



Our Approach to Machine Learning

Laura Evans, SVP Data & Insights

The New York Times

Higher Order Analytics: AI and Machine Learning

GE, Partners have a plan to bring more artificial intelligence to health care

Spotify just bought an AI startup to help it stay ahead of Apple Music

- Spotify bought a French AI start-up called Niland that has a unique approach to music recommendations
- It's in a race with Apple to attract more music customers the better

Jordan Novet | @jordann
6 Hours Ago



Google Pushes AI, Machine Learning to the Front

By David Jones

May 18, 2017 12:45 PM PT

MAY 18, 2017 @ 01:59 PM 142

The Little Black B

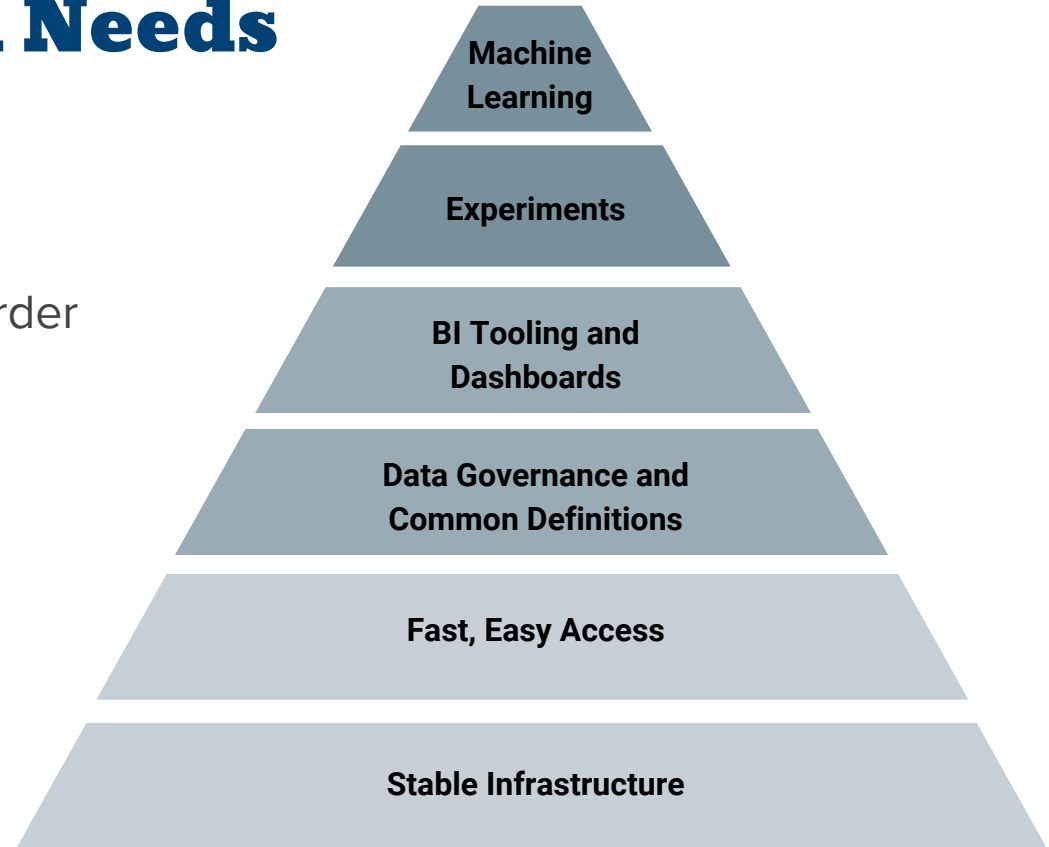
Will AI Eventually Take Over The Content Marketing Industry?

Machine Learning is built from a solid data environment.

