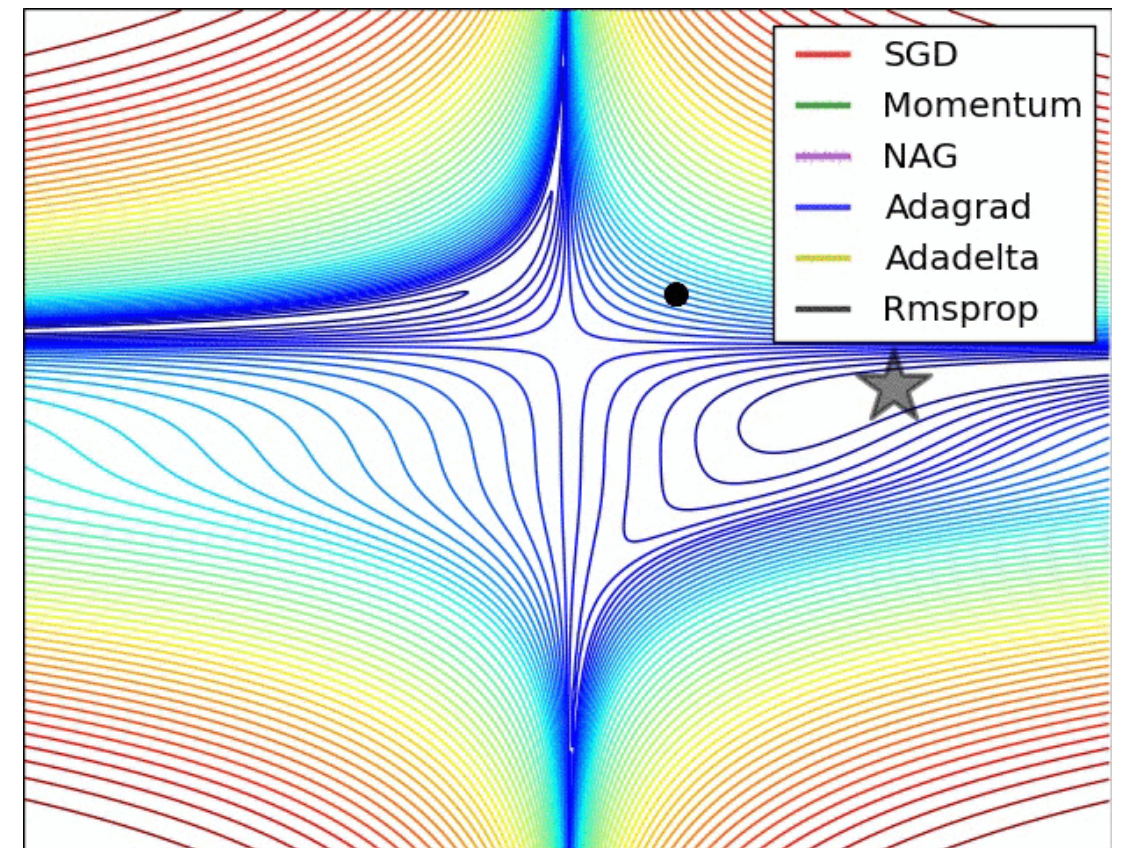# Supposedly CNEL's Deep Neural Networks tutorial made into an internet scale presentation
(tkx Matt)

