

Actor, Culture or Structure? A Predictive Model on News Article Popularity

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Introduction

What influences News Popularity?

- Agenda Setting vs. Agenda Building

Media influences what we think.

Transfer of the media agenda is a reciprocal process.

-- Rogers, Dearing, 1988

- **Audience** takes an active role in virtual sphere during the process of information diffusion. **Human autonomy matters.**
- News popularity can be predicted by **crowd manipulation.**

-- *D. Horne and Adali, 2017*

Introduction

What shapes human behavior?

- "Duality of structure" : social practice, which is the principal unit of investigation, has both a **structural** and an **agency**-component.
 - Anthony Giddens
- **Culture** is an important mechanism.
- “A critical site of social action and intervention, where power relations are both established and potentially unsettled.”
 - Stuart Hall
- Headline negativity, subjectivity and overall sentiment influence news popularity.
 - Reis, Julio, etc., 2015

Research Questions

Goal: To build a predictive model on news popularity

- Can active participants/opinion leaders, news content, and network structure altogether predict the popularity of online news article?
- Hypothesis: Yes.

Significance of the Topic:

- 1) Touch on the relationship between network structure and info diffusion (ameliorate communication strategy online).
- 2) Look into the mechanism and process of developing online public opinion.

Informal Model

Dependent Variable – News popularity

an aggregate of communication effect and public opinion

Predictive Variables – three dimensions

- Structure
Audience Network Attributes
- Agency
Opinion Leaders (number of actors of different roles)
- Culture
News articles' content, sentiment, media agency

Confounders – Date of published, total time of view

Data Sources

- Reddit *an American social news aggregation, web content rating, and discussion website.*
- API: Praw
- /r/news, /r/worldnews (top section)

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Reddit /r/news hot new rising controversial top gilded wiki

Post all analysis/opinion/politics articles to /r/InTheNews

/r/inthenews /r/worldnews /r/politics new comments

links from: past year ▾

Legends aren't born. They're forged on the open seas. Set sail across a shared world to create your own pirate legend and discover what Polygon called "the funniest game we've ever played." (xbox.com)

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Scientist Stephen Hawking has died aged 76 (news.sky.com)
185k submitted 20 days ago by araylisusername
7152 comments share save hide report crosspost

Soft paywall: F.C.C. Announces Plan to Repeal Net Neutrality (nytimes.com)
178k submitted 4 months ago by IanSimmsMady
1126 comments share save hide report crosspost

Apple admits it slows older iPhones, confirming Geekbench report (cnet.com)
149k submitted 3 months ago by ErnestGetsElected
13499 comments share save hide report crosspost

Soft paywall: Net Neutrality Overturned (nytimes.com)
147k submitted 3 months ago by DWinsauer
18855 comments share save hide report crosspost

Japanese firm gives non-smokers extra six days holiday to compensate for cigarette break (independent.co.uk)
127k submitted 5 months ago by ajstrange1
5025 comments share save hide report crosspost

Chester Bennington of Linkin Park commits suicide (wtkr.com)
124k submitted 8 months ago by Another_Chance
16086 comments share save hide report crosspost

#DeleteFacebook Movement Gains Steam After 50 Million Users Have Data Leaked (thewrap.com)
123k submitted 14 days ago by JoseTwitterfan
7134 comments share save hide report crosspost



[–] SounderBruce 1581 points 20 days ago
Favorite Hawking anecdote, from the [Guardian](#):
He began to use crutches in the 1960s, but long fought the use of a wheelchair. When he finally relented, he became notorious for his wild driving along the streets of Cambridge, not to mention the intentional running over of students' toes and the occasional spin on the dance floor at college parties.
permalink embed save report give gold reply

[–] Vuhaar 137 points 20 days ago
He's basically a Science Bro, love it
permalink embed save parent report give gold reply

[load more comments](#) (13 replies)

[–] ludgarthewarwolf 12.3k points 20 days ago
I wonder if any time travelers will come to his funeral.
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[–] Mimantians 6966 points 20 days ago
They'd better, after standing him up at the party he threw for them.
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[–] PJITearz 1239 points 20 days ago
Who wouldn't want to party with Hawking? Those time travelers missed out
permalink embed save parent report give gold reply

[–] joame01 605 points 20 days ago
As a time traveler you never miss out. You can always return and make it right. Right?
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[–] PDGXgriz 242 points 20 days ago
Maybe they already tried once, failed, and can't risk bumping into themselves again. Doctor Who taught me something!
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Data Sources

- News Articles
 - All urls in /r/news (worldnews) top section head title, content, word count
- API: Newspaper3k (supports NLTK)

"All the News That's Fit to Print"

The New York Times

LATE EDITION
Today, Good, afternoon, rainy, high 56. Tonight, a bit of drizzle, low 48. Saturday, mostly cloudy, high 58. Sunday, a late-day shower, high 59. Weather map is on Page 18.

