

Lecture Notes for **Machine Learning in Python**



Professor Eric Larson **Unboxing Convolutional Networks**

Class logistics and Agenda

- Wide/Deep Lab due soon!
- Agenda:
 - Finish CNN Discussion
 - CNN Demo
 - CNN town Hall
- Next Time:
 - More Advanced CNN Demo

Class Overview, by topic

Table Data
Visualization

Numpy, Pandas, Seaborn
Overviews with some in-depth discussion

Dimension
Reduction and
Image Processing

Scikit-learn, Scikit Image,
Intuition only, Some mathematics

Linear and
Logistic
Regression

Numpy, Recreate API for Scikit-learn
Detailed mathematics for simple optimization
intuition for advanced optimization

Neural Networks
and Back Prop.

Numpy
Detailed mathematics for NN operations

Wide and Deep
Networks

Convolutional
Networks

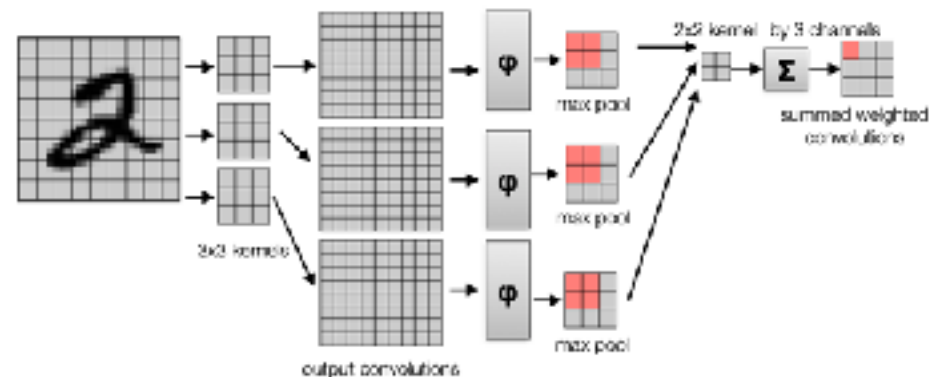
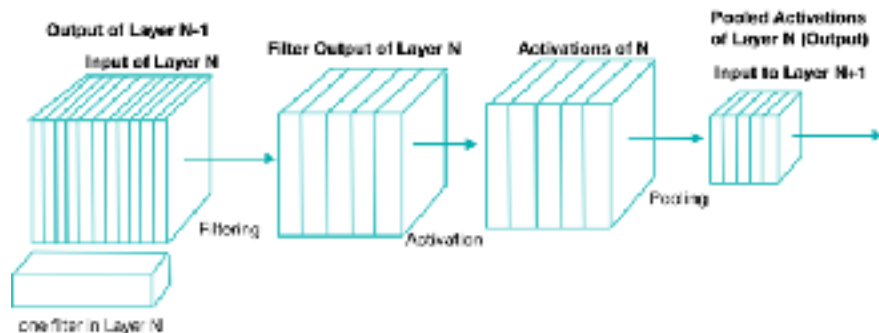
Recurrent
Networks

Keras, Tensorflow
Intuition, Detailed implement.

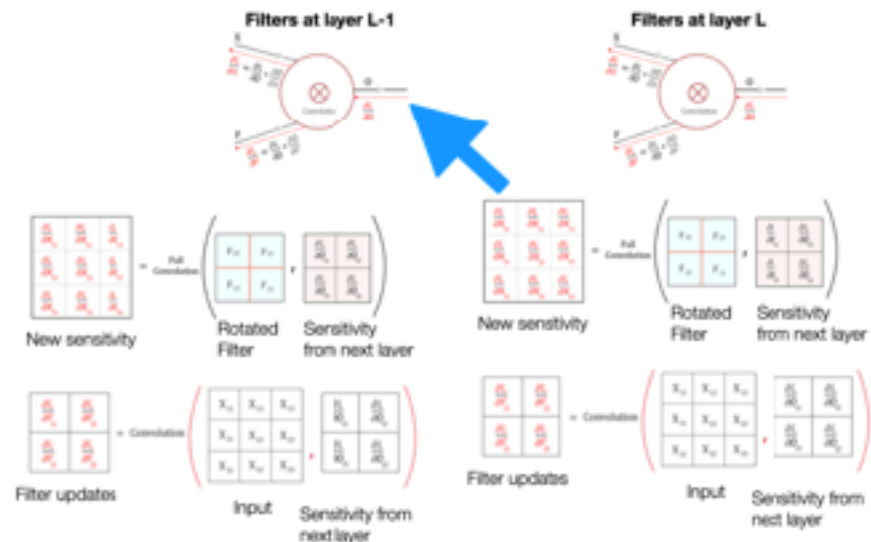
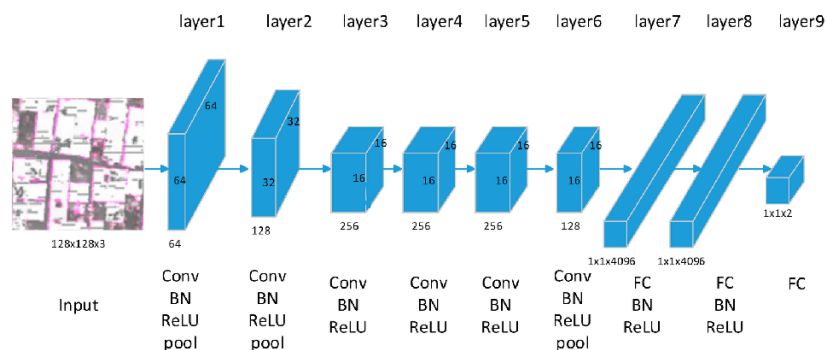
Ethics in
Language Models

