



# The ‘Data’ Gold Rush in Science Education

Jevin West  
Information School  
University of Washington

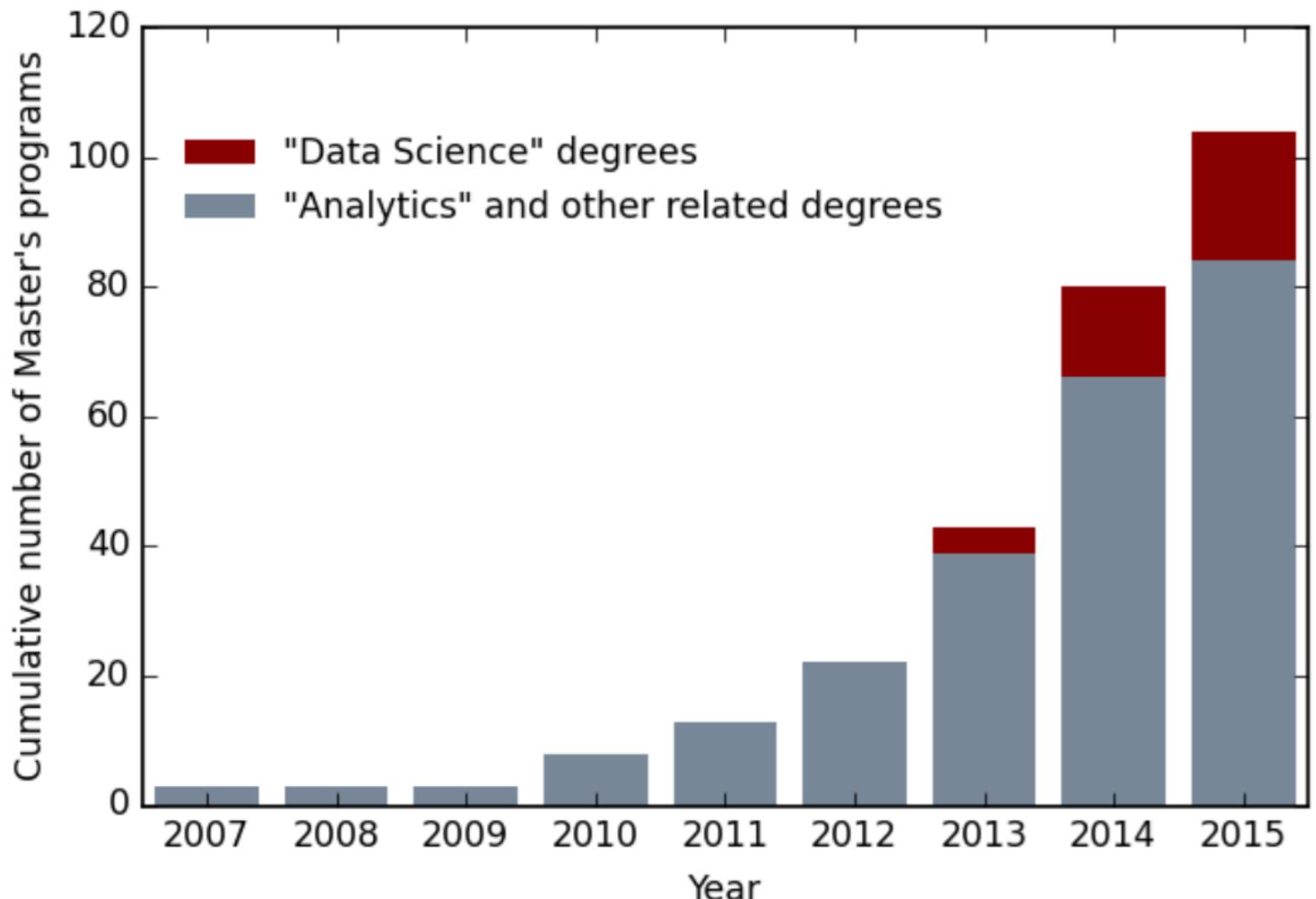
## McKinsey Global Institute



June 2011

# Big data: The next frontier for innovation, competition, and productivity

# Data Science Degree Programs in the US



West and Portenoy (2016) The Data Gold Rush in Higher Education. MIT Press

Data from [http://analytics.ncsu.edu/?page\\_id=4184](http://analytics.ncsu.edu/?page_id=4184)



UNIVERSITY *of* WASHINGTON

# MASTER OF SCIENCE IN DATA SCIENCE

Propel your career with big data skills, taught by world-class faculty from six top-ranked UW departments.