@edersantana
edersantana.github.io
bit.ly/deep_tutorial

What is Deep Learning about?
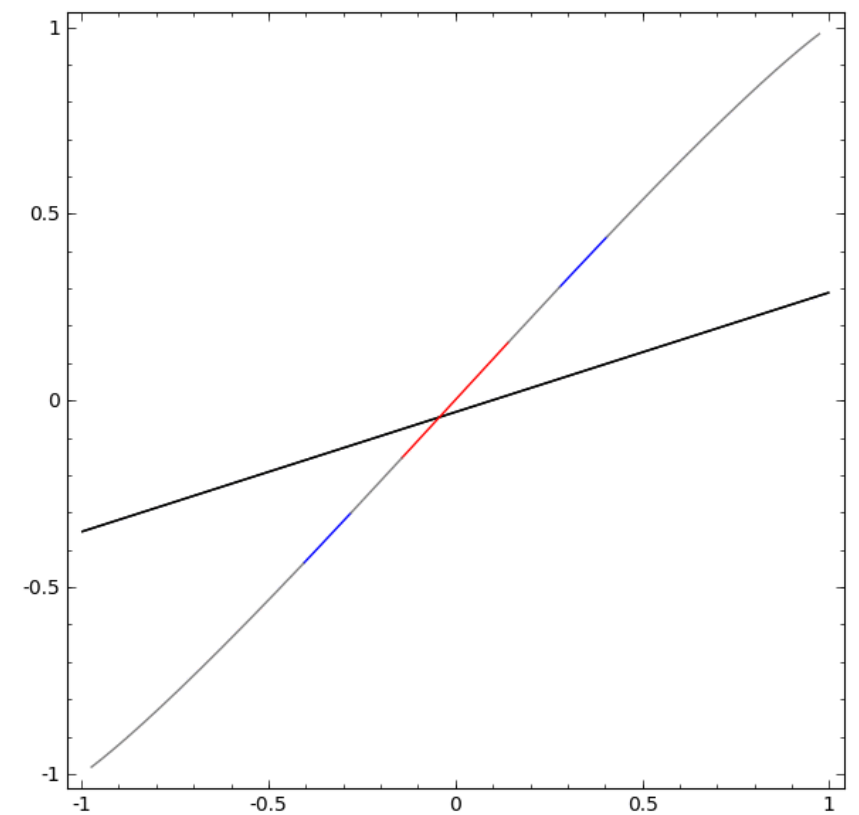
Deep Learning
is about
Neural Networks

Deep Learning
is about
Optimization
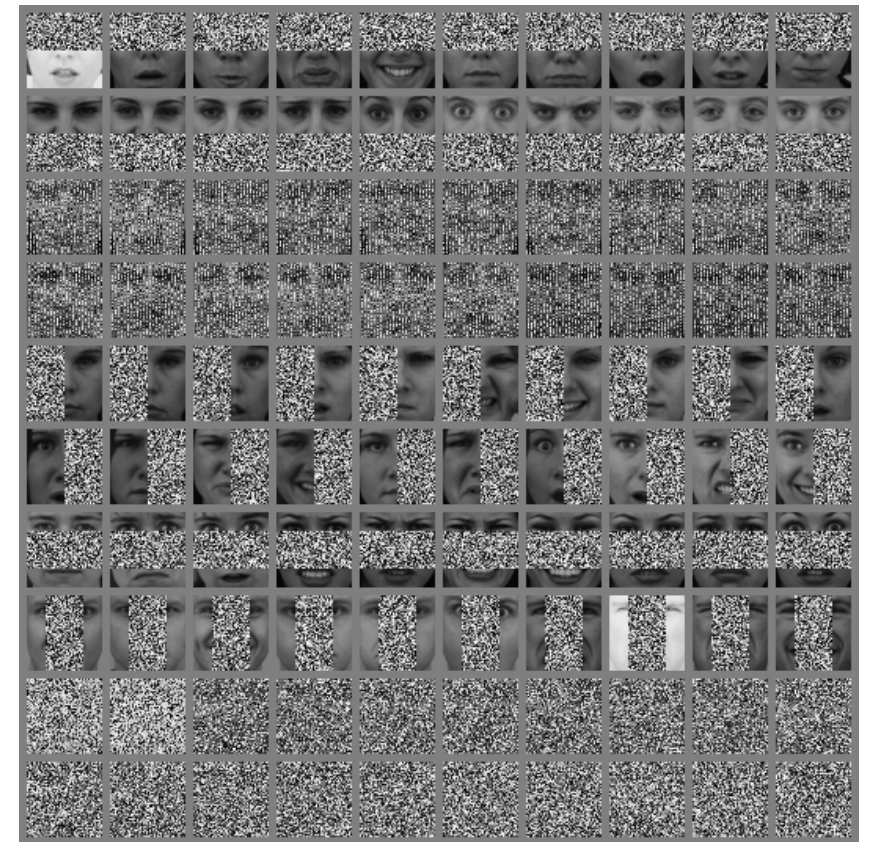

by Alec Redford @alecrad

$$p(w|S)=p(S|w)p(w)/p(S)$$

Deep Learning
is about
Supervised
Learning

by Christopher Olah (colah.github.io)

$$P(c|x,S)=\int p(c|x,w)p(w|S)dw$$
$$=p(c|x,\underline{w})$$
$$\underline{w}=\arg\max p(S|w)p(w)$$

