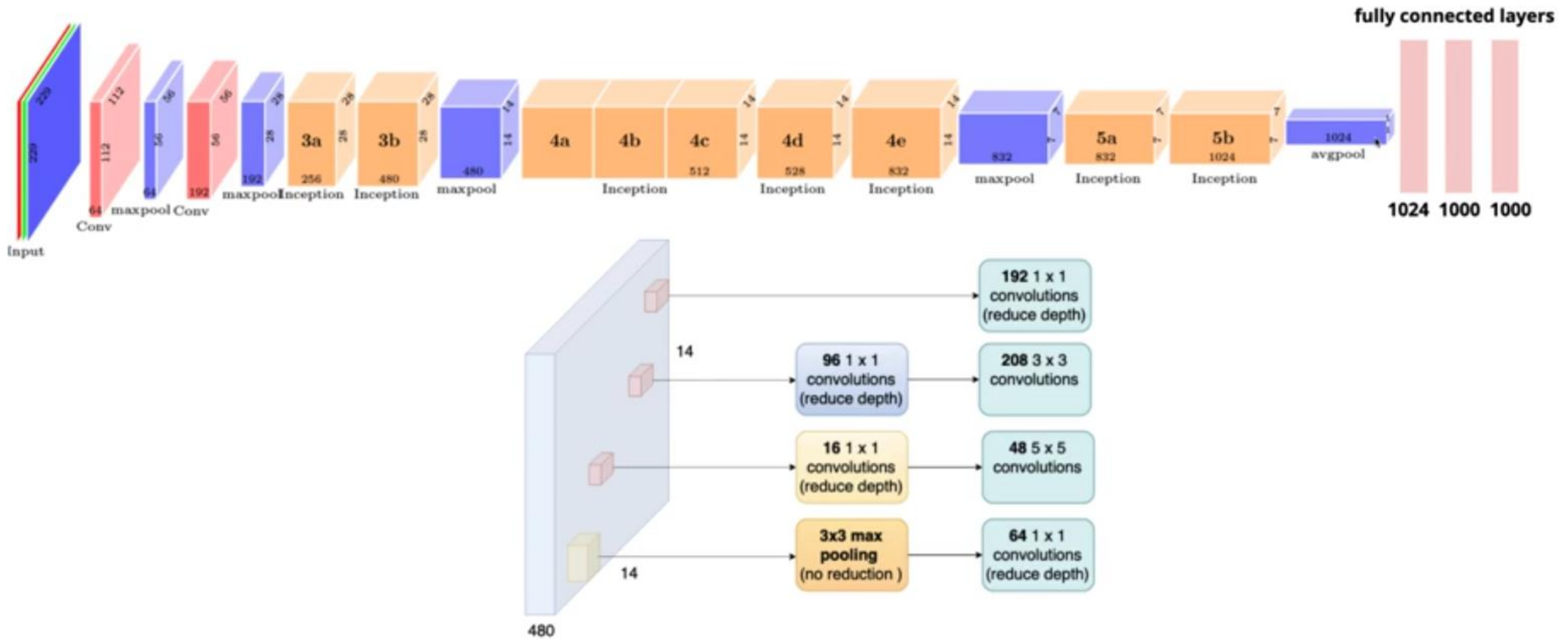


# Deep Learning : Residual Networks (ResNet)



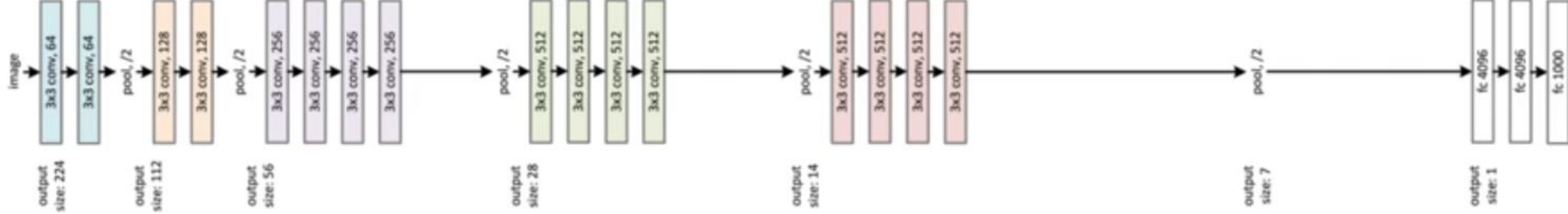
राष्ट्रीय प्रौद्योगिकी संस्थान सिक्किम  
NATIONAL INSTITUTE OF TECHNOLOGY SIKKIM