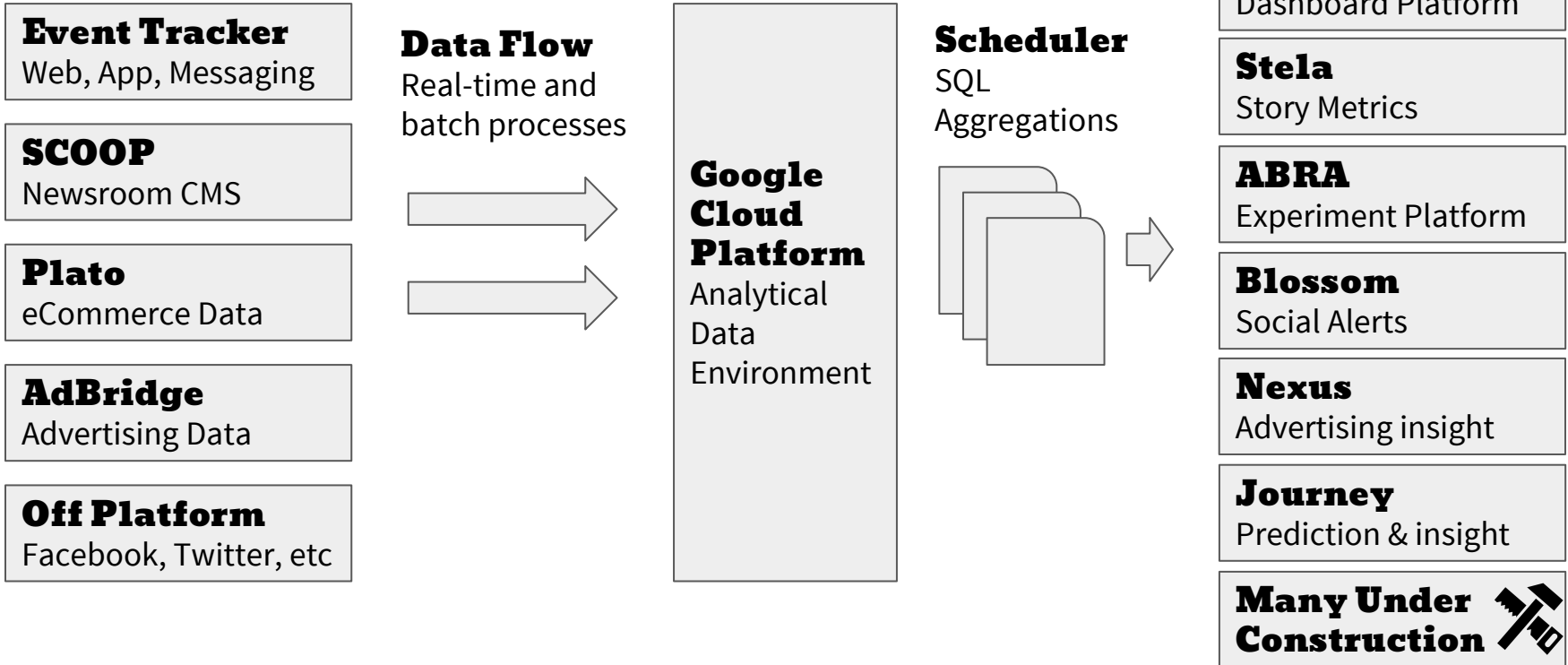
But these offer value at every step.

Requirement: Effective Execution on Hierarchy of Data Needs

Without access, accuracy and reliability, it's nearly impossible to effectively deliver on the higher order needs.

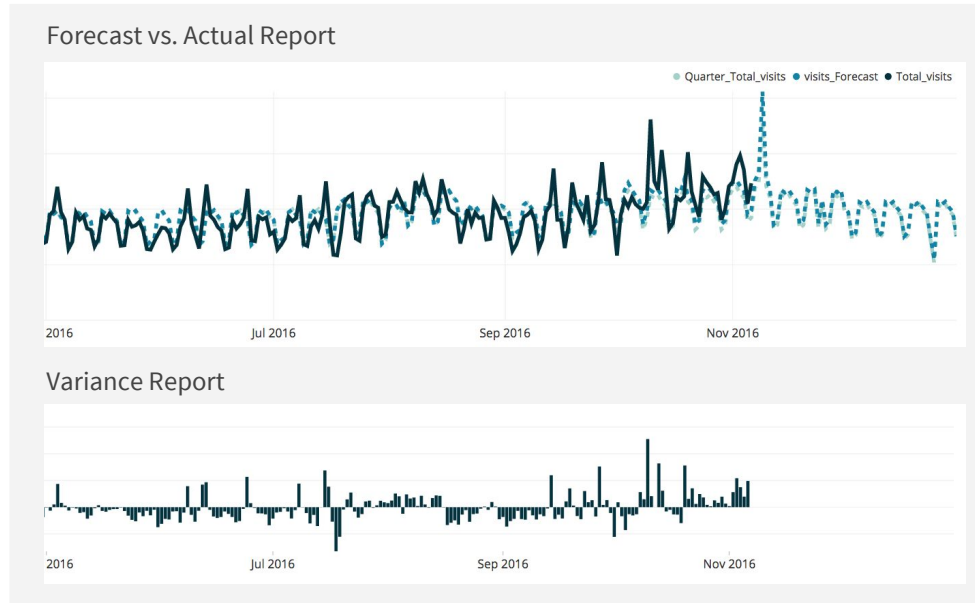


Requirement: Comprehensive Data Environment



Prediction and Expectation Setting

Predict trends in key business revenue and audience metrics for improved understanding of the macro drivers of the business and level setting expectations.