Deep Learning
is about
Unsupervised
Learning

Laurent Dinh, et. al. ICLR 2015

$$p(x)=\int p(x|z,w)p(z,w)dzdw$$
$$p(z|x,w)=p(x|z,w)p(z,w)/p(x)$$

All about that Bayes

[Such Deep](#) [Deep](#), [Much](#) [wow](#)

But then, what distinguishes so-called "deep neural networks" from the neural networks of yesteryear?

my answer at quora.com

my 3 pages discussion

Proves that a single hidden layer neural network with hidden neurons enough can estimate ANY function with arbitrary precision…

…doesn't say anything if a stochastic gradient algorithm can find the weights in finite time. My interpretation from what I read at [Goodfellow et. al. ICLR 2015]

Deep Learning is also about different activation functions

log(1+exp(x))

max(0,x)
close enough!!!
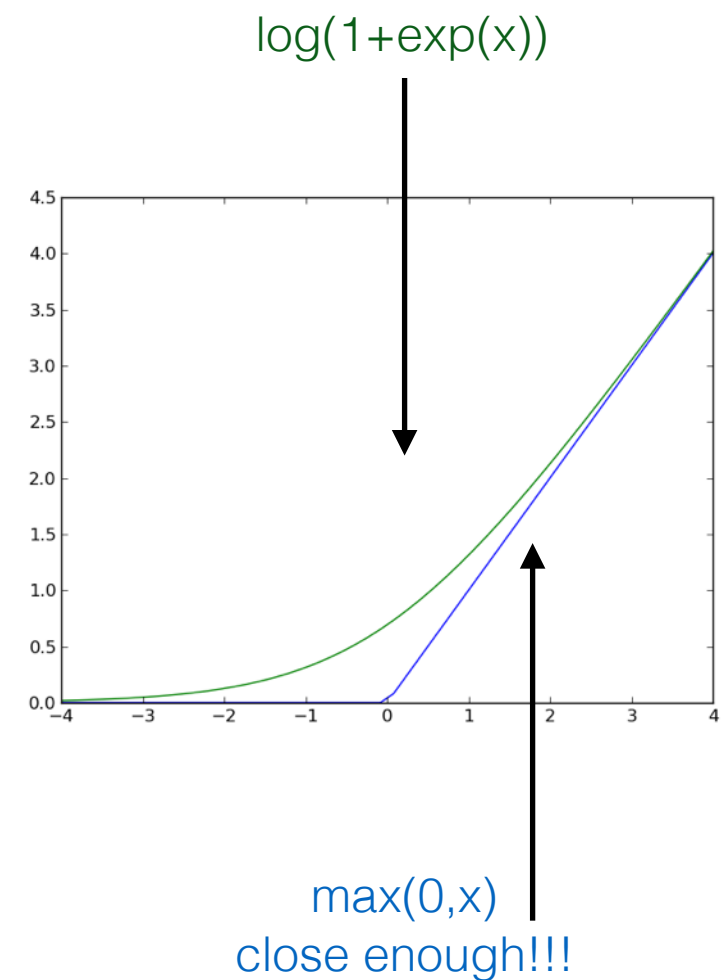
Deep Learning is also about different affine transformations

Image

Convolved Feature

Deep Learning
is *also* about different number crunching hardware

timdettmers

Deep Learning is also about dropout, NAG, better initialization, and many more cool stuff

Brace yourselves
Live demo is coming

Deep Learning
got me, where do I go from here?

Eder's path:

Coursera ⟶ Theano ⟶ Profit!

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