

INTRO To DATA SCIENCE

LESSON 1: WHAT IS DATA SCIENCE?

INTRO TO DATA SCIENCE

WELCOME!

Instructors: Alfred Lee, Patrick McNamara

TA: Sean Quigley

Classes:

Tuesday & Thursday, 6:30-9:30

22 East 17th St, Floor 2

Outside of classwork: Roughly 3 hours a week.

Office Hours: To Be Determined (Today!)

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I. WHAT IS DATA SCIENCE?

II. THE DATA MINING WORKFLOW

LAB:

III. COMPUTER SETUP

IV. DATA PRACTICE

INTRO TO DATA SCIENCE

I. WHAT IS DATA SCIENCE?

3 Minutes:

Use paper/your computer to write down as many different definitions/associations you know about the term 'data science'.

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5 Minutes:

In a small group of four around you, introduce yourselves! We will hand out paper for each group.

Review definitions and associations from your group and write each one down on a different piece of paper.

5 Minutes:

In a small group of four around you, introduce yourselves!

Joe and I will hand out a memo pad for each group.

Review all definitions and associations from your group and write each one down on a different piece of memo paper.

5 Minutes:

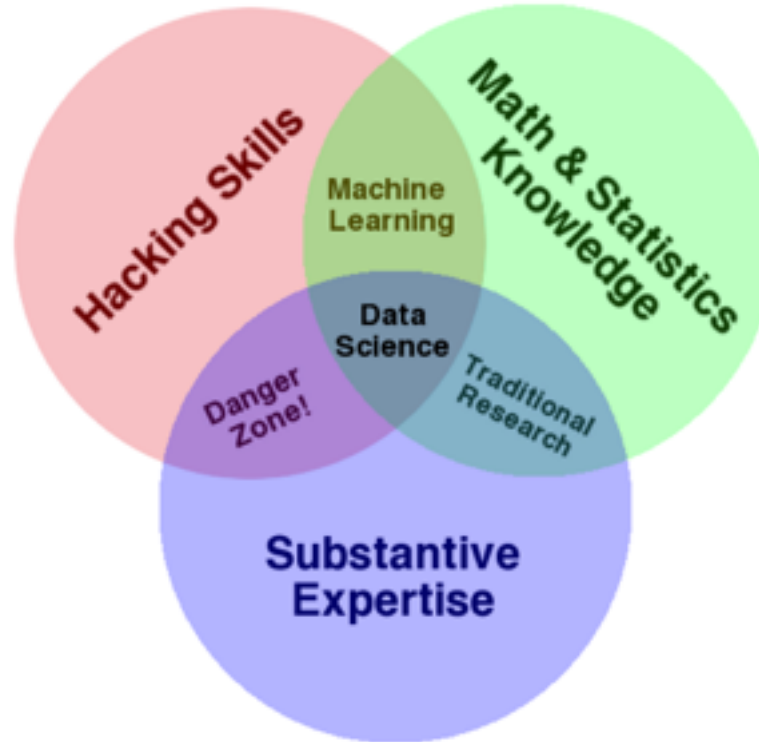
As a group, decide how to best “cluster” your definitions and associations. You can have as many different clusters as you want! Make sure you have a label for each cluster.

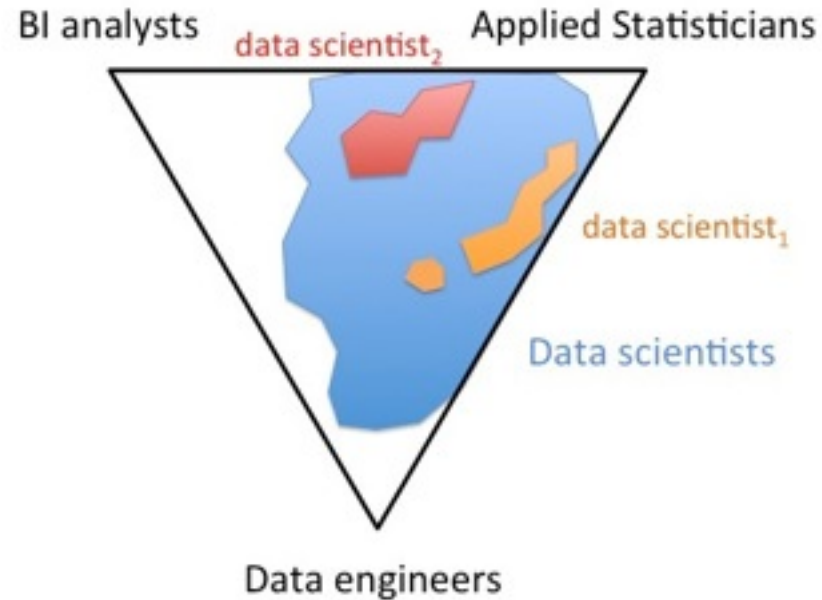
Cluster review!

A set of tools and techniques used to extract useful information from data.

