Contents

1 CNNS

1.1 CNNS vs fully connected DNNS

1.2 3 CONV layers

each with kernel 3x3 each with same padding stride 2

lowest layer outputs 100 feature maps middle layer outputs 200 feature maps top layer outputs 400 feature maps

input images are RGP 200x300

total # of parameter in the CNN how much ram for 32 bit floats for single prediction ram for training on a mini-bach of 50 images

[200 x 300 x 3] = 3**3*600*100*200*400 10,800,000,000

3x3x3+1 weights+bias = 28 first: 28x100

3x3x100 + 1 weights+bias = 901 first: 901x200

3x3x200 + 1 weights+bias = 1801 first: 1801x400

28x100 901x200 1801x400

- = 903400

Image
(200x300) (100x150) (50x75) (25x38)

32 bits is 4 bites first layer takes: 4x100x150x100 = 6MB second layer takes:4x200x75x50 = 3MB third layer takes: 4x400x38x25 = 1.5MB parameter take : 4x903400 = 3.6

11.5M5 - 1.5MB + 3.6MB = 12.6MB

1.3 GPU runs out of memory

1.4 Why max pooling

1.5 Local Response Normalization Layer

1.6 Alex Nets

1.7 Other Architectures

1.8 Fully Convolutional Layes

1.9 Semantic Segmentation

1.10 CNN on MNIST

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