

ML/DL for Everyone Season2

with PYTORCH

10-6 Advanced CNN(ResNet)

Code: <https://github.com/deeplearningzerotoall/PyTorch>

Slides: <http://bit.ly/2VrZcWM>

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지난시간

- VGG Network 만들기

오늘은

- ResNet Network 만들기

이론적인 설명은 어디서?

모두를 위한 딥러닝 시즌 1

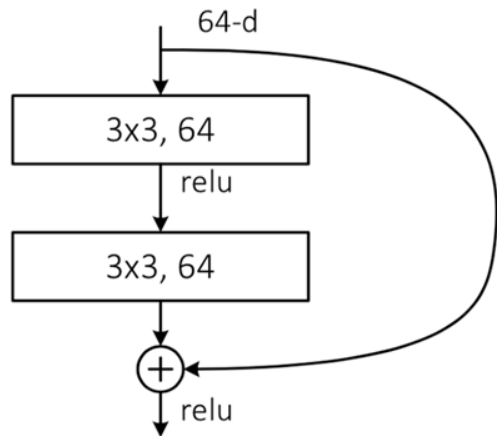
https://www.youtube.com/watch?v=KbNbWTnIYXs&list=PLIMkM4tgfjnLSOjrEJN31gZATbcj_MpUm&index=37

Pytorch Lecture 11: Advanced CNN

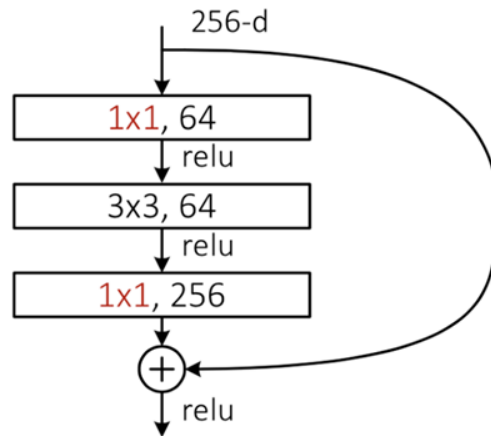
<https://www.youtube.com/watch?v=hqYfqNAQljE>

ImageNet experiments

- A practical design of going deeper



BasicBlock
(for ResNet-18/34) **all-3x3**

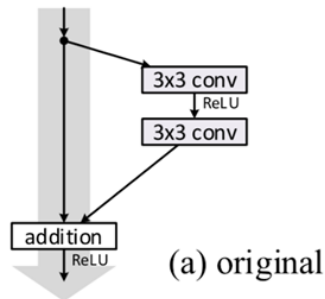


bottleneck
(for ResNet-50/101/152)

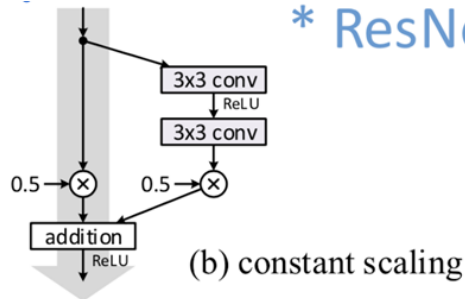
Many more experiments!

$$h(x) = x$$

error: 6.6%



* ResNet-110 on CIFAR-10



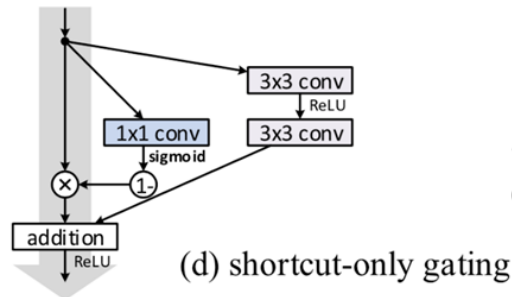
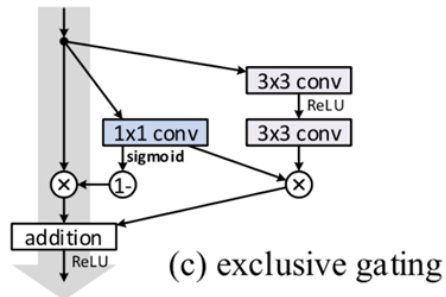
$$h(x) = 0.5x$$

error: 12.4%

$$h(x) = \text{gate} \cdot x$$

error: 8.7%

*similar to "Highway Network"

