Deep Learning: AI around the corner

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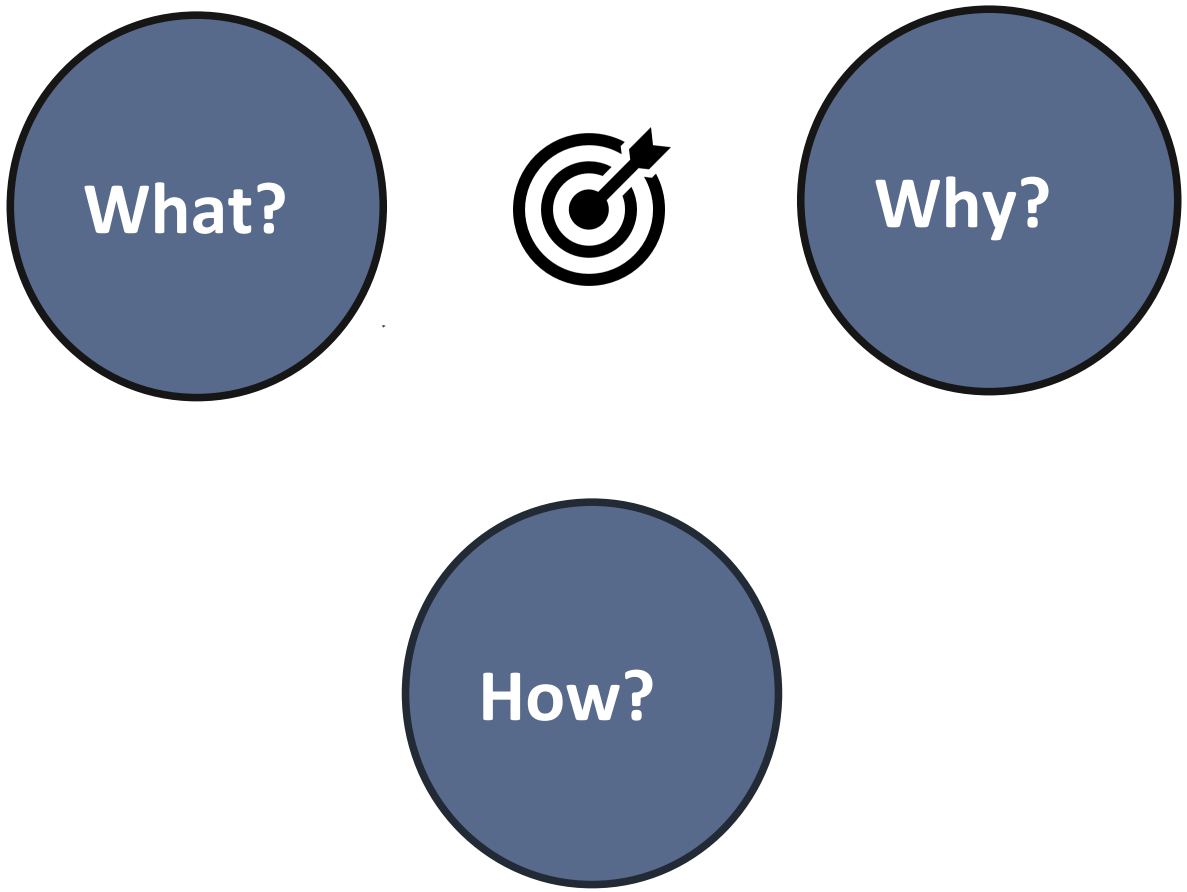
WOMEN IN DATA SCIENCE
@ LUMS

Overview

- What? Why? How? The fundamental concepts of deep learning
- Deep learning toolkits
- Helpful resources

Fundamental Concepts

The ‘deep learning’



Practical Example?

Tools and Resources

Theano

- https://github.com/mariashoaib01/Machine-Learning-101/blob/master/dem1.py
- Theano is a Python library
- Lets you to define, optimize, and evaluate mathematical expressions
- Go to http://deeplearning.net/ and follow instructions

Theano

```
import theano
from theano import tensor

# declare two symbolic floating-point scalars
a = tensor.dscalar()
b = tensor.dscalar()

# create a simple expression
c = a + b

# convert the expression into a callable object that takes (a,b)
# values as input and computes a value for c
f = theano.function([a,b], c)

# bind 1.5 to 'a', 2.5 to 'b', and evaluate 'c'
assert 4.0 == f(1.5, 2.5)
```

Torch 7

- Large scale machine learning applications, for instance, speech learning and video applications
- Neural networks, optimization, image processing and, graphical models
- C, C++, Lua+C
- Supervised and Unsupervised deep learning tutorials at http://code.madbits.com