LEARN MORE



[PROGRAM DETAILS](#) / [ADMISSIONS](#) / [COSTS & FINANCIAL AID](#) / [STUDENT RESOURCES](#) / [UW & SEATTLE](#) / [CONTACT US](#)

## Master of Science in Data Science

The new Master of Science in Data Science at the University of Washington gives current and aspiring data science professionals the technical skills to turn large, messy data sets – or big data – into valuable insights.

### IMPORTANT DATES

**February 16**

Applications Open

# 'There's Gold in them thar hills'

College	Degree	Duration	Cost (r=resident)
Univ Denver	M.S. in Business Analytics	12-36 Mo	\$69,500
New York Univ	M.S. in Business Analytics	12 Mo	\$67,500
Carnegie Mellon			
Univ	M.I.S.M. (Business Intel. track)	16 Mo	\$67,200
Southern Methodist	M.S. in Applied Stats and Data	18-24	
Univ	Analytics	Mo	\$65,600
Carnegie Mellon			
Univ	M.S. in Computational Data Science	16 Mo	\$65,000
Northwestern Univ	M.S. in Analytics	15 Mo	\$64,800
Univ Rochester	M.S. in Business Analytics	10 Mo	\$62,700
	Master of Information and Data Science	12-20	
Univ CA, Berkeley	(MIDS)	Mo	\$60,000
IL Inst of	M.S. in Marketing Analytics and	12-24	
Technology	Commun.	Mo	\$58,000
Univ Miami	M.S. in Business Analytics	10 Mo	\$57,100



62 Salaries: 1–20 of 46 Job Titles

Sort by Avg. Salary (high to low) ▾

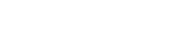
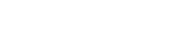
Salaries in USD 

