# Life as an ML Engineer

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February 13, 2018

# Intro

# Things you already know

1. Interchangable Parts

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2. Testing
3. Integration

# Objectives

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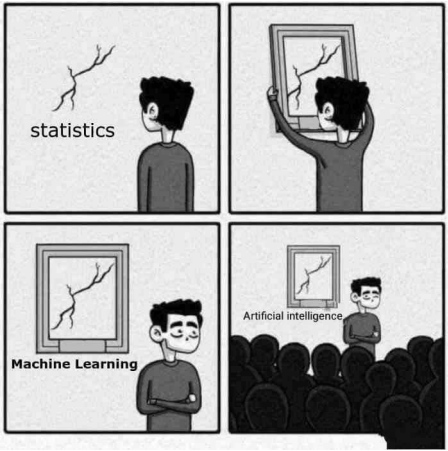
2. Learn some of the terminology used to help converse between Data Scientists and Engineers like:

# ai vs statistics



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# you need to know what you're trying to do

- look at your data (inputs and outputs)

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- interpretability

# don't forget to look for prior art

- Look at YOLO, UNet, ResNet51, RetinaNet, BERT, Transformer, and many other hyped algorithms.

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- Tensorflow has many sets of "pre-trained" weights

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- new API

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- new CSV from a customer

# things that matter for ML

- normalizing or "whitening"

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- missing values
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- class imbalance

# algorithms

# jargon

- letters

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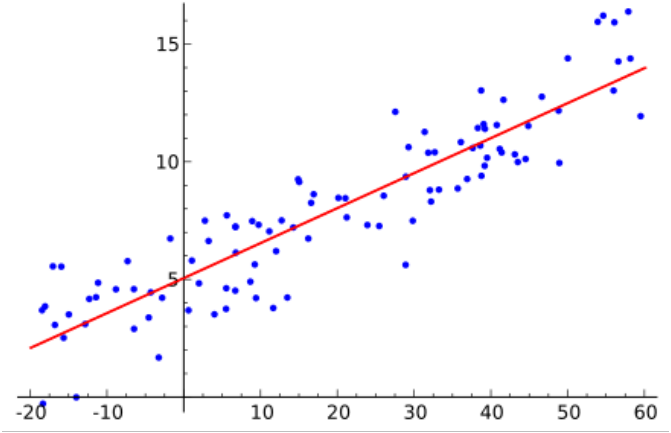
- $Y = mx + b$

# jargon (cont'd)

$$Y = Wx + b$$

# regression



## what if there are multiple variables?

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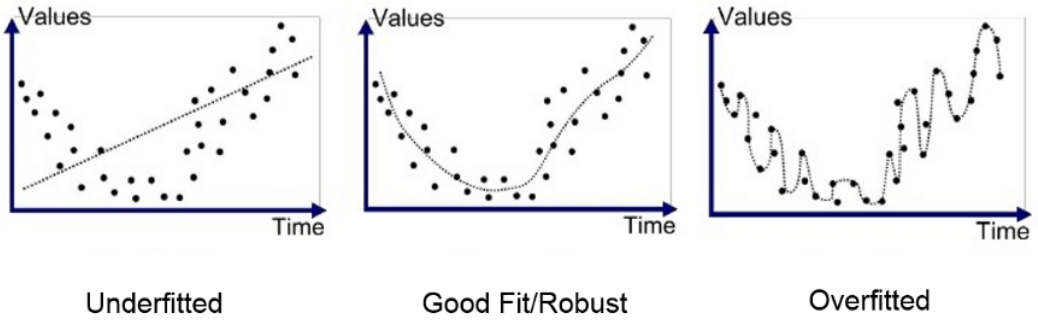
- $y = Wx + b$

# overfitting



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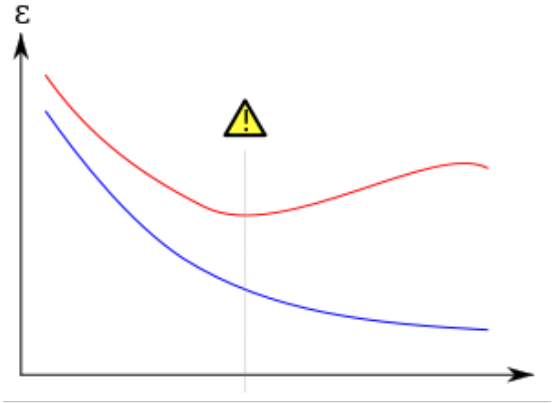

# inference aka "pushing to production"

# scaling (performance, speed)

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- well defined interfaces

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- shared-nothing

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- load balancing

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  - e.g., hot dog vs not hot dog, and someone gives it a brautwurst

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  - e.g., hot dog vs not hot dog, and someone gives it a brautwurst
  - or a real example, kangaroos on self driving cars

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- online learning: re-train nightly/hourly/steaming w/ new data
- active learning: figure out what labels you need to improve model performance

# tensors and flow graph

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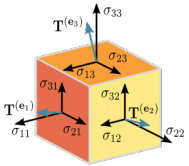
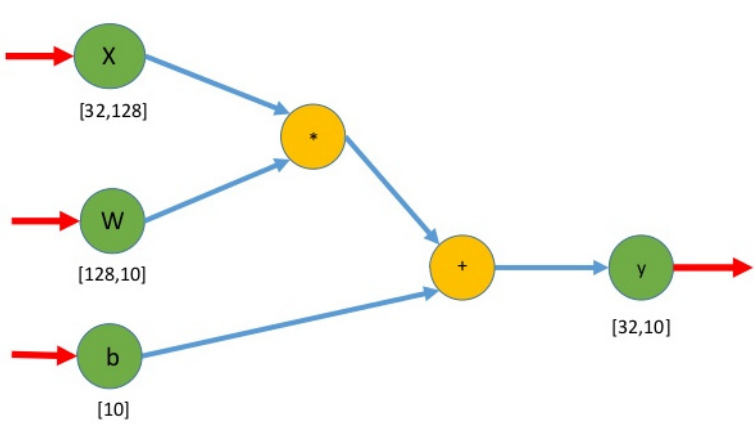


# computational flow graph (Directed-acyclic graph)



# questions?

# other resources

# other learning resources

- http://fast.ai
- https://hackernoon.com/choosing-the-right-machine-learning-algorithm-68126944ce1f
- http://ml-cheatsheet.readthedocs.io/en/latest/linear_regression.html

# image credits

- ai vs stats
- regression
- overfitting
- more overfitting
- loss functions
- gradient descent
- tensors
- tensorflow graph