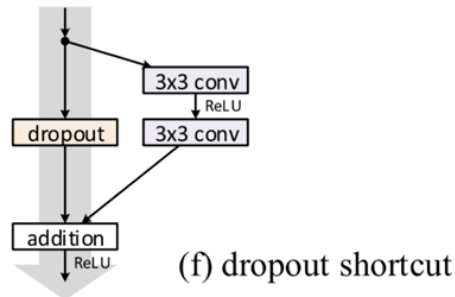
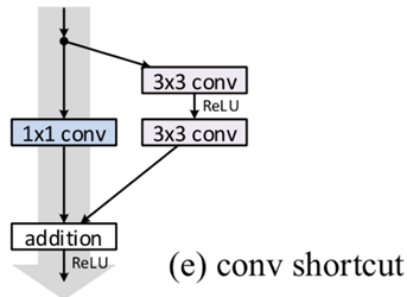


$$h(x) = \text{gate} \cdot x$$

error: 12.9%

$$h(x) = \text{conv}(x)$$

error: 12.2%



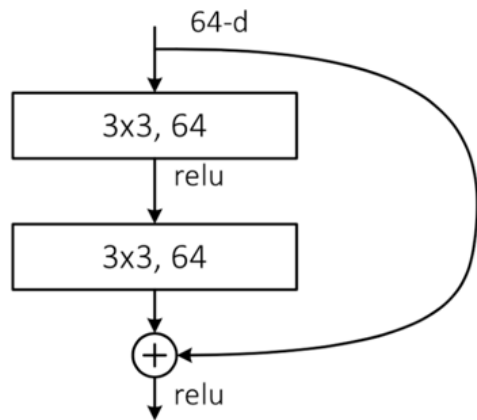
$$h(x) = \text{dropout}(x)$$

error: > 20%

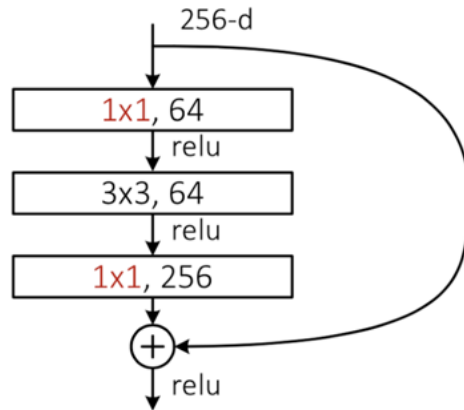
torchvision.models.resnet

- resnet (18,34,50,101,152)를 만들 수 있도록 되어있음
- 3x224x224 입력을 기준으로 만들도록 되어 있음
- input size가 다른 경우 ResNet를 적용하려면 어떻게 해야 할까?

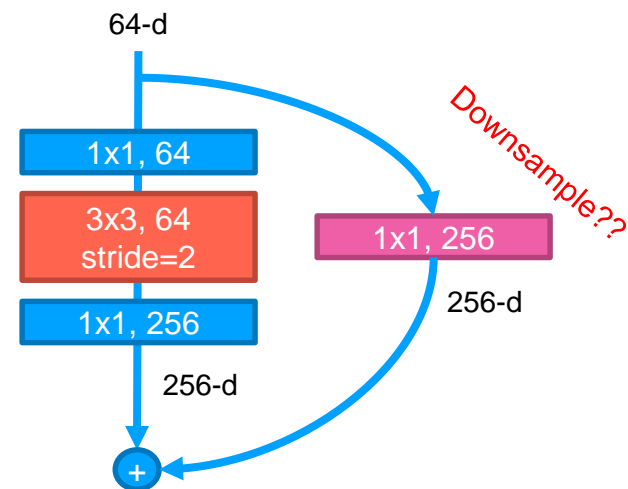
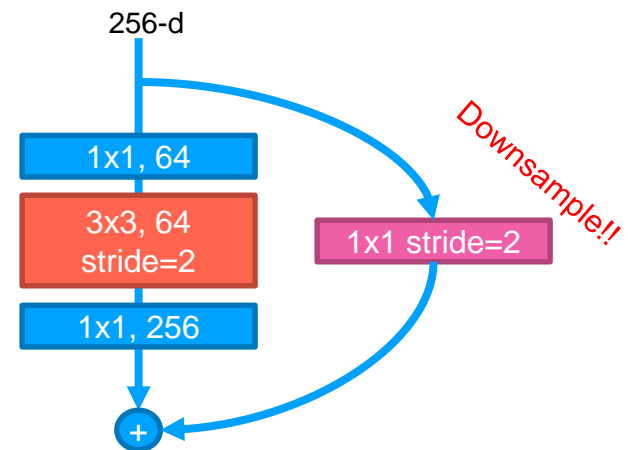
직접 해보기