Avg. Salary

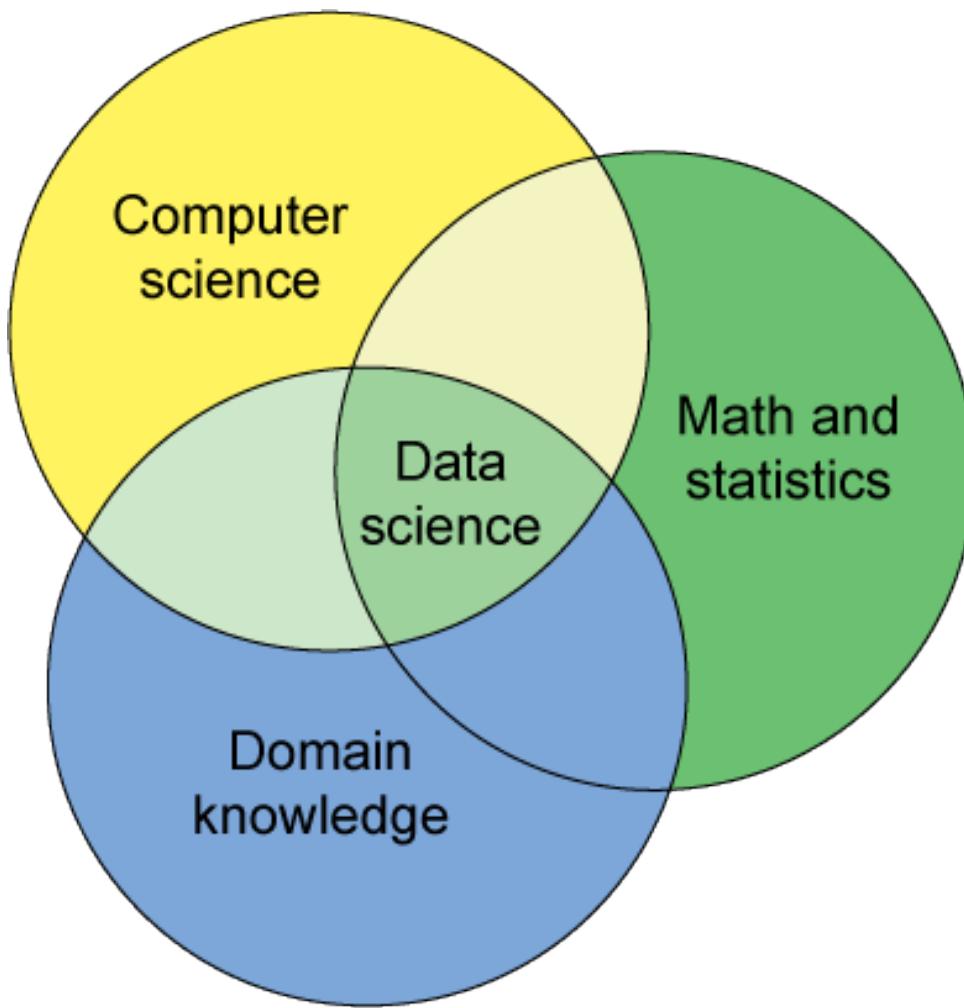
\$110k

\$150k

\$190k

<b>Senior Data Scientist – Netflix</b> 1 Salary	n/a	\$203k  \$220k
<b>Data Scientist – Groupon</b> 1 Salary	n/a	\$155k  \$166k
<b>Data Scientist – EBH Enterprises</b> 2 Salaries	\$155,326	\$120k  \$191k
<b>Data Scientist – Live Nation</b> 1 Salary	n/a	\$145k  \$155k
<b>Data Scientist – Nokia</b> 1 Salary	n/a	\$134k  \$146k
<b>Data Scientist – GREE International</b> 1 Salary	n/a	\$133k  \$142k
<b>Senior Data Scientist – LinkedIn</b> 7 Salaries	\$136,871	\$124k  \$150k
<b>Senior Data Scientist – Tapjoy</b> 1 Salary	n/a	\$130k  \$141k
<b>Data Scientist – Gerson Lehrman Group</b> 1 Salary	n/a	\$125k  \$134k
<b>Data Scientist – Apollo Group</b> 2 Salaries	\$122,360	\$110k  \$135k

