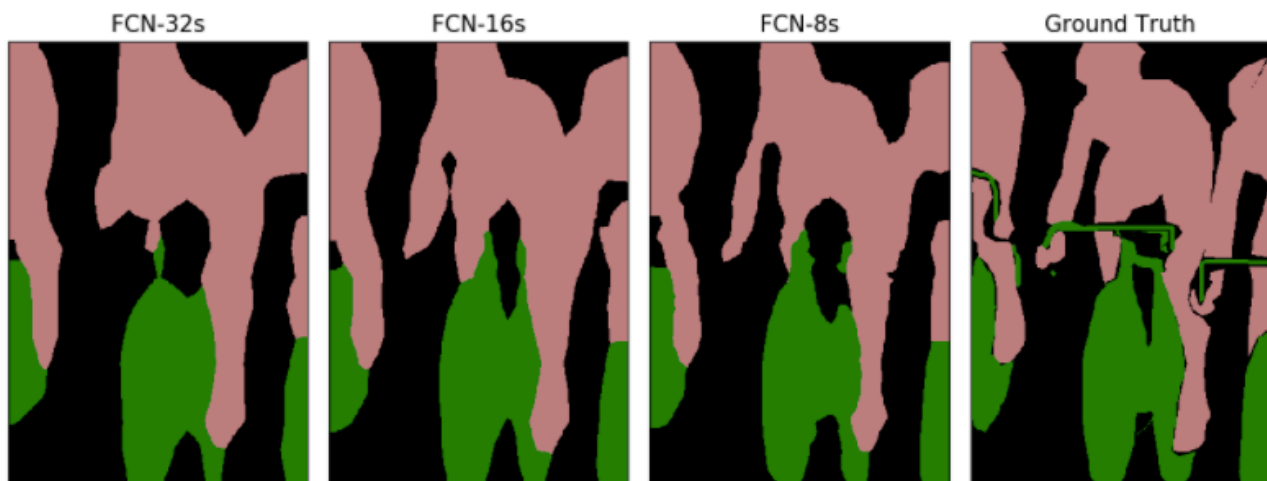


Figure 1: Long, et al. Fully Convolutional Networks for Semantic Segmentation, Figure 4

The Figure 2 shows the figure I reproduced.



The most of the details of two figures are the same. The FCN-8s has the best performance in the both case. In this case, the neural network captures the more local and detailed feature. On the other hand, the FCN-32s model is more general and focused on the global features, the overall semantic segmentation.

In this project, I listed all the packages I used in the `requirements.txt` file. Such as the `numpy`, `matplotlib`, `pytorch` and `PIL` packages. I built the all three neural networks from the scratch as well as the bilinear kernel. All three neural networks are based on the ResNet34, which is not exact the same as the paper VGG19.

Here, I do not have too many issue when I was reproducing the figure. As we can tell, the two figures are not the same. It might because that the pretrained model I used is different. Before I did this project, I think the ResNet34 does have a better performance than VGG19, so that is the reason I choose transfer learning from that. In the result, we cannot say which one has the better performance overall. In my result, I can separate the arms of human from the body but cannot find out the handlebar of the bike.