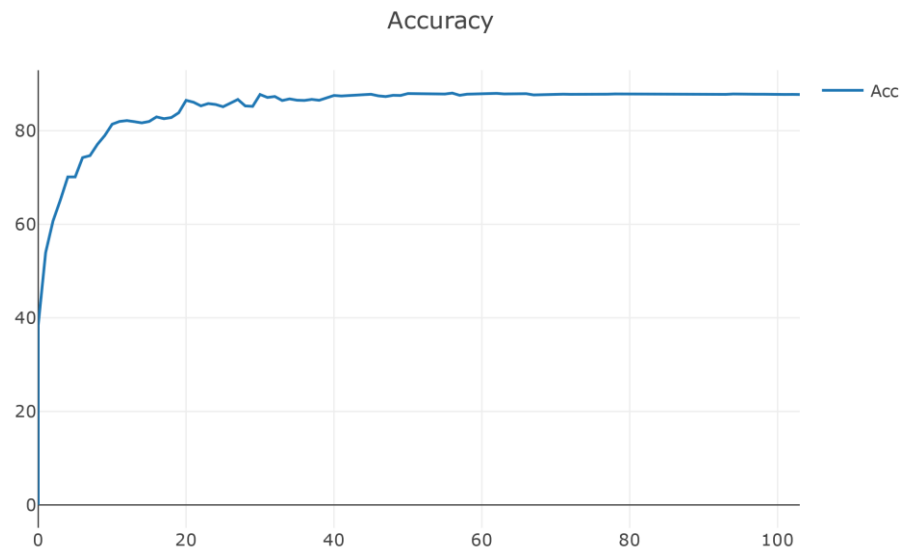
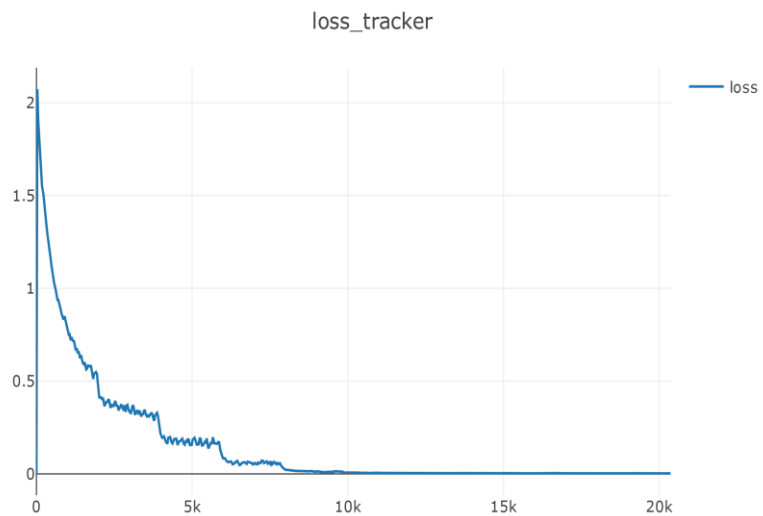


BasicBlock
(for ResNet-18/34)



bottleneck
(for ResNet-50/101/152)





오늘 같이 해본 것들은?

ResNet을 직접 만들고 cifar10 에서 학습 해봤습니다.

What's Next?

- 그럼 앞으로 뭘 해야 할까