# An exercise in departmental coordination



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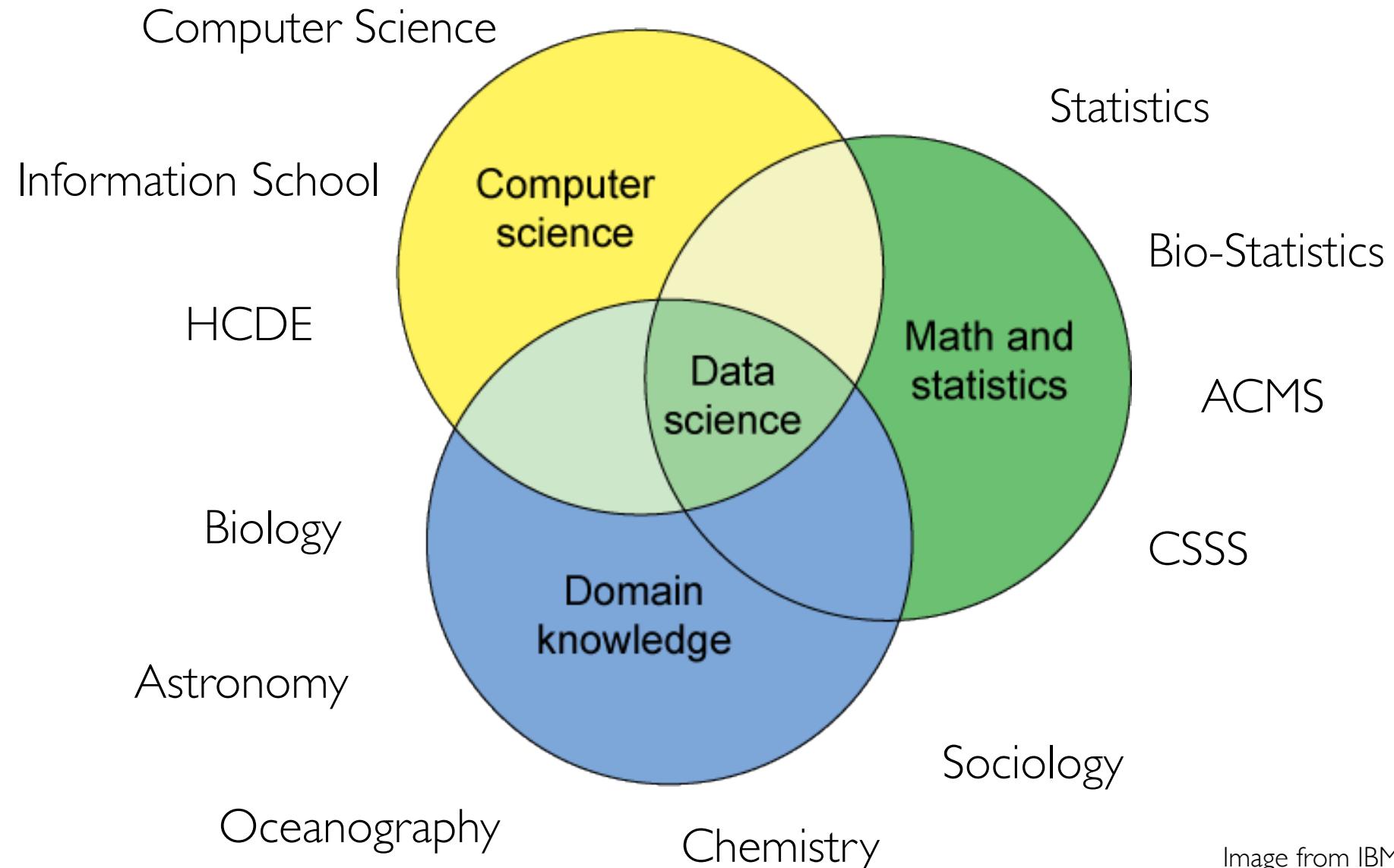


Image from IBM

# Curriculum

- Coding and Software Development
- Databases and Cloud Computing
- Statistics and Probability
- Machine Learning
- Information Visualization
- Data Ethics and Privacy
- Domain Applications (Biology, Physics, Astronomy, Oceanography, Sociology)

# INSIGHT DATA SCIENCE FELLOWS PROGRAM

An intensive **seven** week post-doctoral training fellowship bridging the gap between academia and science

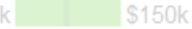
[WHITE PAPER](#)[APPLY NOW](#)

Want to be notified of future dates? [Click Here](#)



62 Salaries: 1–20 of 46 Job Titles		Sort by	Avg. Salary (high to low) ▾	
Salaries in USD 	Avg. Salary	\$110k	\$150k	\$190k
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# High commercial demand taking a toll on *Science*

1 Salary			
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# THE MODERN MARKETER

PART ARTIST • PART SCIENTIST

Technology is transforming the marketing profession, adding new tools, techniques, and strategies on a daily basis. The modern marketer needs to have two sides: an artist and scientist. Marketers need creativity and imagination to create campaigns that engage consumers, and an analytical side to measure and calibrate marketing strategy. Let's take a look!

PART  
ARTIST

## WRITTEN CONTENT



Inbound marketing has become the go-to strategy for modern marketers, putting a premium on writing skill.

## VISUAL ASSETS



Visual content grabs consumers' attention, making it a valuable marketing resource.

## SOCIAL MEDIA



Social media has changed the way marketers interact with consumers, making managing digital relationships an important skill.

## EMAIL MARKETING



Email remains the workhorse of most modern marketing departments. Best practices and design remain essential skills for marketers.

PART  
SCIENTIST

## PERFORMANCE TRACKING

Marketing can no longer afford to be a cost center and the modern marketer should track all marketing activities and campaigns.