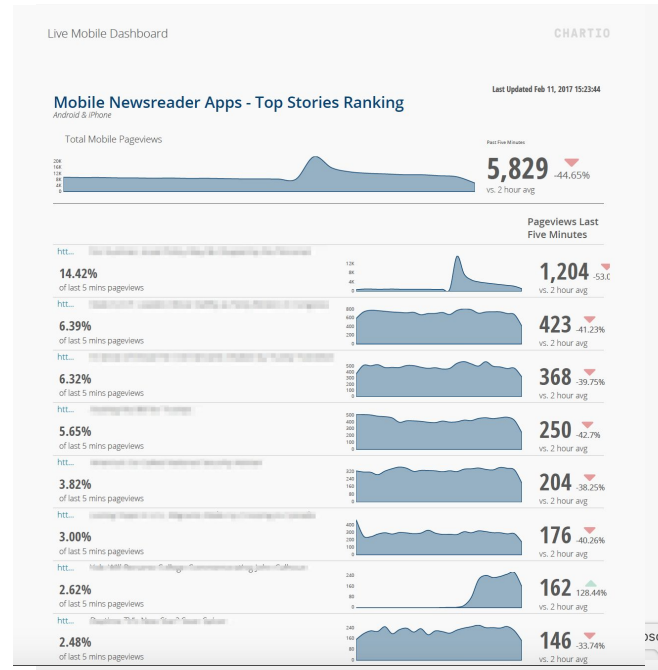


Data Democratization

Enable operators with timely and actionable reporting that clarifies objectives.

Value Delivered:

- Auditing dashboards
- Executive dashboards
- Marketing dashboards
- Advertising dashboards
- Product dashboards
- Newsroom dashboards



**Machine Learning to advance
understanding and improve our
efficiency.**

Filling in the Gaps

We use text analytics to fill in missing data and give greater insight into content.

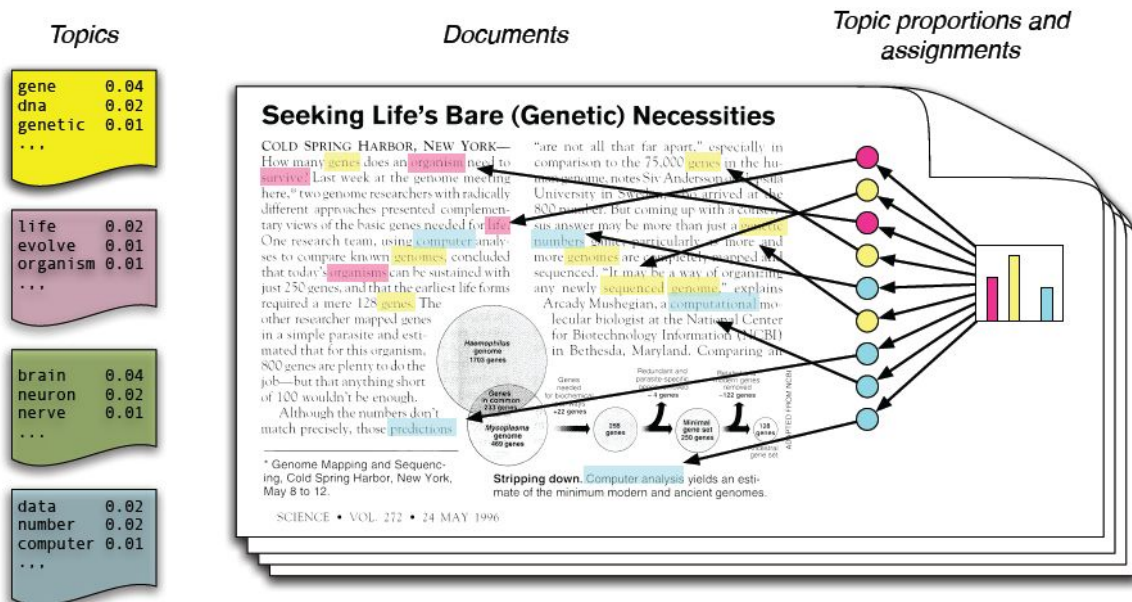


Image source:

Machine learning: Trends, perspectives, and prospects

M. I. Jordan^{1,2}, T. M. Mitchell^{1*}

* See all authors and affiliations

Science 17 Jul 2015

Combining Data for New Insights

Nexus: “Who reads what, where?” reveal & render audiences for advertisers.



