Deep Learning Lab

Autonomous Intelligent Systems

Exercise 3

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Learning Objectives

The learning objective of ex-3 was to understand the upsampling of FCNs by implementing the various configuration with skip connection in the code.

FCNs and Code Implementaion

FCNs are encoder and decoder where up-sampling and down-sampling is performed. The feature map is produced from four conv-layers with 2 strides and the resolution is 16 times lower as compare to the input image. The up-samling or transpose convolution is done on this lower resolution image and eventually it is equal to the input image.

The given four configurations are implemented.

Config_1: Output has to be up-sampled by a factor of 16 so there are 120 up-sampling feature maps which are created with a stride of 16.

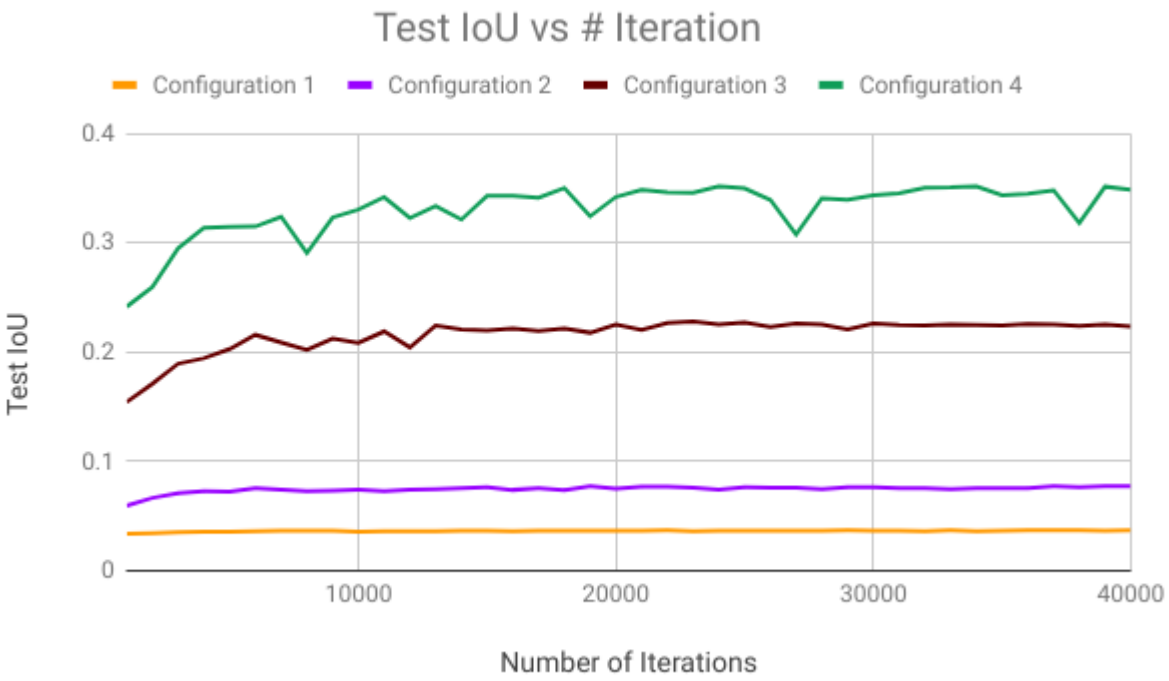
Config_2: A skip connection has been added to the decoder.

Config_3 Two skip connections naming DB4_skipconnection and DB3_skipconnection are used here.

Config_4: In this full decoder we use 3 skip connections named DB4_skipconnection, DB3_skipconnection and DB2_skipconnection.

Results

IoU values have been drawn vs epochs. Starting with low accuracy of config_1 we started adding the skip connection in config_2 and onwards where it is getting better. Finally it shows highest accuracy.



Configuration	IoU value
1	0.03699290931
2	0.07744444213
3	0.2282557223
4	0.3519788415