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An interdisciplinary, problem-oriented subject.





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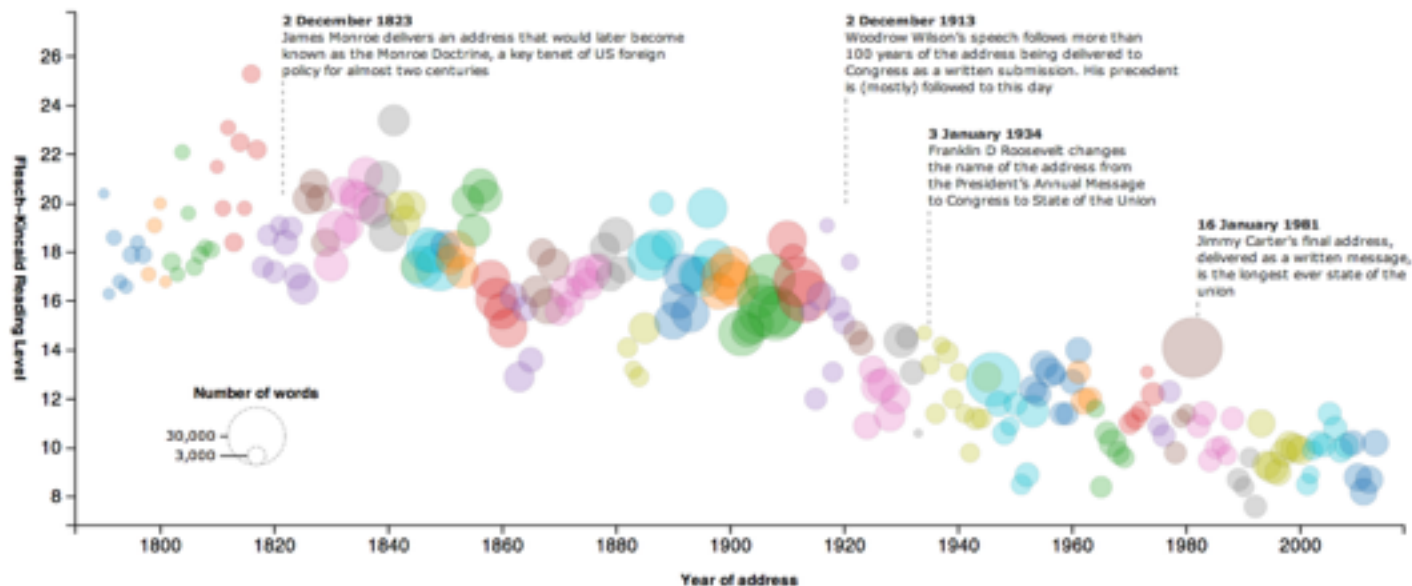
A rapidly growing field.



The state of our union is ... dumber:


How the linguistic standard of the presidential address has declined


Using the [Flesch-Kincaid readability test](#) the Guardian has tracked the reading level of every state of the union




Music + Data:
<http://bit.ly/echonest>

 “‘Data Scientist’ is a Data Analyst who lives in California”

 "A data scientist is someone who is better at statistics than any software engineer and better at software engineering than any statistician."

 “A data scientist is a business analyst who lives in New York.”

 "A data scientist is a statistician who lives in San Francisco."

 "Data Science is statistics on a Mac."



Michael E. Driscoll

@medriscoll



Following

Data scientists: better statisticians than
most programmers & better programmers
than most statisticians bit.ly/NHmRqu
[@peteskomoroch](#)



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More



Pocket

- Statistical and machine learning knowledge
- Computer Science and Engineering experience
- Academic curiosity
- Product sense
- Storytelling and communication skills

II. THE DATA SCIENCE WORKFLOW

Dataists blog

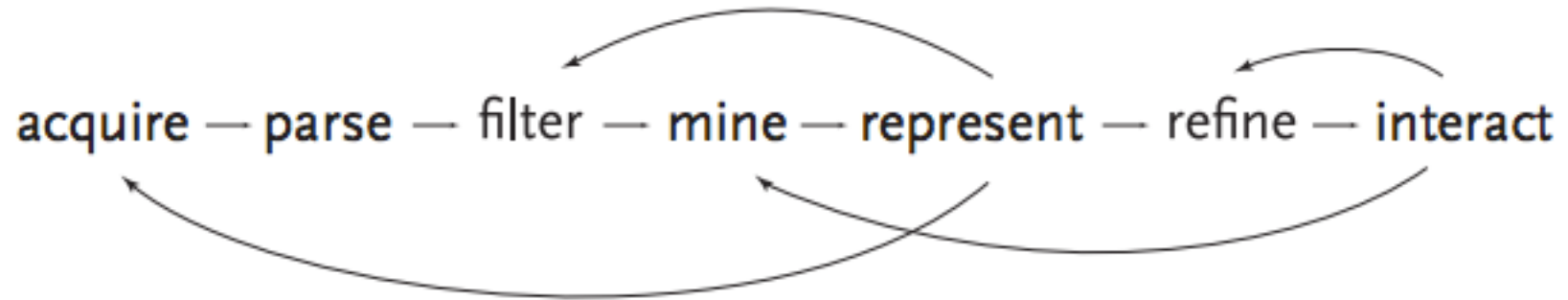
1. Obtain
2. Scrub
3. Explore
4. Model
5. Interpret