ConceptNet
Case studies

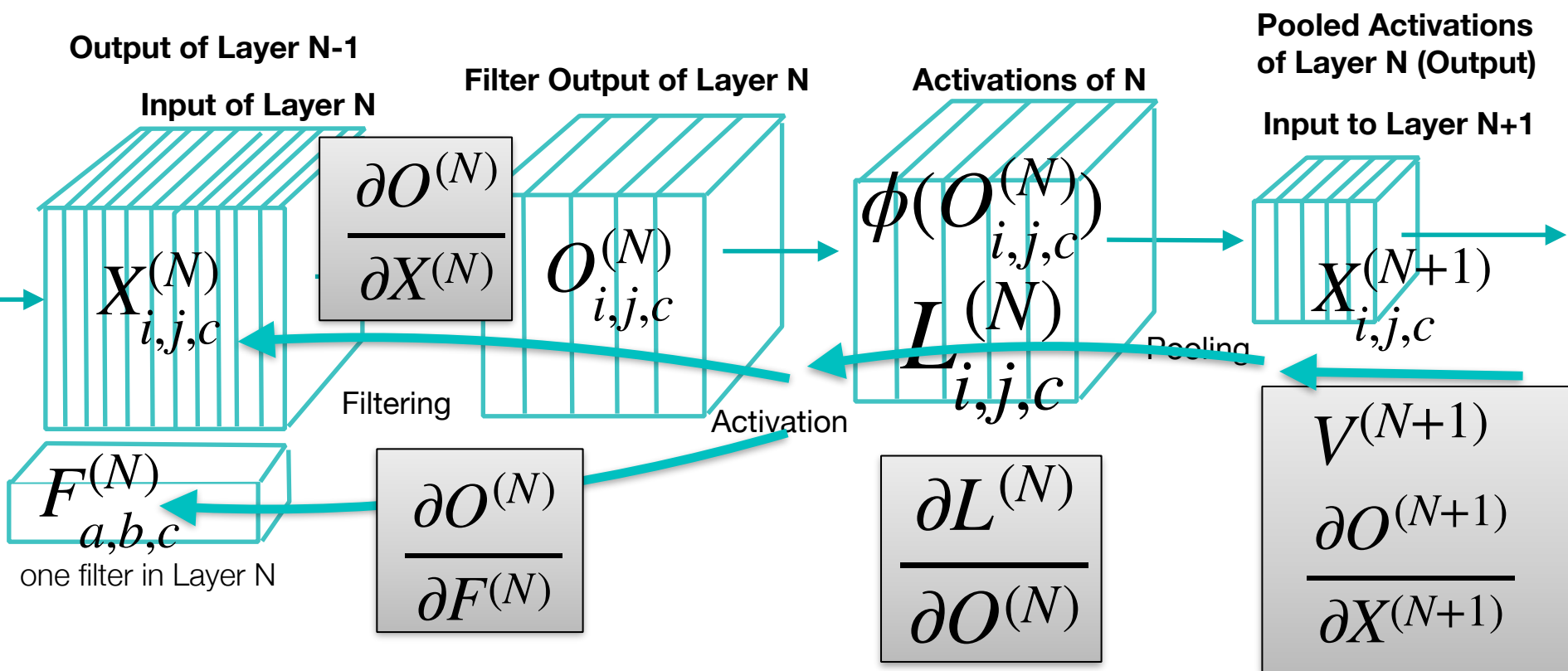
Last Time:



