Question related to parameter "dilation" of PyTorch nn.Conv2d method?

Bide Xu posted Mar 13, 2019 3:07 AM Subscribe

According to official document https://pytorch.org/docs/stable/nn.html#conv2d

The default value of dilation is 1. For those who want to know what means dilation, you can find its behavior in the following link:

https://github.com/vdumoulin/conv_arithmetic/blob/master/README.md

However, the problem is that, if you set dilation to 0, in other words, you want to disable this behavior, then you will get run time error. And the value of this dilation can only be set as larger than 0 according to the error message.

Therefore, it seems this behavior of dilation is imposed by PyTorch, but I do not think this is quite reasonable, that means when you use pytorch, you have to apply dilation in your model.

Since this Conv2d is a very important layer for our project if we use pytorch with cnn, and I do not think we can get around of this method, it will be used implicitly (even in some pytorch supported models) or explicitly. So anyone have any idea about this issue?

I know probably most of us just ignore this parameter (so it will be default to 1), but to force the use of "dilation" is something indeed reasonable for image processing?

At least it would cause some information be lost when scan the original image with dilation, is that something we expected? Or some other machine learning package have different behavior when deal with dilation?

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Will Hamilton
March 15 at 3:05 PM

Hi,

Interesting point! After looking into this, I think that the issue is just that PyTorch uses a strange convention when defining the dilation parameter. Basically, it seems that in PyTorch dilation=1 really means "no dilation" and dilation=0 is not defined.

This issue is discussed in this StackOverflow post: https://stackoverflow.com/questions/43474072/default-dilation-value-in-pytorch

Hope that helps!

- Will

Reply

Bide Xu
March 16 at 1:30 AM

Well, thank you. :)

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