## OPERATIONS

With more responsibility and fewer resources, marketers must be experts in budgeting and operations.



## ANALYTICS

Marketers need to be data experts, able to see major trends and important takeaways in a mass of data at a glance.



## CAMPAIN PERFORMANCE

Using tools like Salesforce to understand campaign performance is an essential skill for the modern marketer.



It's no surprise that the modern marketer must be multi-faceted. By developing both an artistic side and a scientific side, marketers are able to quickly adapt and thrive in the rapidly-changing marketing landscape.



# The Modern Brain Drain from Science to Marketing

# The Science ‘Ghost Town’



# Data Science for Science



data science

A word cloud centered around the words 'data' and 'science'. The word 'data' is in a large, dark purple font, and 'science' is in a large, dark green font. Numerous other words are scattered around them in various colors (yellow, orange, red, blue, etc.), representing terms related to data science, such as research, faculty, projects, support, environment, methodology, tools, students, metrics, budget, reproducibility, see, alternative, open, social, scientific, across, committee, funding, scientific, annual, methodologies, anticipate, use, domain, many, executive, professor, program, institute, activities, professor, work, funded, etc.



**ALFRED P. SLOAN  
FOUNDATION**

# What We Do



## Overview

Over the course of the last decade many disciplines have evolved from recording observations in laboratory notebooks to the use of instruments capable of digitally recording many gigabytes of data in a day. This abundance of data provides unprecedented opportunities for discovery. Tapping its potential requires the application of sophisticated new computational techniques operating on large scale storage, computational and network resources. Since its creation in 2008, the eScience Institute has worked to create the intellectual and physical infrastructure needed to meet this challenge.

At the core of the eScience Institute are individuals who have proven track records in developing and applying advanced computational methods and tools to real world problems. Their task is to seek out and engage researchers across disciplines where eScience approaches are likely to have the greatest impact. To ensure that researchers have access to the necessary physical infrastructure, the Institute has undertaken coordinated planning and support for advanced local and remote computational platforms. This includes developing relationships with commercial and non-commercial service providers as well as the development of shared facilities on campus. This support extends to assistance in the preparation of select proposals where we are able to focus resources, improving their chances for success.

## Also in... What We Do

### [Appliance Gallery](#)

Find and use the eScience Institute's virtual machines equipped with software useful for specific applications.

### [Campus Compute & Storage](#)

Learn about what UW is doing to support scalable scientific computing on campus

### [Consulting & Services](#)

From algorithm development to database creation to cloud computing, we can help.

### [Projects](#)

Explore some of our current collaborations with research scientists.

### [Relevant Courses](#)

View a list of courses offered in eScience disciplines.

### [SQLShare Success Stories](#)

### [Tools](#)

Whether it's database management, visualization, or developer tools, learn about tools we can help you use.

## Latest eScience News

[Data Science Incubation Program - Winter 2016](#)

2 hours 4 min ago

[Ben Marwick On How Computers Broke Science](#)

Search

# Lessons Learned

- Space and water coolers still matter
- The need for  $\Pi$ -shaped students
- Project-driven learning facilitates interdisciplinarity (capstones, hackathons, data for social good)
- Leverage alternative forms of education (MOOCs, bootcamps)
- The need to create career paths for data scientists that build tools (databases, software) that facilitate science
- Experiment with university programs

