Machine Vision
Deep Learning — Unit 4

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Slides available at jonkrohn.com/talks

July 28th, 2018

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Outline

ConvNets

LeNet-5

AlexNet

Transfer
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Project
Formulation

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1 **Intro to Convolutional Neural Networks**

2 **Classic ConvNet Architecture I: LeNet-5**

3 Classic ConvNet Architecture II: AlexNet

4 Transfer Learning

5 Deep Learning Project II: Formulating

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3. **Classic ConvNet Architecture II: AlexNet**

4. **Transfer Learning**

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DeepVis

[deepvis]

Convolution Demo

from the illustrious [Andrej Karpathy]
(*everyone* gets a turn on whiteboard)

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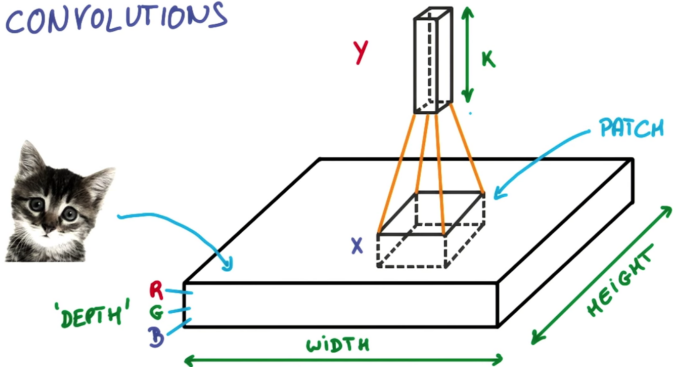
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LeNet-5

let's make our [deep net] *convolutional*!

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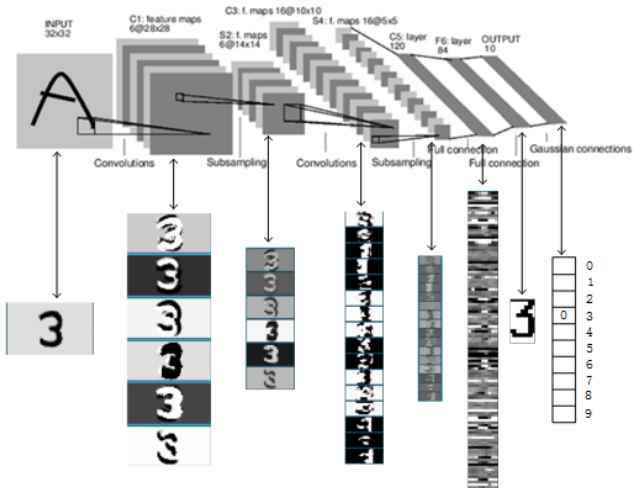
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AlexNet

[AlexNet] from scratch

VGGNet (Simonyan & Zisserman, 2014)

Take-Home Exercise III

- build VGGNet from AlexNet notebook
- be able to verbalize all Arsenal (Theory I-IV) items

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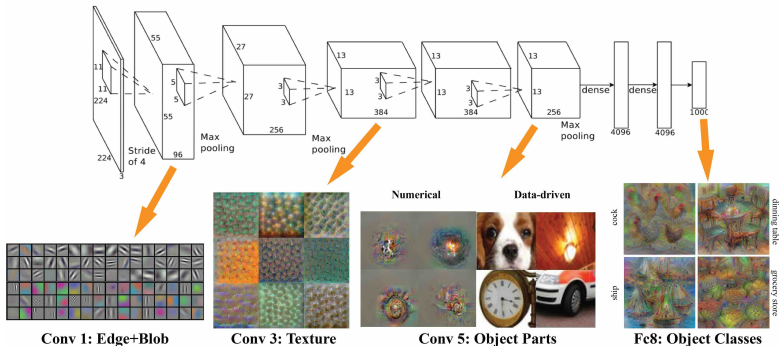
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VGGNet (Simonyan & Zisserman, 2014)

Take-Home Exercise III

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- [toy example]

- [pre-trained model weights in Keras]

- [beefy bottleneck features example]

- [toy example]
- [pre-trained model weights in Keras]
- [beefy bottleneck features example]

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- [toy example]
- [pre-trained model weights in Keras]
- [beefy bottleneck features example]

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Formulating
Your Deep Learning Project II

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Your Deep Learning Project II

1 split your data

- training set (80% — for optimizing parameters)
- validation set (10% — for hyperparameters)
- test set (10% — don't touch yet!)

2 build architecture

- if machine vision (incl. transfer learning), *now*
- if NLP, wait until next session

3 get above chance (simplifying problem, if necessary)

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Natural Language Processing