Using JavaScript to Teach Machines How to Do ~~Basic Things~~ Cool Shit

Hi! I'm Kylie

Formidable

We're hiring!

Our Agenda

How is Machine Learning different from Artificial Intelligence?

What are some different Learning Types?

How do we decide which Learning Type to implement?

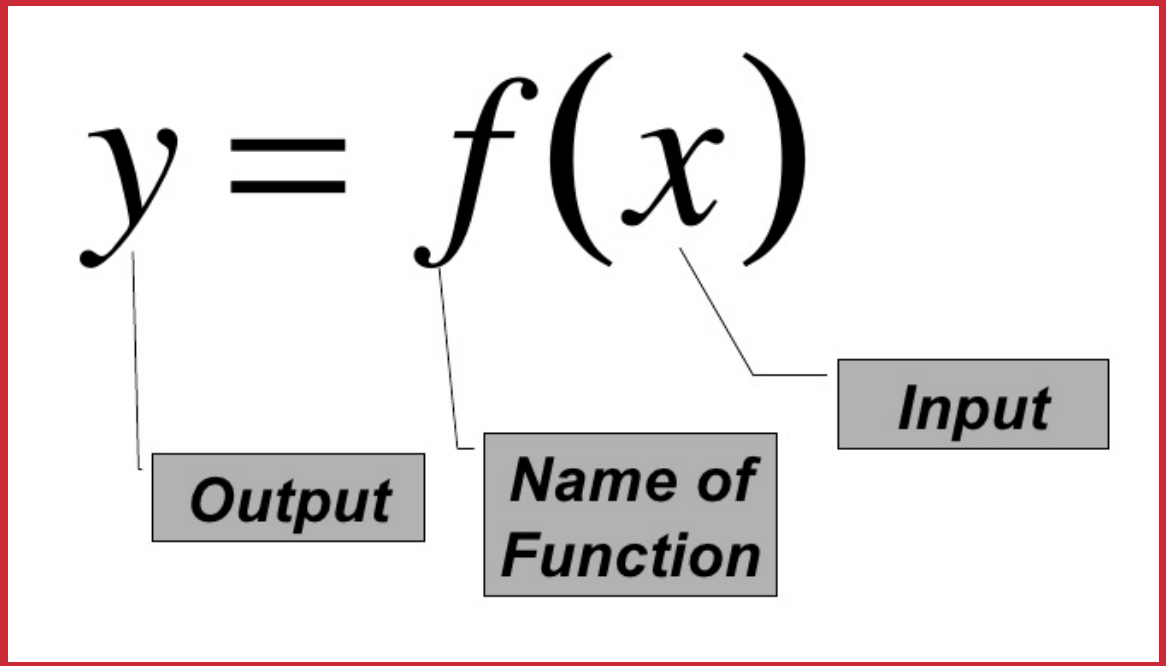
Seriously? JavaScript?

What is Machine Learning, anyway?

> **"The ability to learn without being explicitly programmed."**

- Arthur Samuel

Think: Function Notation



Machine Learning

paves the path

to Artificial Intelligence

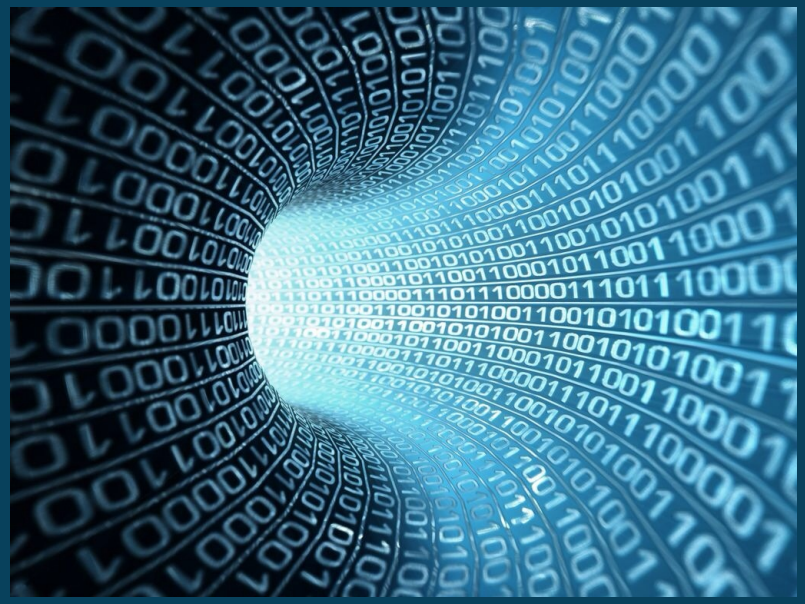
But how?