# Space Matters

 $\pi$

# Project-based learning

DUBHACKS

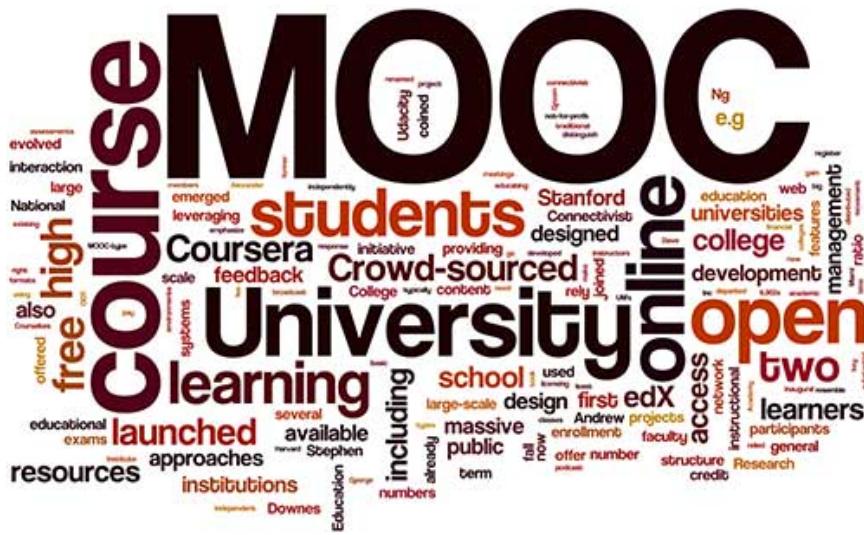
Schedule

FAQ

Sponsors



# Alternative Education Forums



\*image from [learndash.com](#)

# University career paths for data scientists

The word cloud illustrates the various domains and activities within university career paths for data scientists. The most prominent words are 'data' and 'science', which serve as the central focus. Other significant terms include 'research', 'faculty', 'projects', 'support', 'environment', and 'metrics'. The words are colored according to their association with specific concepts, such as 'social' and 'scientific' metrics or 'methodology' and 'methodologies'.

Key words and their associations:

- Large Words:** data, science, research, faculty, projects, support, environment, metrics.
- Other Key Words:** career, center, educational, physical, statistics, groups, made, process, external, annual, roles, university, one, individuals, engineering, described, breakthrough, reproducibility, see, ite, alternative, open, students, use, tools, committee, funding, scientific, across, annual, methodology, methodologies, anticipate, space, nsf, working, also, researchers, collaborations, focused, area, additional, project, section, seed, administrative, group, UW, practices, computing, evaluation, bridge, three, techniques, current, among, incubator, best, scientist, ccss, support, best, igert, domain, research, activity, assessed, well, range, many, executive, sciences, fellows, goal, team, leaders, activities, professor, program, institute, appendix, methods, proposal, theme, computer, culture, new, work, funded, universities, initiative, programs.

# Interdisciplinary Experimentation



## Academic Programs

### Bachelor of Science in Informatics

Informatics majors have a passion for making a difference through information and technology. They design, build, manage and secure systems to meet the needs of people, organizations, and society.

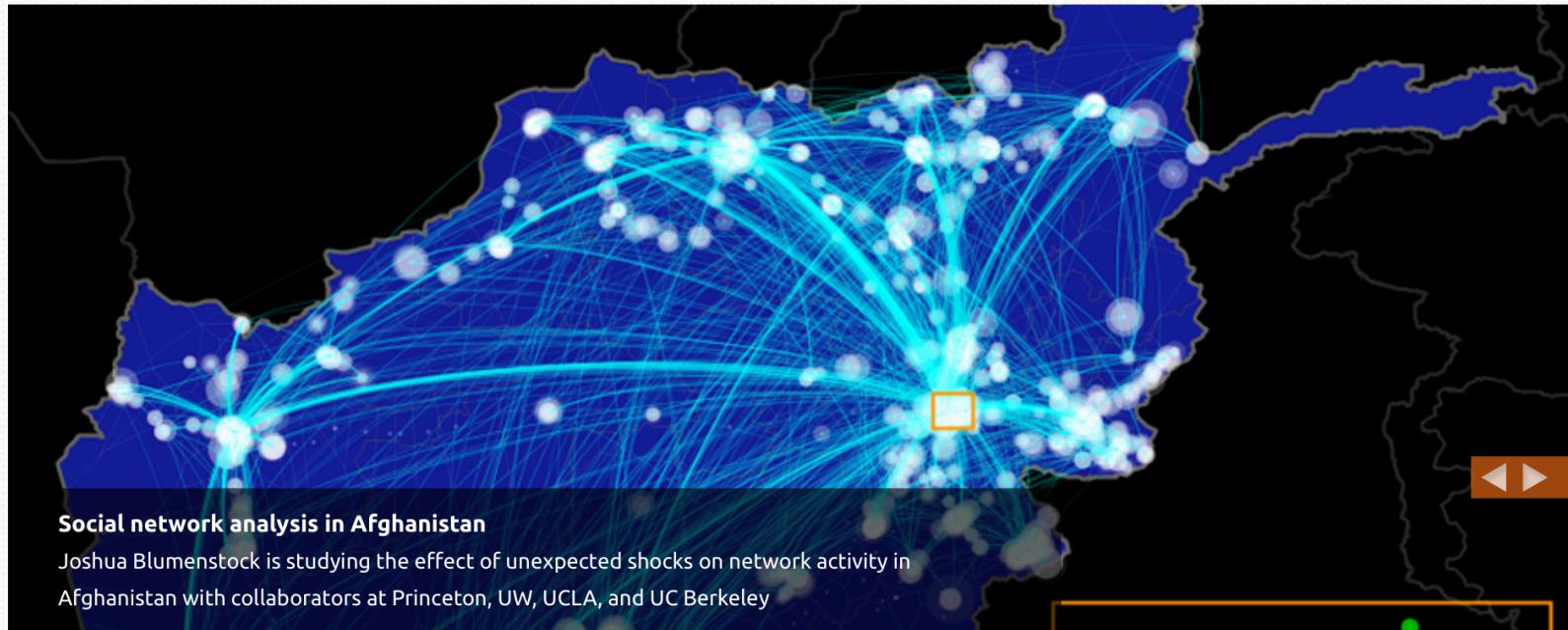
- > Learn about the program
- > See the curriculum and courses
- > Discover careers
- > Meet a diversity ambassador
- > Apply for the program

