CSCE 479/879

Hackathon 5 Solution

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1. Write a few sentences about the differences between the ResBlock and Bottleneck layers above. Why might the Bottleneck block be more suitable for deeper architectures with more layers?

Ans. ResBlock is a simple block with two convolutional layers and an identity shortcut connection. It has a lower number of layers and filters than the Bottleneck block.

On the other hand, the Bottleneck block uses three convolutional layers with a much smaller number of filters in the first and third layers and a larger number of filters in the middle layer. Bottleneck mainly reduces the number of parameters being used and decreases the computation for matrix multiplication and the bottleneck block also allows for more efficient processing of larger images and data sets. This layer makes the residual block thin which in turn helps to make networks deep as possible with reduced parameters and thus makes it suitable for deeper networks with more layers.

Resources :

1. https://paperswithcode.com/method/bottleneck-residual-block#:~:text=create%20a%20bottleneck.-,The%20use%20of%20a%20bottleneck%20reduces%20the%20number%20of%20parameters,%2D50%20and%20ResNet%2D101.