The ‘Data’ Gold Rush in Science Education

Jevin West
Information School
University of Washington

International Symposium on Advanced Future Studies
Kyoto University, Japan (Feb. 11, 2016)
McKinsey Global Institute

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

June 2011
Data Science Degree Programs in the US

Cumulative number of Master's programs

- "Data Science" degrees
- "Analytics" and other related degrees

Year

Data from http://analytics.ncsu.edu/?page_id=4184
Propel your career with big data skills, taught by world-class faculty from six top-ranked UW departments.

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 that can drive business decisions.
‘There’s Gold in them thar hills’

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Duration</th>
<th>Cost (r=resident)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ Denver</td>
<td>M.S. in Business Analytics</td>
<td>12-36 Mo</td>
<td>$69,500</td>
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<td>New York Univ</td>
<td>M.S. in Business Analytics</td>
<td>12 Mo</td>
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<td>Carnegie Mellon University</td>
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<tr>
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<td>Univ</td>
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<td></td>
<td>Master of Information and Data Science</td>
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<tr>
<td>Univ CA, Berkeley</td>
<td>(MIDS)</td>
<td>10 Mo</td>
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<tr>
<td>IL Inst of Technology</td>
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<td>Univ Miami</td>
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<tr>
<td>Job Title</td>
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<tr>
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<tr>
<td>Data Scientist – Gerson Lehrman Group</td>
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</tr>
<tr>
<td>Data Scientist – Apollo Group</td>
<td>Apollo Group</td>
<td>$122,360</td>
<td>$110k</td>
</tr>
</tbody>
</table>

Seattle, WA Area
National

Not enough employee data
An exercise in departmental coordination
An exercise in departmental coordination
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
High commercial demand taking a toll on Science

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Avg. Salary</th>
<th>Median Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Data Scientist – Netflix</td>
<td>n/a</td>
<td>$110k - $150k</td>
</tr>
<tr>
<td>Data Scientist – Groupon</td>
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<tr>
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<td>$133k - $142k</td>
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The Modern Brain Drain from Science to Marketing

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 a 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.

**CAMPAIGN 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 Science ‘Ghost Town’
Data Science for Science

Data-driven Discovery

Data Science Environments

Data Science

Courtesy of well-formed.eigenFACTOR.org
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.
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

\[ \pi \]
Alternative Education Forums
University career paths for data scientists
Interdisciplinary Experimentation
CAPSTONE PROJECTS ARE A KEY COMPONENT OF EVERY DEGREE
The 2015 Capstone award winners: Social Impact, Commercial Potential, Audience Favorites. Read more...

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.
Social network analysis in Afghanistan
Joshua Blumenstock is studying the effect of unexpected shocks on network activity in Afghanistan with collaborators at Princeton, UW, UCLA, and UC Berkeley
Science Education

- Physical Sciences
- Life Sciences
- Math Statistics
- Engineering
- Humanities
- Information Sciences
- Social Sciences
Data Science Education opportunity
Jevin West
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jevinwest.org
datalab.ischool.uw.edu