## What is an iSchool?

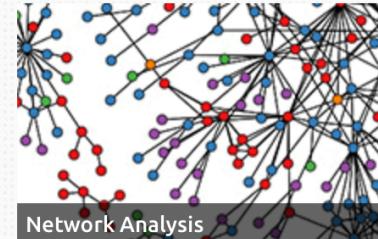
### Who are we?

We are a community of professionals focused on diverse areas of expertise relating to the study of information and its use by people and organizations.





### Research Focus Areas



### News and Updates

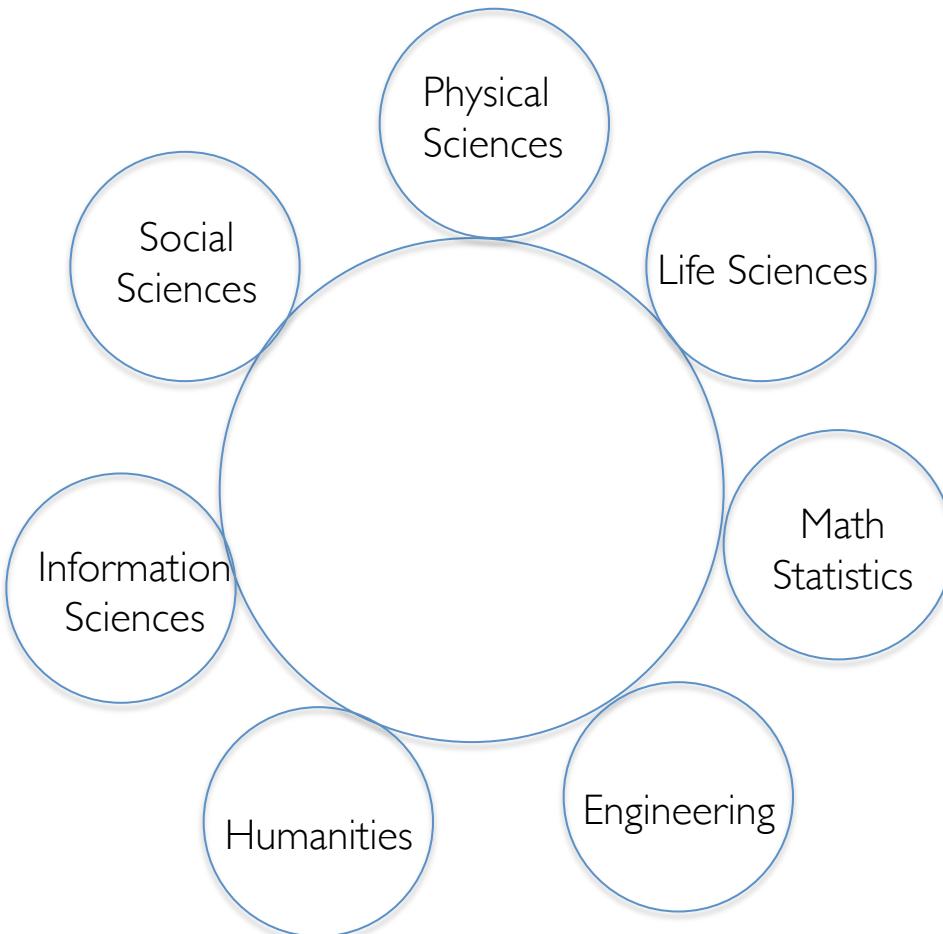
28