Jeff Hammerbacher: Chief Scientist, Cloudera

1. Identify problem
2. Instrument data sources
3. Collect data
4. Prepare data (integrate, transform, clean, impute, filter, aggregate)
5. Build model
6. Evaluate model
7. Communicate results

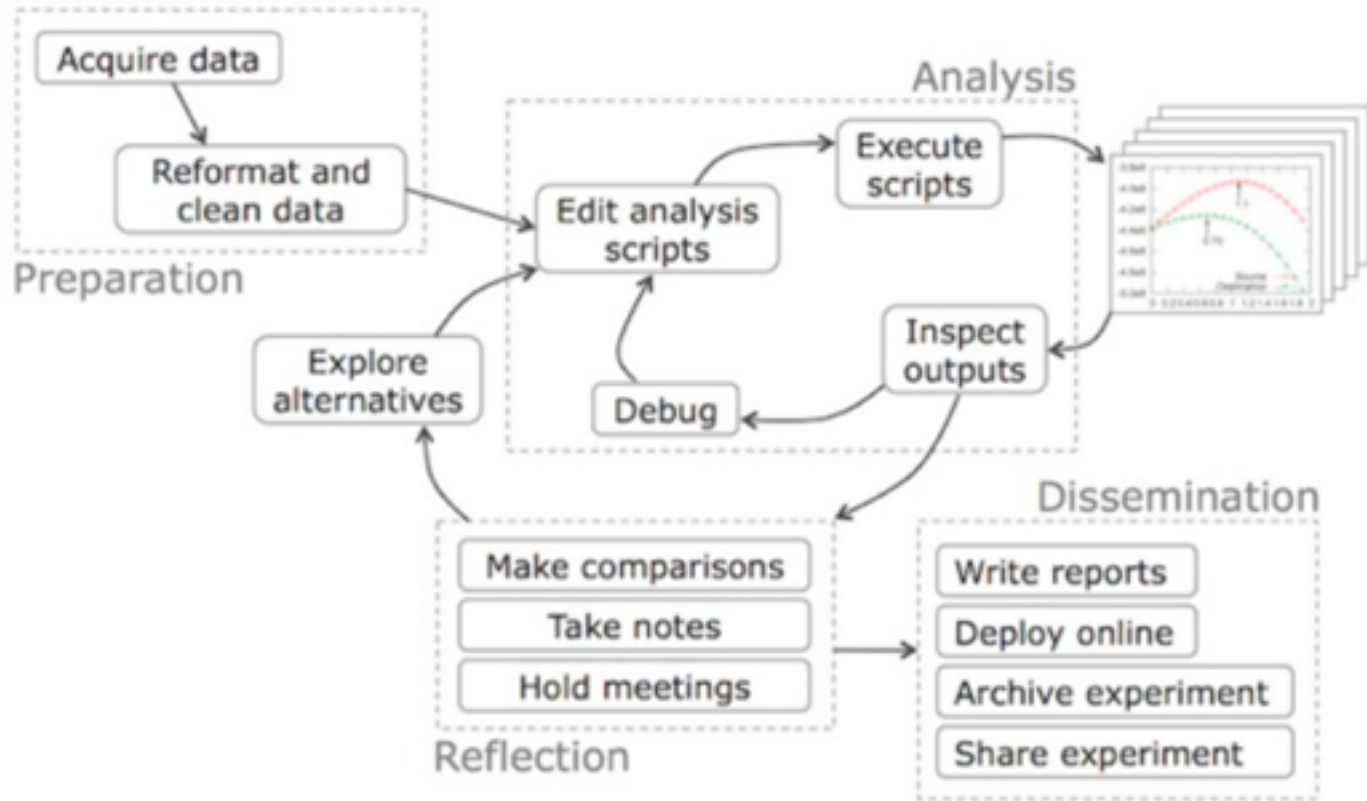
Ben Fry: Principal, Fathom





Zip Decode

<http://benfry.com/zipdecode/>



BUILDING AN ANALYTICS TEAM

1. Define the top priorities of the organization
2. Determine the data you'd like to collect

What will your greatest challenges be?

What products could you build?

What studies could you run?

How would these influence the organization?

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4. Extract new meaning to predict if user would purchase again
5. Share results (and probably also go back to the drawing board)

PROBLEM: HOW TO DEFINE “MORE ITEMS TO CONSIDER” IN AMAZON?

10 Minutes: In the same small group, define the flow an Amazon Data Scientist would work through to curate the “More items to consider” list for a particular user.

III. COMPUTER SETUP

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DISCUSSION