ConvNets

LeNet-5

AlexNe

Learning

Formulation

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Machine Vision Deep Learning — Unit 4

Dr. Jon Krohn
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Slides available at jonkrohn.com/talks

July 28th, 2018



Intro to Convolutional Neural Networks



ConvNets

1 Intro to Convolutional Neural Networks

Transfer

2 Classic ConvNet Architecture I: LeNet-5

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3 Classic ConvNet Architecture II: AlexNet

4 Transfer Learning

5 Deep Learning Project II: Formulating



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ConvNets

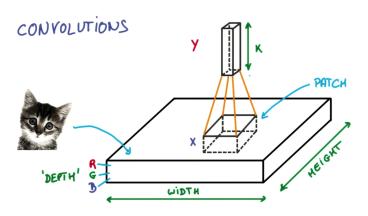
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[deepvis]



Convolution Demo

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



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LeNet-5

ConvNets

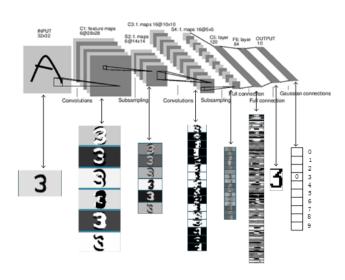
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let's make our [deep net] convolutional!



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AlexNet

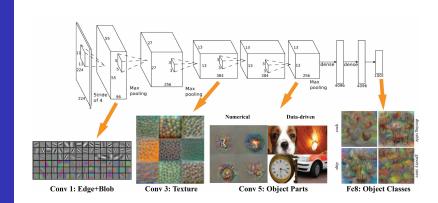
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[AlexNet] from scratch



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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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AlexNet

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Transfer Learning

4 Transfer Learning



ConvNets

Transfer

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Up Ne:

- [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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- [toy example]
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- [beefy bottleneck features example]



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Formulating Your Deep Learning Project II





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Project Formulation

Up Nex

Formulating

- 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
- get above chance (simplifying problem, if necessary)



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Transfer

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Formulating

Your Deep Learning Project II

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Natural Language Processing

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