Exercise 3 Report: Fully Convolutional Neural Network

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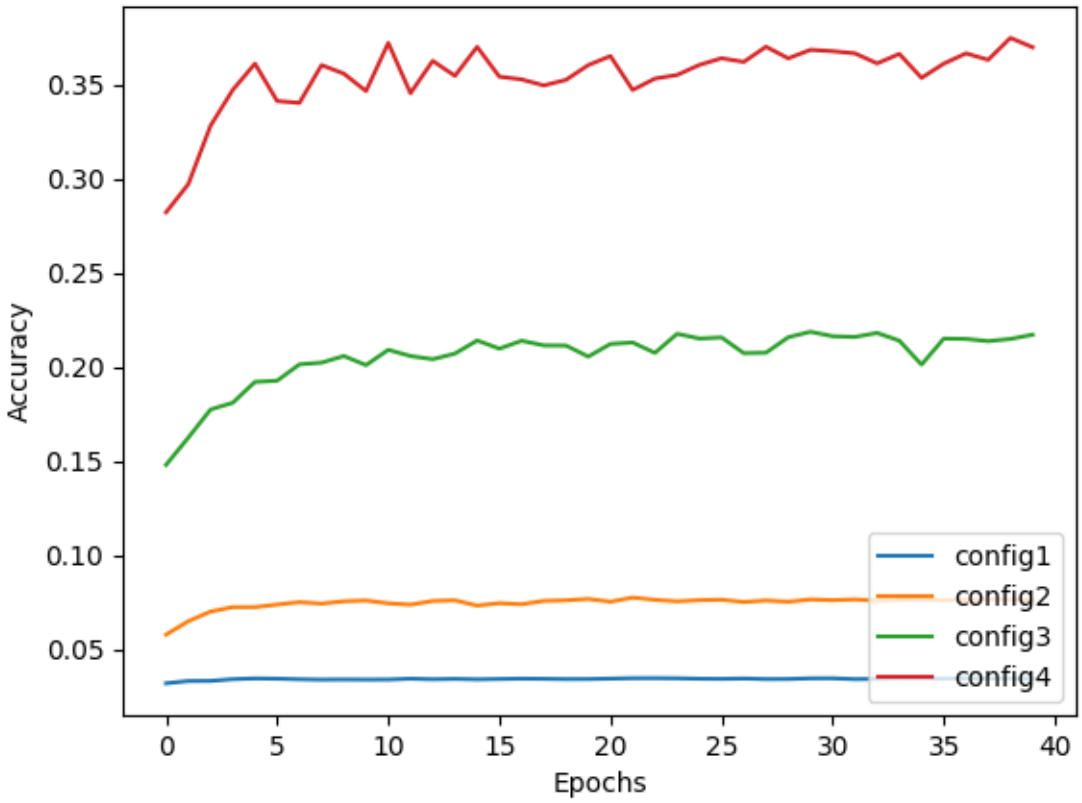
IoU Values

Configuration	Best Value	Step
config1	0.03464	23000
config2	0.07743	22000
config3	0.21860	30000
config4	0.37468	39000

Plots



Exercise

The implementation was pretty straight forward, once i realized that we were supposed to used the predefined functions such as *TransitionUpElu* or *Convolution* instead of, say, *tf.nn.conv2dtranspose*.

Printing the shapes after each step was a huge help.

The amount of layers and the convolutions done confused me a bit but the QA-Session really cleared that up and helped alot with implementing the configurations.

By looking at the plots, one can easily see that configuration 4 has by far the best IoU Value throughout all epochs. Second best is configuration 3 and both configuration 2 and configuration 3 are equally bad

The results are not surprising as the configurations get more refined and complex the higher the number goes
The first configuration does not even make use of a skip connection and therefore won't ever reach good IoT-Values.

After the first configuration, each following configuration uses one more skip connection, leading to more refined results.
If i understood correctly, a skip connection basically avoids that there is less/no information lost (vanishing gradient).
The concatination between the upsampling layer and the skip connection makes sure that the upsampling is not an "empty" one but one with information from previous layers.

So skip connections can help increasing accuracy since the output layer will have more information leading to a higher IoT-Value