Structure of Each Tensor: Channels x Rows x Columns

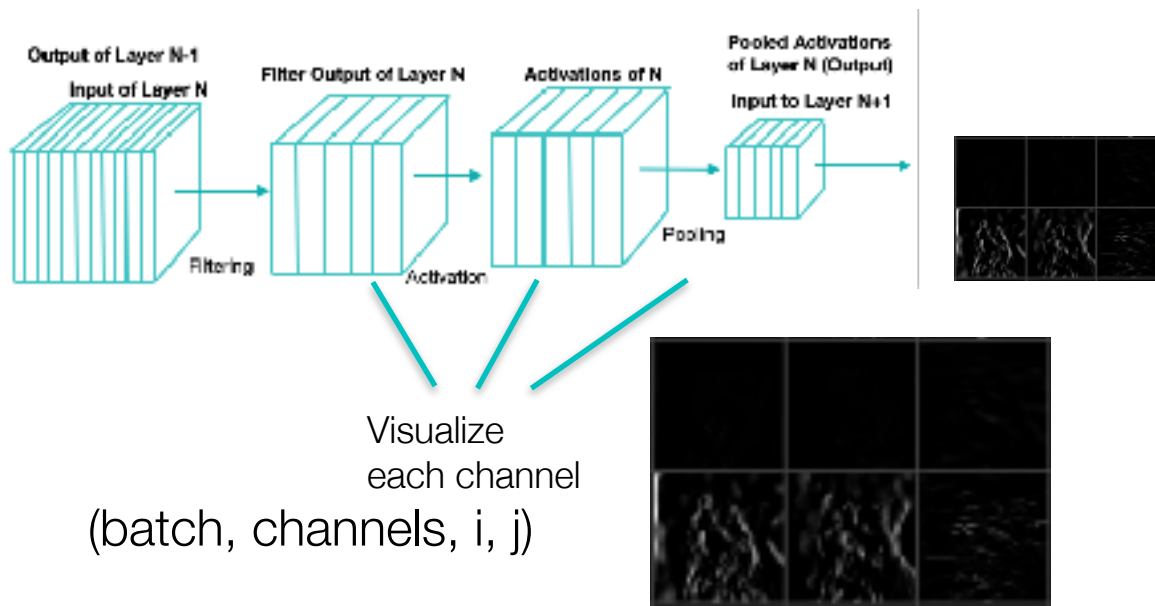
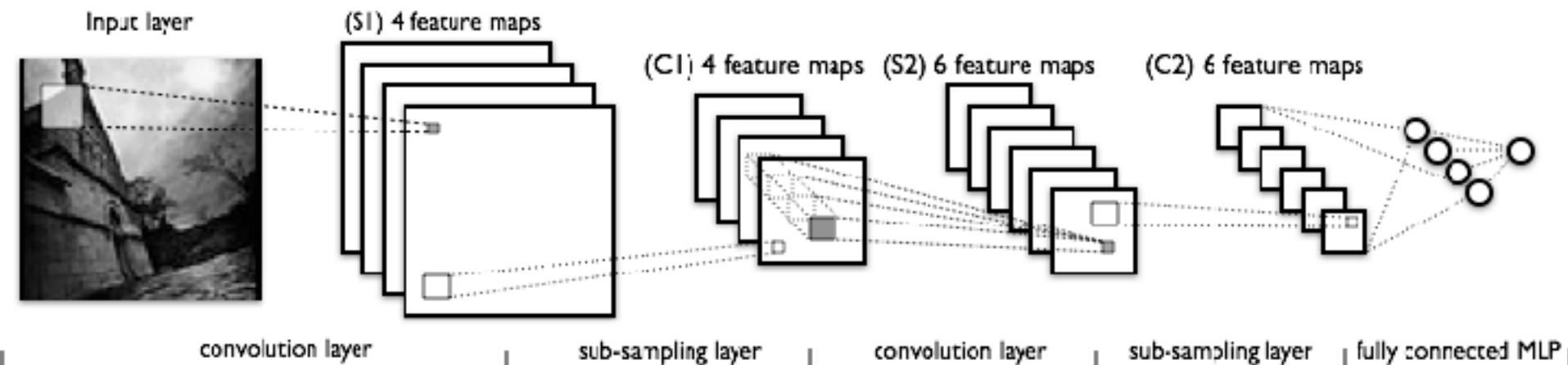


Last Time: CNNs, Putting it together



Structure of Each Tensor: Channels x Rows x Columns

Some Example CNN Architectures



Naming:
conv1 (output of conv)
p1 (output of pooling)
n1 (output of normalization)

Deep Visualization Toolbox

yosinski.com/deepvis

#deepvis



Jason Yosinski



Jeff Clune



Anh Nguyen



Thomas Fuchs



Hod Lipson



<https://github.com/yosinski/deep-visualization-toolbox>

Convolutional Neural Networks
in TensorFlow
with Keras



11. Convolutional Neural Networks.ipynb

CNN Town Hall



Machine Learning 101

Next Lecture

- More CNN architectures and CNN history