VOL CLXII , No. 56,092 © 2013 The New York Times NEW YORK, SUNDAY, MARCH 31, 2013 \$5.00

As OSHA Emphasizes Safety, Long-Term Health Risks Fester

Toxic Factory Fumes Test Agency's Powers

By IAN URIBA

TAYLORSVILLE, N.C. — Sheri Farley works with a power tool in her only job she could hold would be one where she does not have to stand on her feet for long stretches, otherwise pain screams down her spine and legs — lots of them, she says. "It's like a rock," Ms. Farley describes herself, recalling how she used to consider it a curse, a source of whining to her mother about whether the "crippled lady" was "dealing with it." After two short periods, but its use has grown 15-fold in the past six years.

For about five years, Ms. Farley, 45, stood alongside about a dozen other women, all wearing in hand, giving together foam cushions for chairs and couches sold at a furniture store called Broyhill, Ralph Lauren and Thomasville. They had also formed a yellowish fog inside the plant, and Ms. Farley's doctor told her she had to leave it; it eventually ate away at her nerve endings, resulting in what she calls "her co-workers can't deal with it."

A chemical she handled —

known as a propoly benzene, or PB — is used by tens of thousands of workers in auto body shops, dry cleaners and furniture factories and carpet-cleaning plants across the nation. Medical researchers, government officials and environmental companies that once manufactured PB say it was a major cause of cancer and other health damage for over a decade that it causes reproductive damage and infertility when ingested or absorbed through the skin. It was first used in the 1940s and 1950s, but its use has grown 15-fold in the past six years.

The agency has been unable to decrease the exposure of workers to the difficulty, despite efforts of OSHA, of ensuring that Americans work in safe and healthy conditions. Even as worker after worker fell ill, records from the Occupational Safety and Health Administration show that managers at Broyhill, which closed in 2011, Ms. Farley was employed, repeatedly exposed glancers to nPB levels that were considered unsafe, and that managers considered safe, failed to provide respirators and turned off fans designed to vent fumes.

PHOTOGRAPH BY MICHAEL KAMMEN/GETTY IMAGES

SHORT OF MONEY, EGYPT SEEKS CRISIS ON FUEL AND FOOD

ECONOMIC FEARS DEEPEN

Government Is Pressed to Increase Taxes and Cut Subsidies

By DAVID D. KIRKPATRICK

QALYUBIYA, Egypt — A fuel shortage has hit the country hard, and prices soaring. Electricity is blacking out even before the sun rises. Two recent explosions have killed at least five people and wounded dozens over the past two days.

The root of the crisis, economists say, is that Egypt is running out of money and it needs for fuel imports. The shortage is raising questions about whether that is essential to subsidies that are fueling growing fears of an economic catastrophe at a time when the government is already struggling to quell uprisings.

PHOTOGRAPH BY AP

INTRODUCE PHOTO BY MICHAEL KAMMEN/GETTY IMAGES

The Boston Globe

SUNDAY, APRIL 9, 2017

DEPORTATIONS TO BEGIN

President Trump calls for tripling of ICE force; riots continue

Curfews extended in multiple cities

PRESIDENT TRUMP has set in motion one of his most controversial campaign promises, ordering the Justice Department to assemble a "massive deportation force" by tripling the number of immigration and Customs Enforcement agents.

The president made the announcement during a speech he gave last night from the Old Post Office building in Washington, D.C., now a Trump International Hotel. In a surprise move after the speech, Trump invited reporters from around the nation to stand right next to him at the podium to field questions. "You_said_ eye face," he told NBC Nightly News reporter Megyn Kelly, who was covering the speech from a news van. "I'm going to do that because she has been placed on a White House tour."

Although Trump reiterated his promise to expand the 11,000-migrant deportation force to a two-year-old deadline, "so fast your head will spin," he also said he would not immediately offer details but said he intends to flesh out the policy with Congress. "We're going to do it," he said.

BREAKING NEWS

TRUMP: DEPORT ILLEGALS 'SO FAST YOUR HEAD WILL SPIN'

LIVE NOW: PRESIDENT ADDRESSES THE NATION

Markets sink as trade war looms

WORLDWIDE STOCKS plunged on Friday, continuing to fall month on record as trade war with China and Mexico seem imminent.

Markets are likely to follow to the Nikkei benchmark on speculation that China is disrupting shipping lanes. Treasury Secretary Steven Mnuchin said on Friday that the United States will impose 35 percent tariffs on Chinese imports and 35 percent on Chinese exports.

"I don't mind trade wars when we're losing \$58 billion a year to China," Mnuchin said. "But Chinese officials have made it no secret that they will put up a fight."

Methods

Data Processing

- API: Networkx, NLTK
- Average clustering, transitivity, centrality, connectivity, etc.
- Algorithm to differentiate different types of users
- Text Classification (Bayes Classifiers, SVM, sentiment)
- Topic Modeling (Generative Models and LDA)

Sample size

- now 1,000 top news/worldnews and several hundred comment trees for each)

Model Selection

- Machine Learning: lasso regression, principal component regression, spline

Few Points to Mention

Algorithm Confounding Issues

- Probably only top news can be scrapped
(Reddit limits number of objects to be returned by Praw within 1000)
- Unpredictable size of comment data
- Data sources, sample size and methods are subject to change

Measurement Issues

- 1) unable to measure the impact from the offline world
- 2) silent participants are filtered
- 3) unable to study the interaction between different dimensions

Citations

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