AI/ML for Software Engineers

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My Journey to Machine Learning

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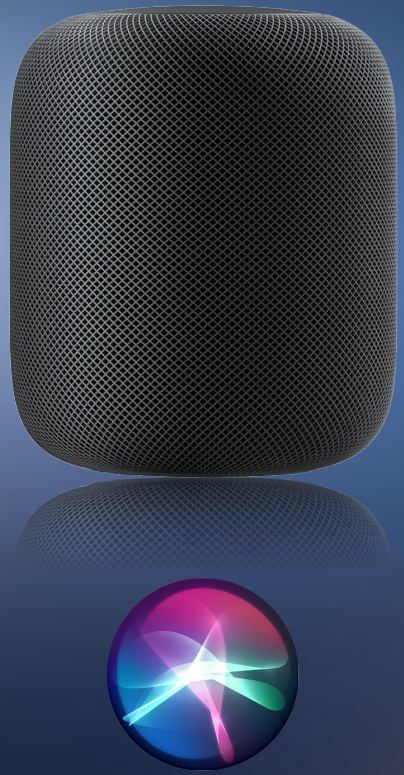

vs.

@robertharrop

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1: Machine Learning **is** competitive advantage

ML is rapidly becoming competitive necessity

2: ML is what's **next** for software engineers

How -> How^2

3: Good models **don't** happen by accident

DevOps → DevSecOps → DevSecOps

ML

“The way a team plays as a whole determines its success.”

“The test of a first-rate intelligence is the ability to hold two opposed ideas in mind at the same time and still retain the ability to function”

F. Scott Fitzgerald

Generalisation

vs.