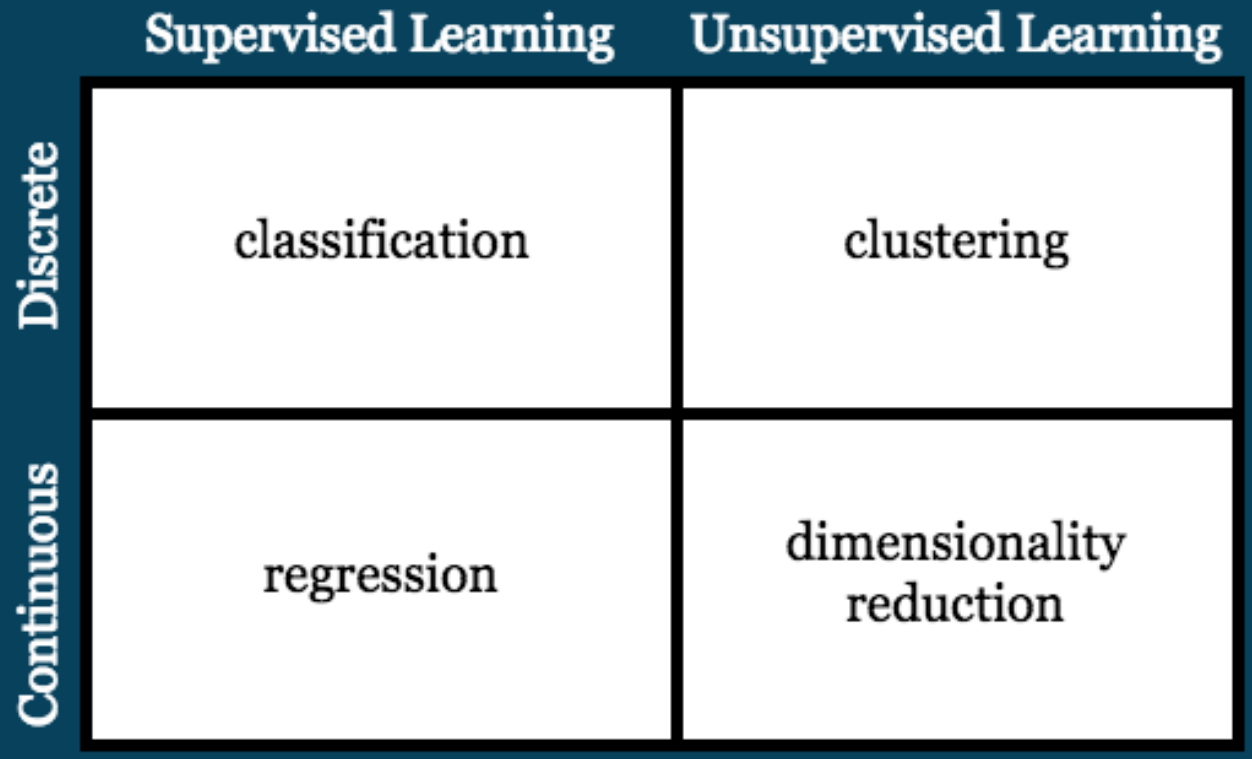
Supervised Learning

- Humans
- Linear Regression
- Classification

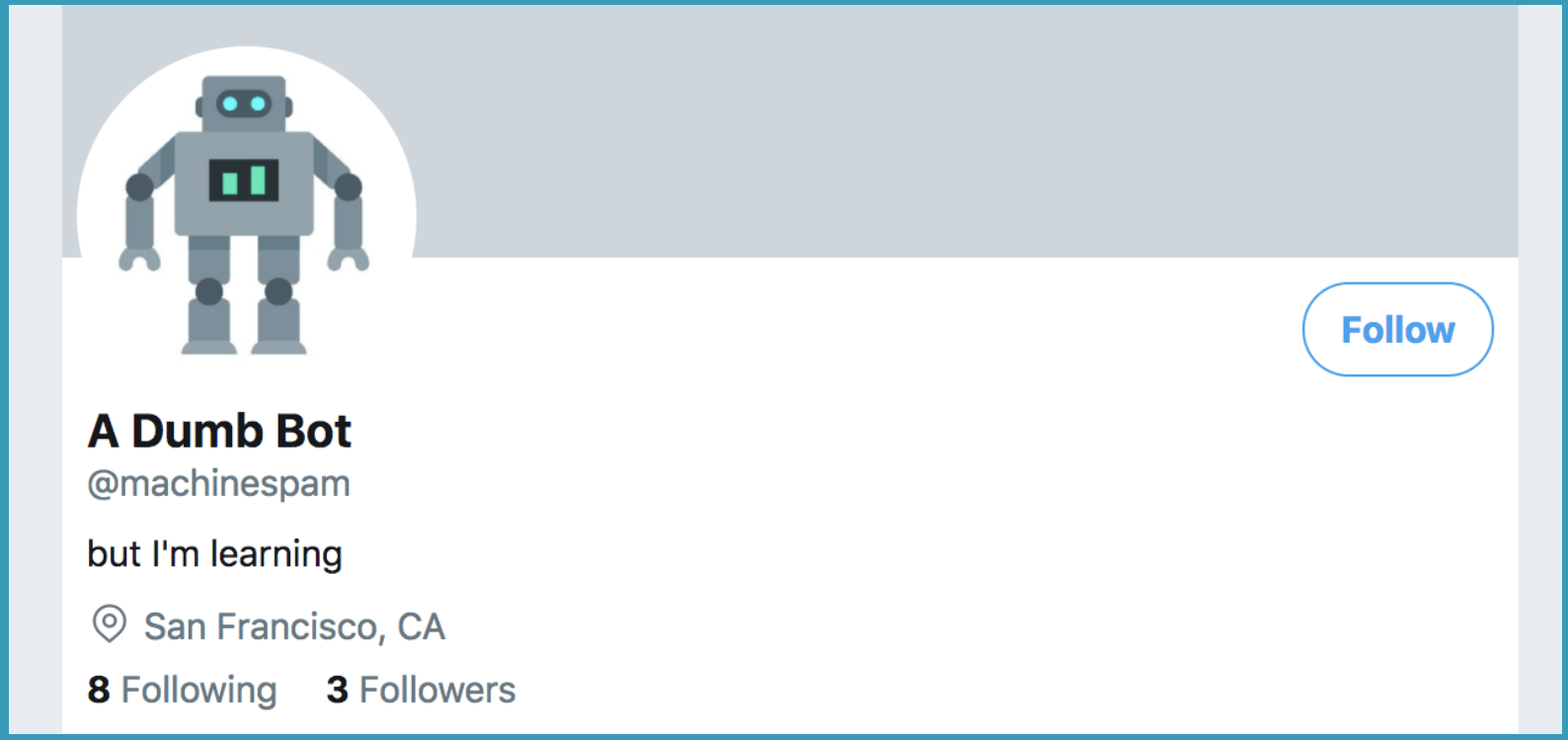
Unsupervised Learning

- Great for big data
- Exploratory analysis
- Anomaly detection
- Clustering




Supervised Learning
Unsupervised Learning
Discrete
Continuous
classification
clustering
regression
dimensionality reduction

Not Smart:



