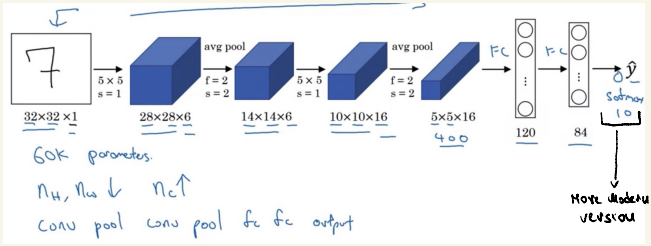
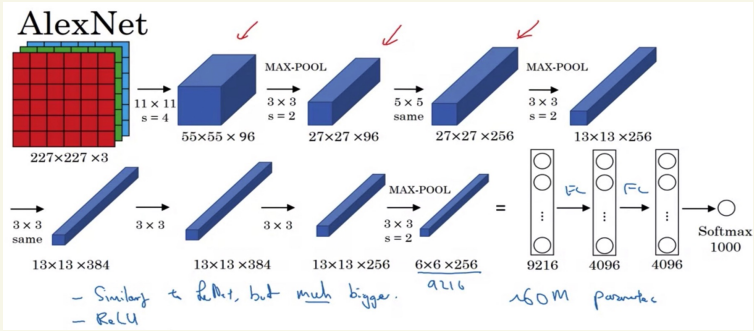
CASE STUDIES

- **LeNet-5**: old style CNN Network, no padding, no softmax as last activation function
  → Hand written digits recognition

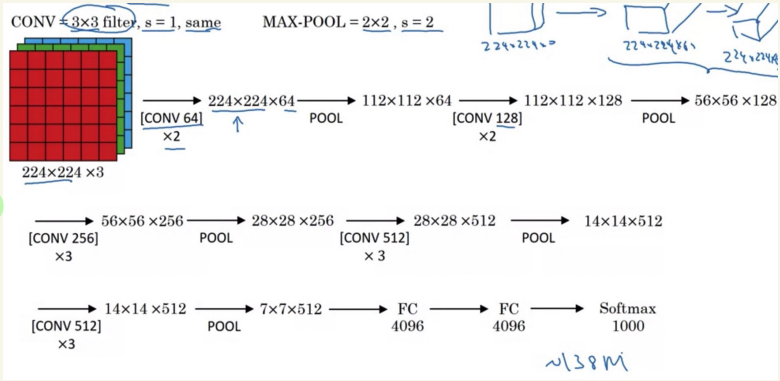


- **AlexNet**: much higher # params to train
  → IMG classification

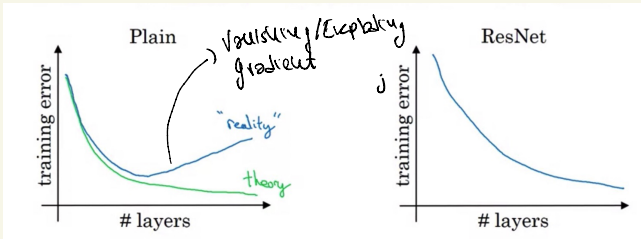


- **VGG-16**: simpler network architecture
  → Large scale img recognition

Deep Networks like this are hard to train because of vanishing and exploding gradient



- **ResNets**: allow you to train much deeper networks by using shortcuts that fast-forward activations (Residual Blocks)



[Transfer Learning]

1) Download an existing trained NN
2) Get rid of the last softmax layer and plug in the one you need for your problem

→ So you basically freeze the earlier layers and you only train the last one. In general, you can decide how many layers to freeze and train

[Data Augmentation]

- Mirroring
- Random cropping
- Rotation
- Shearing
- Color shifting