Specialisation

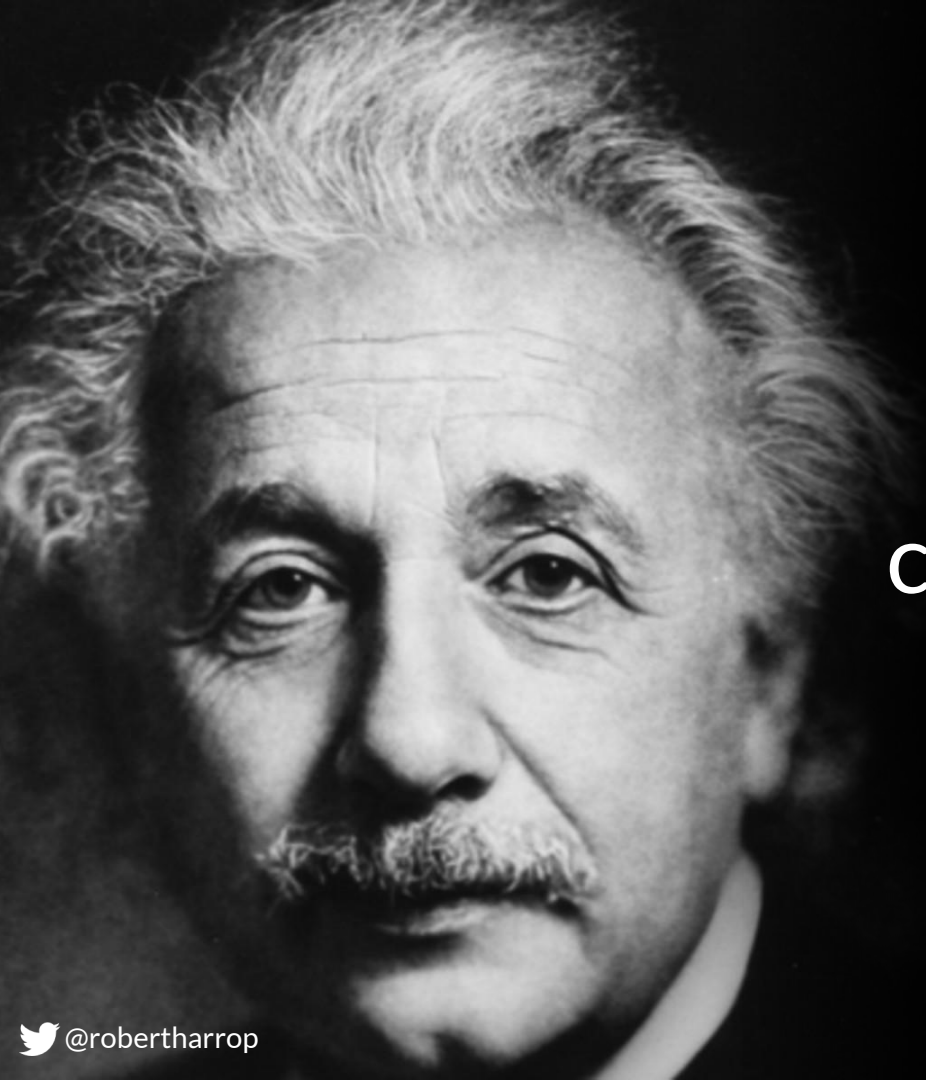
Individuals specialise

Teams generalise

4: You **Must** Upskill

Theory	Practice	Intuition
Statistics	Exploratory analysis	What type of learning problem do I have?
Linear Algebra	Data preparation	What is optimisation/regression/classification really doing?
Calculus	Iterative model development	How can I think about forward and backward propagation?
Optimisation	Deploying and supporting models	What types of things can I learn with a neural network?
Regression	Python/R	
Classification	Numpy/Scikit/Pandas	
Deep Learning	Tensorflow/Keras/PyTorch	


Theory
Practice
Intuition



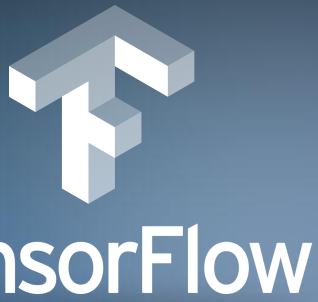
“Intuition does not come to an unprepared mind.”

Practice

vs.