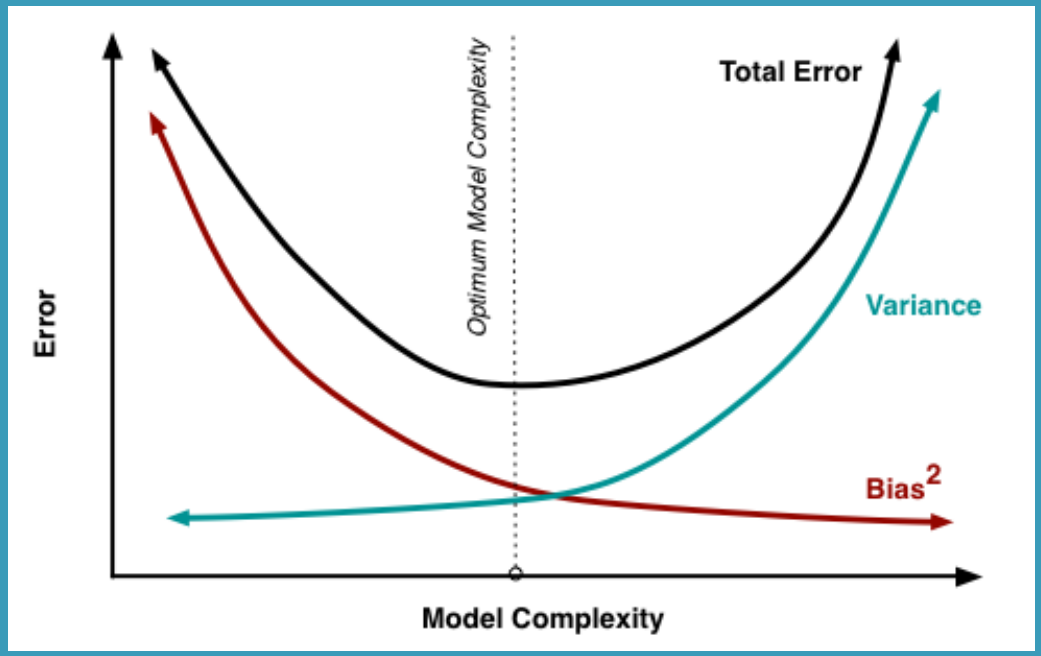
this Twitter Bot

```
const T = new Twit(config);

const retweet = hashtag => {
  const params = {
    q: `#${hashtag}`,
    result_type: "recent",
    lang: "en"
  };

  // search twitter for latest tweets associated with given hashtag
  T.get("search/tweets", params, data => {
    const tweets = data.statuses;
    const randomTweet = superRandom(tweets);
    const retweetId = randomTweet[0].id_str;

    T.post("statuses/retweet/:id", { id: retweetId }, (err, response) => {
      if (response) {
        console.log("✅  Successful retweet!");
      } else {
        console.log(`😱 Something went wrong while retweeting ${err.message}`);
      }
    });
  });
};

const superRandom = arr => {
  const randomIndex = _.random(0, arr.length);
  const chosenOne = _.pullAt(arr, randomIndex);

  return chosenOne[0].id_str;
};

retweet("MachineLearning");
setInterval(retweet, 120000);
```

How can we make this bot smarter?

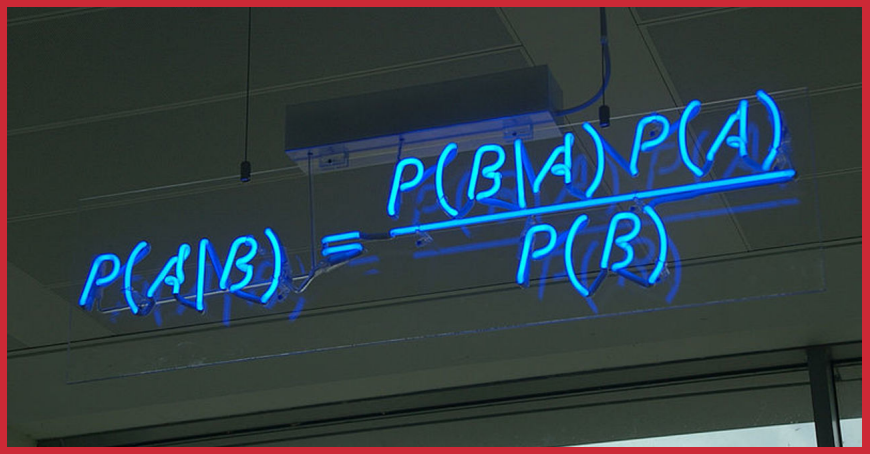
→ *Clustering?*
→ *Anomaly detection?*
→ *Regression?*
→ *Classification?*

Bias-Variance Tradeoff



- http://scott.fortmann-roe.com/

Naive Bayes
A Linear Classifier



Environmental

Programming

Space

Sports

Room for Error

Its very important to get more women in to the Tech space. Technology is too important to be left to men. #GirlsinICT

Deep Learning

Then

Now

Medium

Elle O'Brien
Computational scientist, software developer, science writer
Jan 6 · 2 min read

