Convolutional Neural Networks

Deeplearning4j & Scala

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Bernie

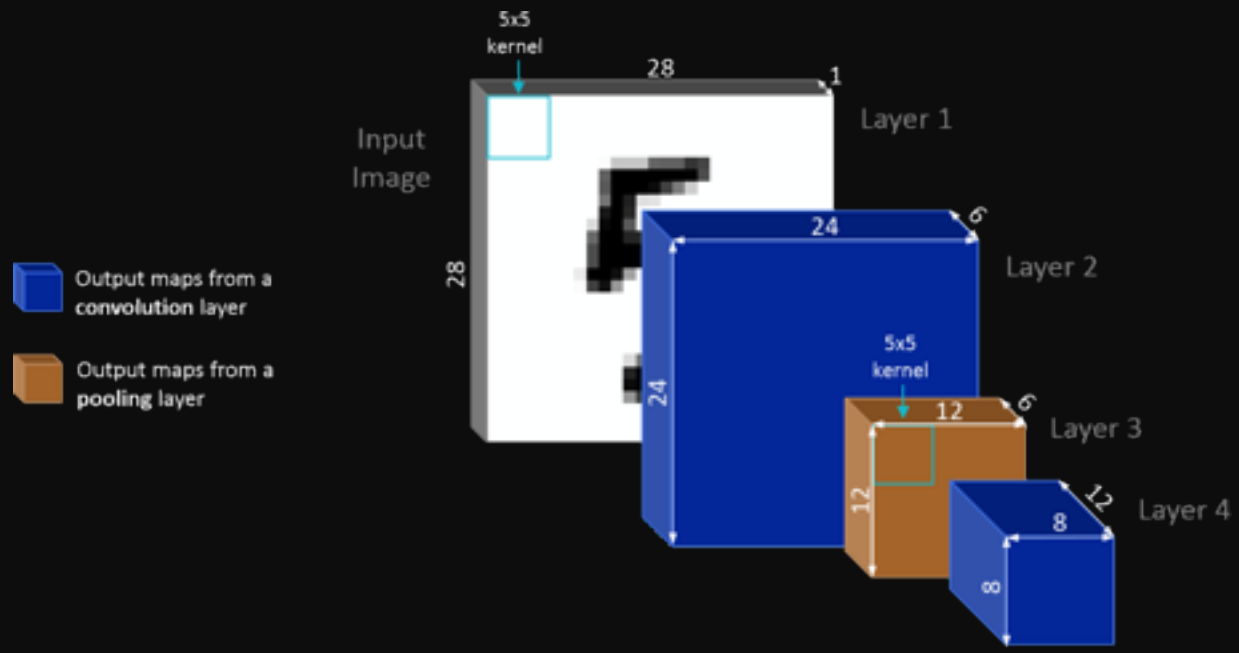
ABOUT BERNIE

Bernie is a personal assistant for online dating. Bernie learns the user's physical attractive preferences, and starts conversations to determine mutual interest.