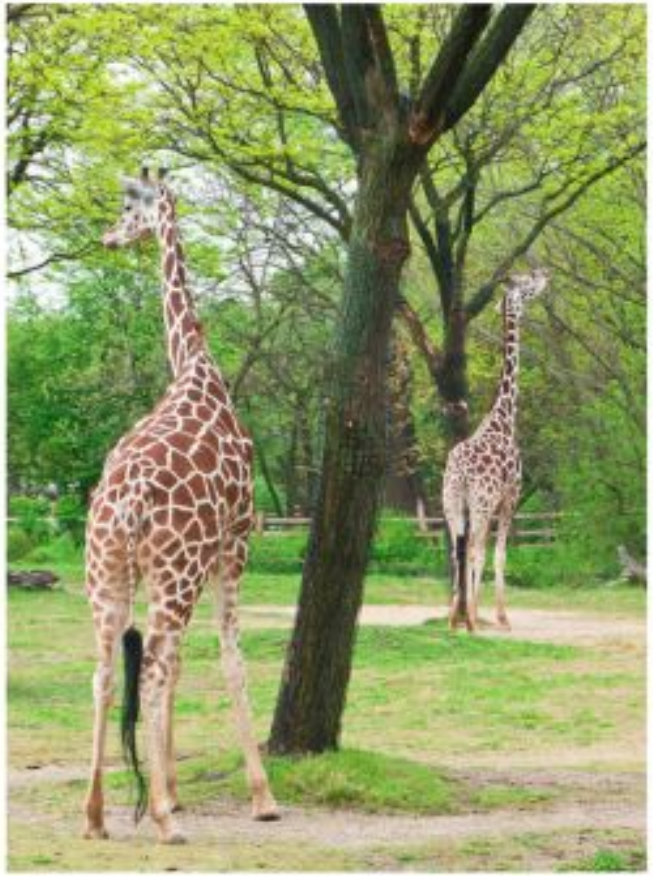
Caffe

- A deep learning framework
- Expression, speed, and modularity
- http://caffe.berkeleyvision.org/

ConvNets

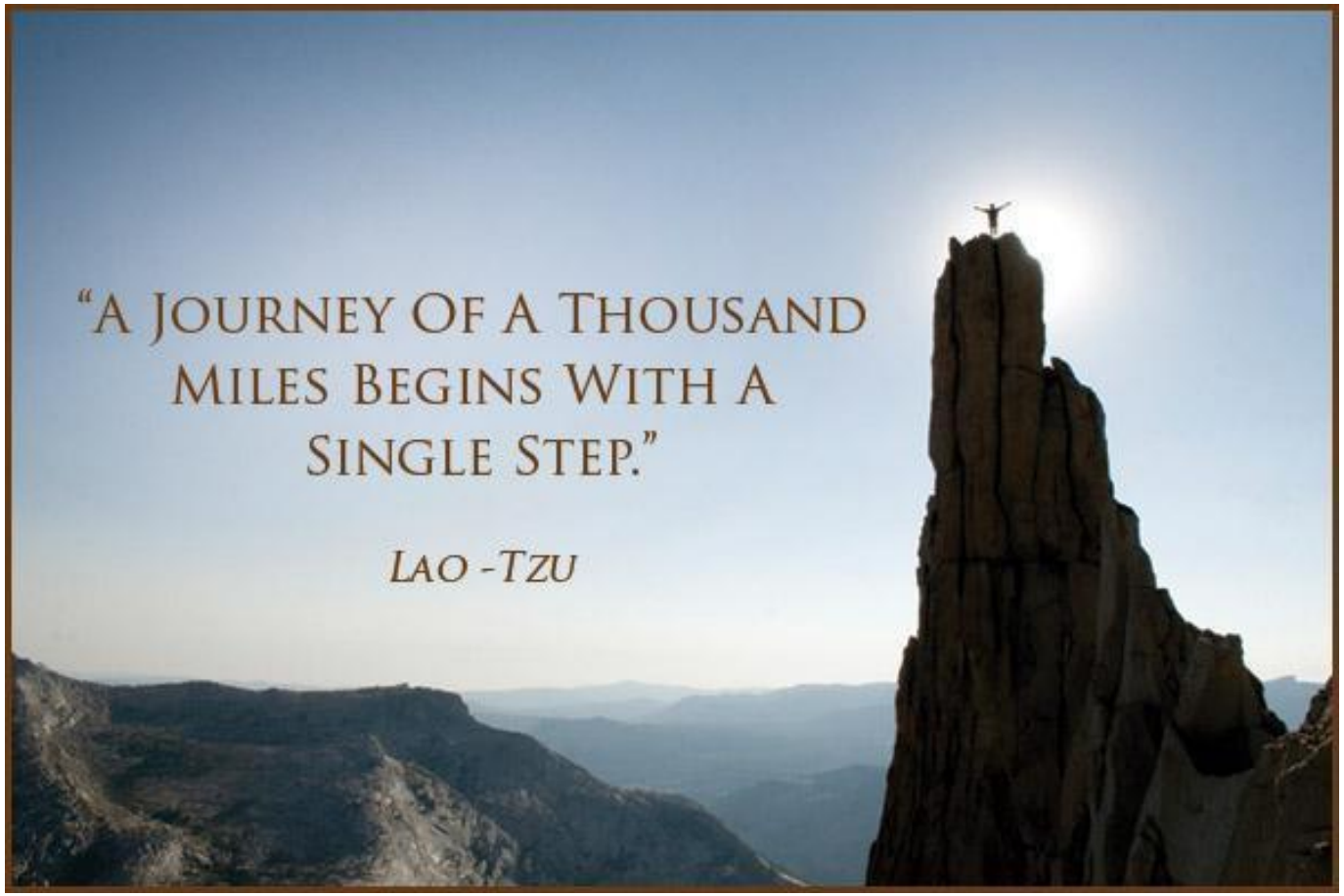
a soccer player is kicking a soccer ball

a street sign on a pole in front of a building


a couple of giraffe standing next to each other

https://ujjwalkarn.me/2016/08/11/intuitive-explanation-convnets/

Key takeaways



http://www.picturequotes.com

Key takeaways

- Don’t Get Overwhelmed by the “overwhelmingness”
- Don’t need to understand how algorithms work. For example, ConvNets. ATM at least!
- Don’t have to be an expert, just learn by starting out

Helpful Resources

- Andrew Ng's Deep Learning course from Stanford via Coursera
- https://www.coursera.org/specializations/deep-learning
- Deep learning tutorials: https://www.deeplearning.net/

Thank you, any questions?