Blumenstock at Population Association of America

### What we do

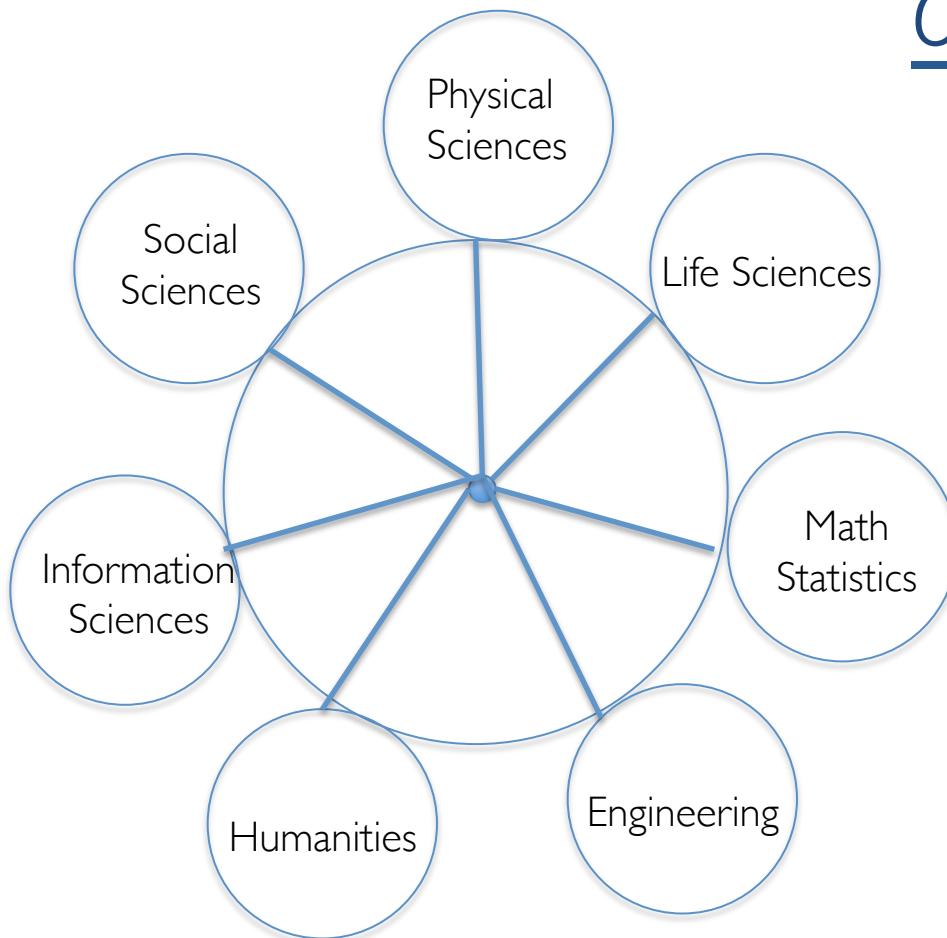
The DataLab is the nexus for research on Data Science and Analytics at the UW iSchool. We study **large-scale, heterogeneous human data** in an

# Science Education



# Data Science Education

opportunity



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