PROBLEMS WITH PCA

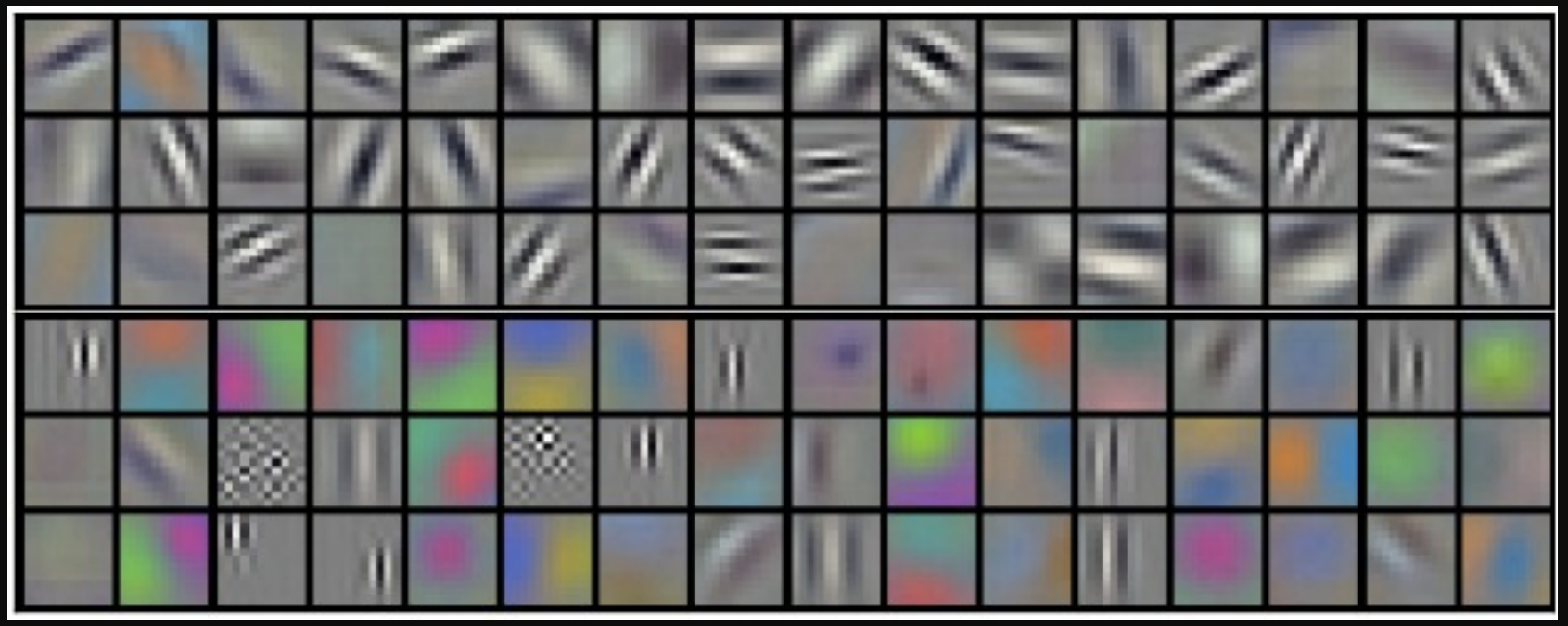
Principal Component Analysis (and Eigenvector-based algorithms) can't detect features and is better suited for features based on structure, and require extreme consistency in a dataset.


NO
YES



CONVOLUTION

Neural networks are “okay”, and engineers designed convolutional nets to specifically be trained on datasets.



FILTER MAPS

Maps that have smooth, consistent patterns and less “noisy” images indicate a well-trained network.

DEEPLEARNING4J

Open-source, commercial-grade, distributed deep-learning library for Java, Scala, and Clojure (and Kotlin if you're really cool). Integrates with Hadoop and Spark, and supported by SkyMind.

```
val labels = new java.util.ArrayList[String]()
val recordReader = new ImageRecordReader(
       imageWidth, imageHeight, nChannels, true, labels)
```

DL4J and Scala

The authors of Deeplearning4J have designed the library to be Scala-friendly. There are some gotchas...

PREPPING DATA

If you try the latest release candidate, strongly recommend you trial with black and white JPGs or non-compressed sRGB images.

HELPFUL COMMANDS

ImageMagick is worth its weight in gold if you need to clean your dataset.

```
find ./ -name "*.jpg" -exec mogrify -grayscale rec709luma {} \;

find . -iname "*.png" -exec identify -format "%d/%f %r\n" {} \; |
                grep "Gray" | awk '{print $1}'

find ./ -name "*.gif" -exec mogrify -depth 8 -type TrueColor -format
                                png {} \;
```

LET'S GET DIRTY

Sample repository available at
http://github.com/crockpotveggies/dl4j-convolutional-net-scala

QUESTIONS?

@crockpotveggies

Learn more about Bernie A.I.
http://www.bernie.ai/

Bernie