**Course Instructor:**  
Dr. Bam Bahadur Sinha  
*Assistant Professor*  
*Computer Science & Engineering*  
*National Institute of Technology*  
*Sikkim*

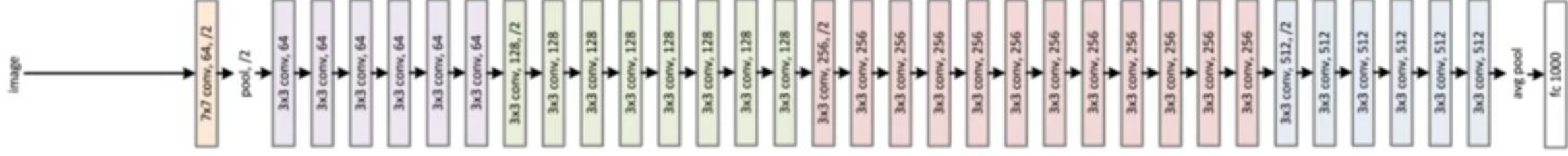


GoogLeNet  
(What does the full network look like?)

VGG-19

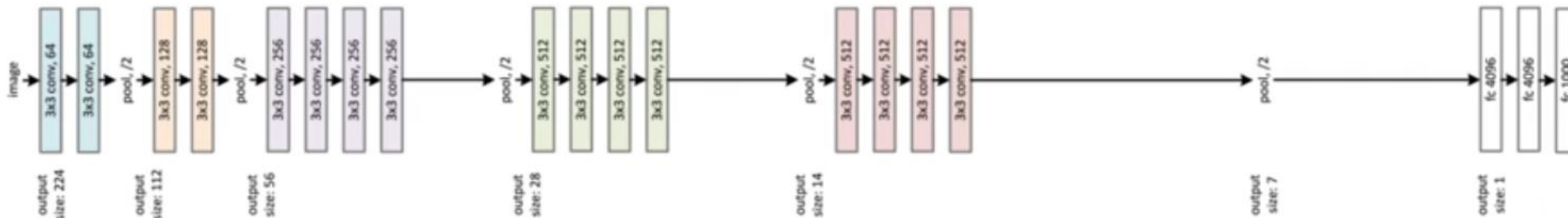


34-layer plain

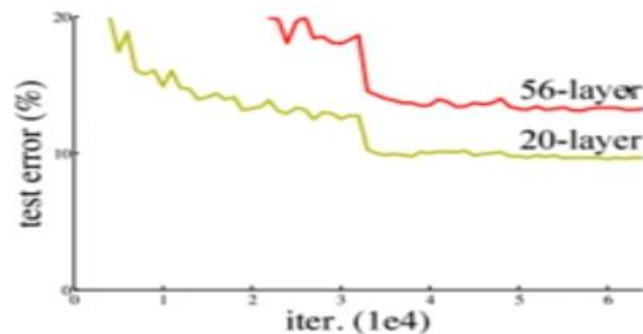
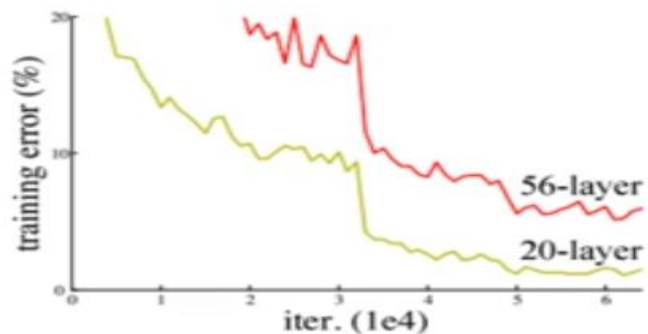


What happens when you increase the depth of the network with a very large amount?