python™

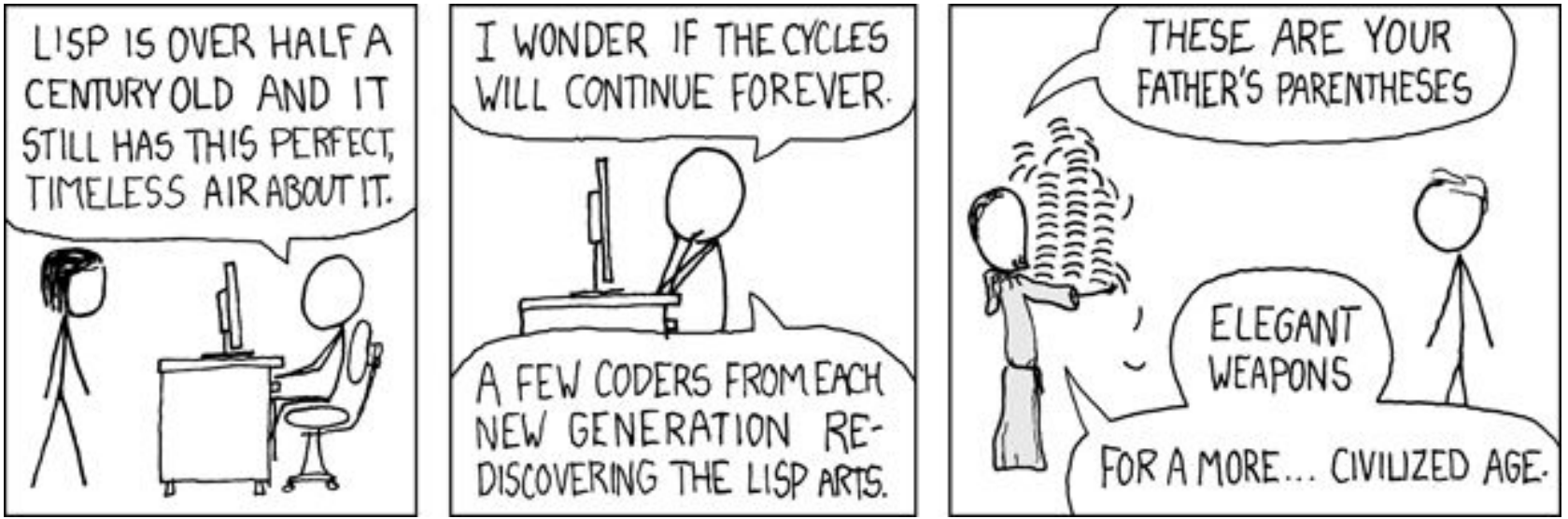

PYTORCH


TensorFlow

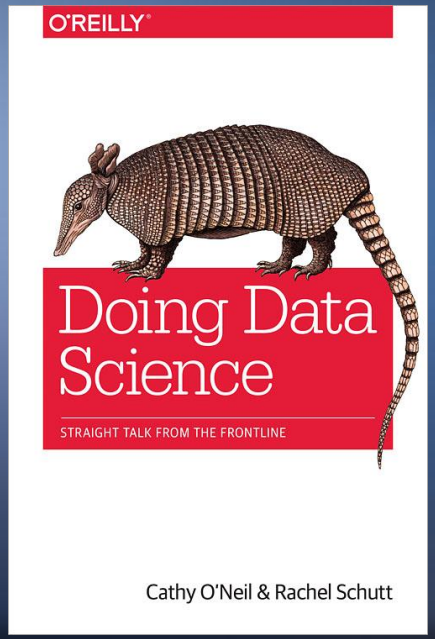

K
Keras

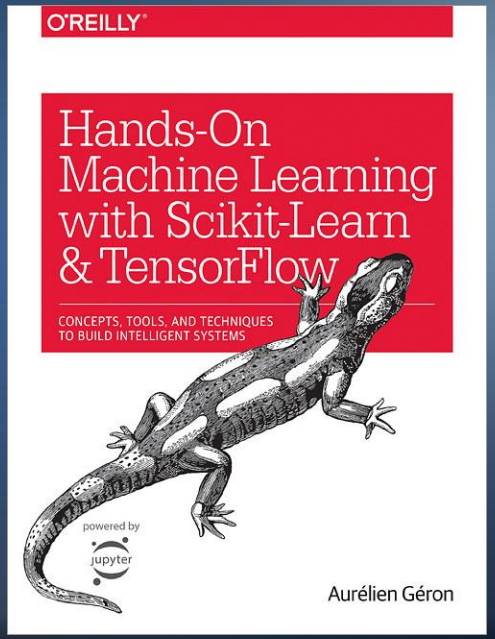

mxnet

Theory


LISP IS OVER HALF A CENTURY OLD AND IT STILL HAS THIS PERFECT, TIMELESS AIR ABOUT IT.
I WONDER IF THE CYCLES WILL CONTINUE FOREVER.
A FEW CODERS FROM EACH NEW GENERATION RE-DISCOVERING THE LISP ARTS.
THESE ARE YOUR FATHER'S PARENTHESES
ELEGANT WEAPONS
FOR A MORE... CIVILIZED AGE.

Learning Resources - Books





Learning Resources - Online Courses

- Coursera Data Science Specialization - Brian Caffo and Roger Peng
- Coursera Deep Learning Specialization - Andrew Ng
- MIT OCW Linear Algebra - Gilbert Strang
- Coursera Calculus One & Two - Jim Fowler


kaggle™

5: Bias is Everywhere

Human Bias

“When a measure becomes a target, it ceases to be a good measure.”

- Charles Goodhart

Data Bias

Article 9, Section 1

Processing of personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual orientation **shall be prohibited.**

Learned Bias

6: Transparency is Hard


COMPUTER
SAYS NO
memegenerator.net

In Summary

- ML is competitive necessity. Don’t ignore it
- ML *is* software engineering
- Don’t make the mistakes of old; cross-functional teams win
- Now more than ever, ethics matter
- There’s a lot to learn, but it’s all valuable and it’s all fun