Audience data



Reader tracking



Article text

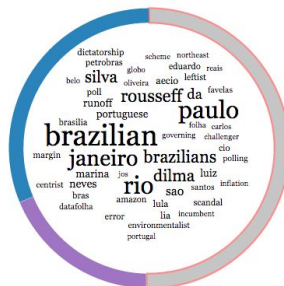
Combining Data for New Insights

How do we visualize these insights & relationships?

- 1) audience segments
- 2) article reading behavior
- 3) reader locations



Fashionistas
Tech Readers
Parents



Topics



Geography

An Unlimited Query Engine

Engagement maps

Over-indexing articles by topic

Over-indexed topics

Reveal audience segments

Target audiences in real-time



Recommendation Engines: Geography

Understand patterns in consumption, and deviations from those patterns, to better surface content to particular audiences.

deploy via realtime Slackbot:

#popular-in-japan 9 | 0 | *Add a topic* 📞 ⚙️

40 clicks in the past 30 minutes **February 24th**

canary APP 5:39 PM
Hi! This article is doing very well in Japan:
What One Photo Tells Us About North Korea's Nuclear Program
<https://www.nytimes.com/interactive/2017/02/24/world/asia/north-korea-propaganda-photo.html>
2.3 times more popular in Japan than the US

canary APP 7:09 PM
Hi! This article is doing very well in Japan:
Trump at CPAC: Warm Embrace Likely for Rights Unlikely Hero
<https://www.nytimes.com/2017/02/24/us/politics/trump-conservative-political-action-conference-speech.html>
2.4 times more popular in Japan than the US

February 25th

canary APP 9:08 PM
Hi! This article is doing very well in Japan:
Where Oscar Best Picture Nominees Are Liked Most
<https://www.nytimes.com/interactive/2017/02/24/movies/oscars-state-by-state->

Optimizing Platforms

Blossom, a bot within the messaging app Slack, predicts how articles or blogposts will do on social and suggests stories to editors from data: content, performance, historical, FB data.



blossombot BOT 3:40 PM ★

Blossom Alert!

This piece is predicted to go viral if posted on Facebook next:

<http://www.nytimes.com/2015/08/12/sports/football/ikemefuna-enemkpali-the-backup-who-broke-geno-smiths-jaw.html>

Here is its [Stela Link](#)

Recommendation Engines

Optimize search and recommendation capabilities to surface the right content to the right user at the right time.

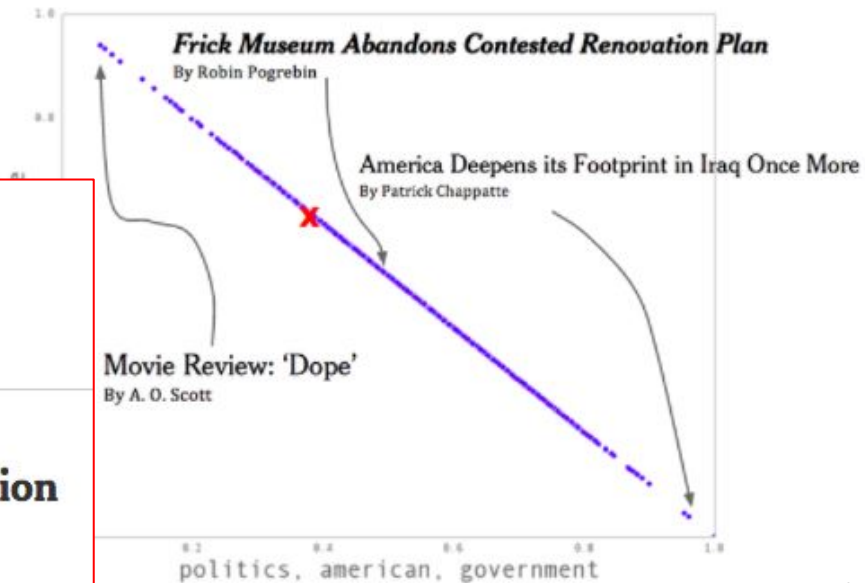


OPEN

All the Code That's Fit to `printf()`

Building the Next New York Times Recommendation Engine

By ALEXANDER SPANGHER AUGUST 11, 2015 11:27 AM 23



Our Strategy:

**Create and Efficient Approach to
Data and Never Assume a Project is
Complete**

Rechecking and Advancing

- A single platform across all tools with single development.
- Advancement in data quality is leveraged across all the tools.
- Learn interpretable model from the predictive model
- Revisit approaches as field advances.



Thank you