## VGG-19

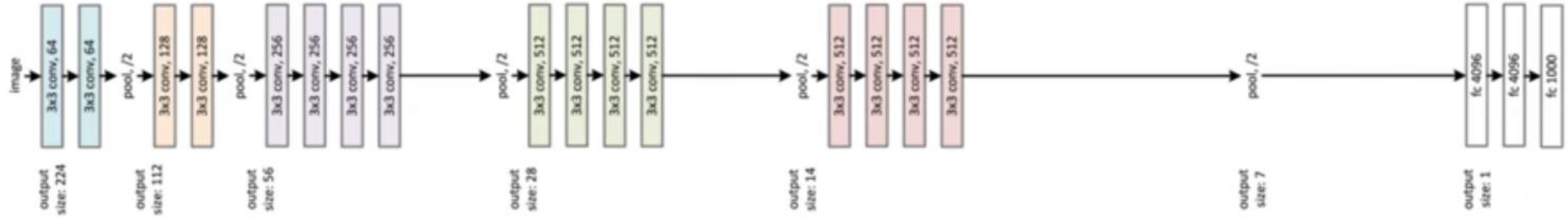


## 34-layer plain

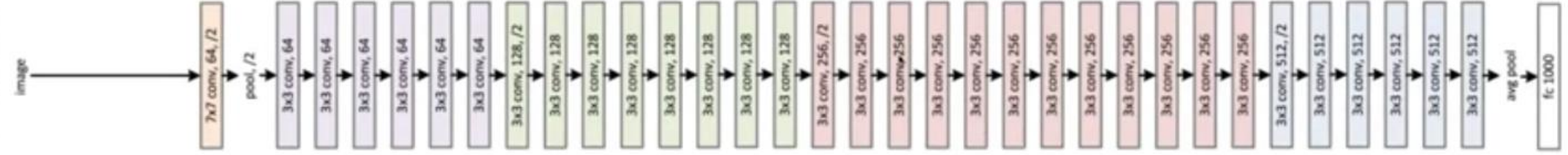


What happens when you increase the depth of the network with a very large amount?

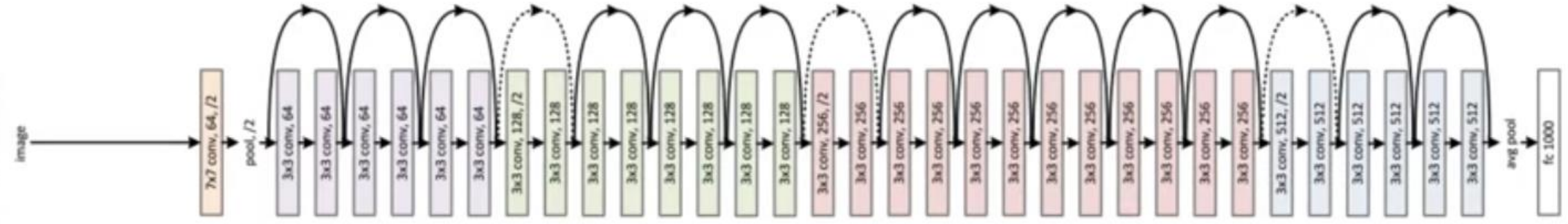
VGG-19



34-layer plain



34-layer residual



Residual Network (Passing the input again)

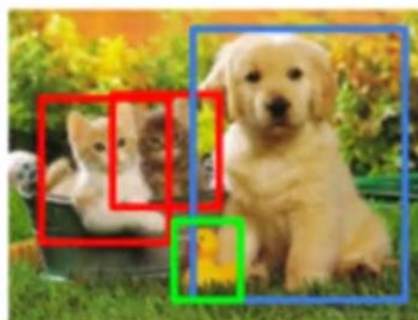




CAT



CAT



CAT, DOG, DUCK



CAT, DOG, DUCK

**Winner on the 5 main tasks:**

- ✓ ImageNet Classification
- ✓ ImageNet Localization\*
- ✓ ImageNet Detection\*

- ✓ Coco Detection\*
- ✓ Coco Segmentation\*

\*101-layered ResNet (2015)

# How does it perform across tasks?