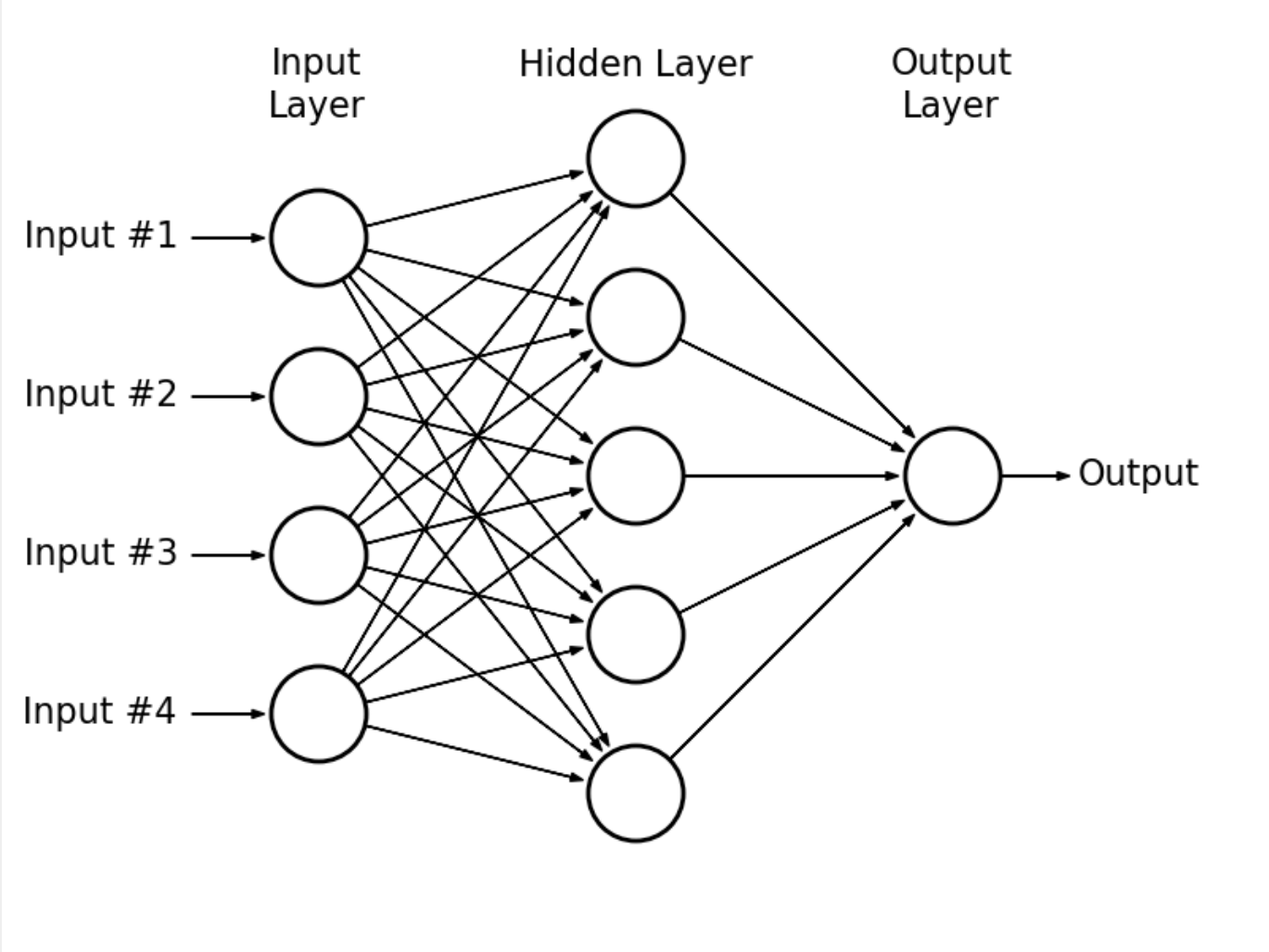
I trained a neural network on Red Lobster tweets and all it does is generate apologies

ANN

Artificial Neural Network

CNN

Convolutional Neural Network


Input
Layer
Hidden Layer
Output
Layer
Input #1
Input #2
Input #3
Input #4
Output

But… JavaScript?

Shoutout to

- https://botnik.org/
- https://github.com/mljs/ml
- https://github.com/tensorflow/tensorflow
- https://github.com/janhuenermann/neurojs
- https://github.com/ttezel/twit

Thank you!

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@kale-stew on Github