

1729

Lecture 7: Algorithmic Fact Checking

How do we get the raw data for the ledger of record?

Algorithmic Fact Checking

1. The full stack includes the moral stack
2. Truth is the core of the moral stack
3. The ledger of record is how we record facts
4. Algorithmic fact checking is how we parse assertions

The Full Stack includes the Moral Stack

The ideas in people's heads are as important as the code on their computers.

Computer Software

Computer Hardware

Biological Software

Biological Hardware



The monopoly of truth is upstream of the monopoly of violence

Convincing people WMDs were in Iraq
justified the invasion of Iraq.



Truegle

Could we really write a function to
"check what is true"?



Balaji Srinivasan ✅ @balajis · Nov 25, 2019
To anyone who wants to “ban lying” on social media

...

Please write down a function that takes in a statement and returns whether it is true

If you can start with the Riemann Hypothesis that would be amazing

127

620

3.3K



Balaji Srinivasan ✅
@balajis

...

Coding “Truegle” for real is a fun concept

For math you are limited by Gödel Incompleteness and the Halting Problem

For encyclopedia facts you can use knowledge graph approaches

But in other areas you might have to show all sides.
Explicit epistemology.



Balaji Srinivasan ✅ @balajis · Nov 22, 2019

I have no dog in this fight, but how would you ascertain truth in an adversarial environment?

- trust the party you find most credible
- wait for trusted third party to opine (eg the police)
- seek more independent first party reports (eg video)

Need more explicit epistemology.

Show this thread

Centralized fact checking

The obvious failure mode is to simply assert it.



Glenn Greenwald @ggreenwald

In May, 2020, [@PolitiFact](#) falsely claimed it knew for certain where COVID came from, had confirmed its origin. They lied. 16 months later, not even the US Govt claims it knows.

Fact-checkers are partisan posers, feigning objectivity they do not possess.

politifact.com/factchecks/202...



A screenshot of a Politifact article. The header features the Politifact logo and "The Poynter Institute". Below the header, a quote is attributed to "Kimberly Lightford" with the note "stated on May 15, 2020 in a TV interview:". The main headline reads "The novel coronavirus was ‘man-made.’". The article includes categories "ILLINOIS", "CORONAVIRUS", and "KIMBERLY LIGHTFORD". To the right of the main content, there's a small graphic of a smartphone displaying the word "TRUTH".

7:59 AM · Dec 23, 2021 · Twitter Web App

444 Retweets 20 Quote Tweets 2,030 Likes

Decentralized fact checking

But there may be a better way...



jack⚡️
@jack

...

Agree this should be open source and thus verifiable by everyone



Balaji Srinivasan ✅ @balajis · May 29, 2020

It shouldn't be tech companies per se getting into fact checking.

It should be open source technology.

Free, universally available code and data for epistemology.

Take a piece of text, parse it, extract assertions, compare to explicitly specified knowledge graphs and oracles. [twitter.com/Richx183/statu...](https://twitter.com/Richx183/status/1265111000000000000)

[Show this thread](#)

11:26 PM · May 29, 2020 from California, USA · Twitter for iPhone

1,769 Retweets 474 Quote Tweets 13.8K Likes

Concept: a knowledge graph

There is a way to structure probabilistic facts via RDF triples in a knowledge graph.

A screenshot of a Google search results page. The search query "what is knowledge graph?" is entered in the search bar. Below the search bar, there are tabs for Web, News, Images, Videos, Shopping, More, and Search tools. A red arrow points from the text "search result pulled from the knowledge graph" to the first search result, which is a snippet from Wikipedia about the Knowledge Graph. The snippet is enclosed in a red box. The snippet text reads: "The Knowledge Graph is a knowledge base used by Google to enhance its search engine's search results with semantic-search information gathered from a wide variety of sources." Below the snippet is a link to "Knowledge Graph - Wikipedia, the free encyclopedia" with the URL "en.wikipedia.org/wiki/Knowledge_Graph". The page also includes a "Feedback" link at the bottom right.

[Google Knowledge Graph Explained by Search Engine Land](#)
searchengineland.com/library/google/google-knowledge-graph

Google: Knowledge Graph. The Google Knowledge Graph is a system that Google launched in May 2012 that understands facts about people, places and things and how these entities are all connected.
You've visited this page 3 times. Last visit: 5/28/15

[Ranking in Google Since Advent of Knowledge Graph A two ...](#)
 <https://plus.google.com/.../posts/XjbcJAQNtg2> ▾
Bill Slawski
6 hours ago - Ranking in Google Since Advent of Knowledge Graph A two Person Presentation in San Diego on June 23, 2015 at the Courtyard San Diego Old Town Please ...



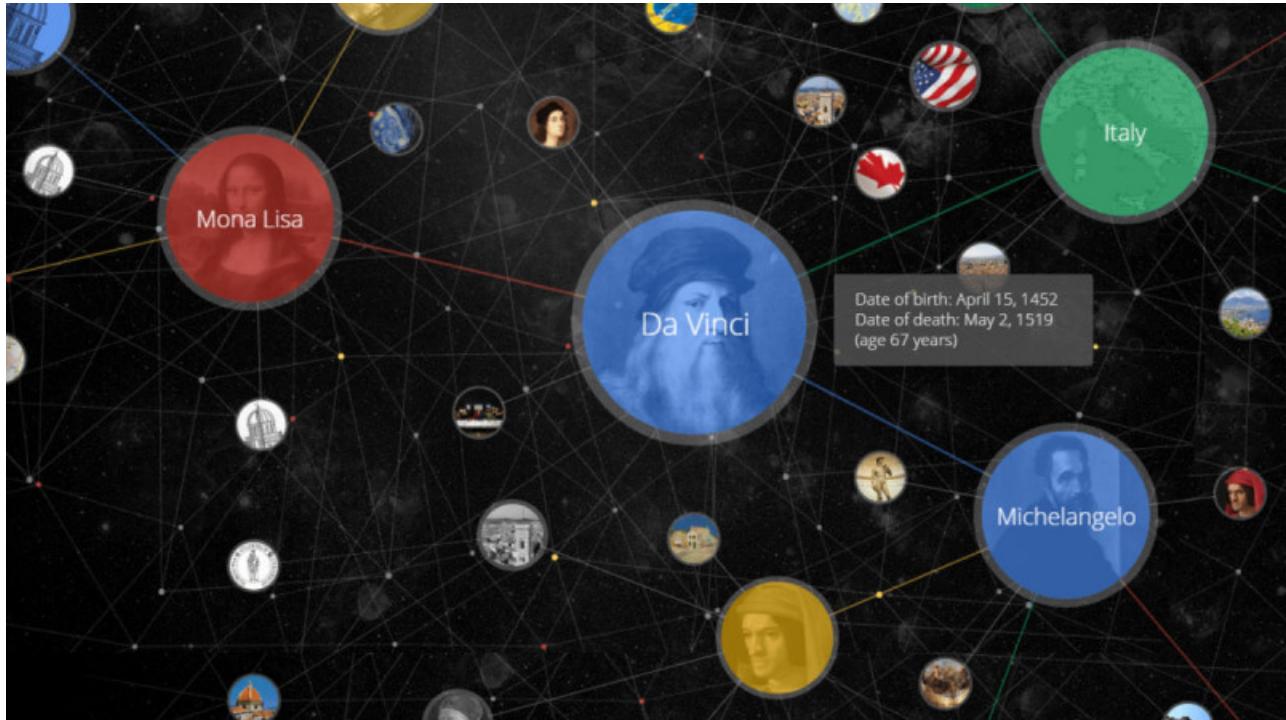
1

2

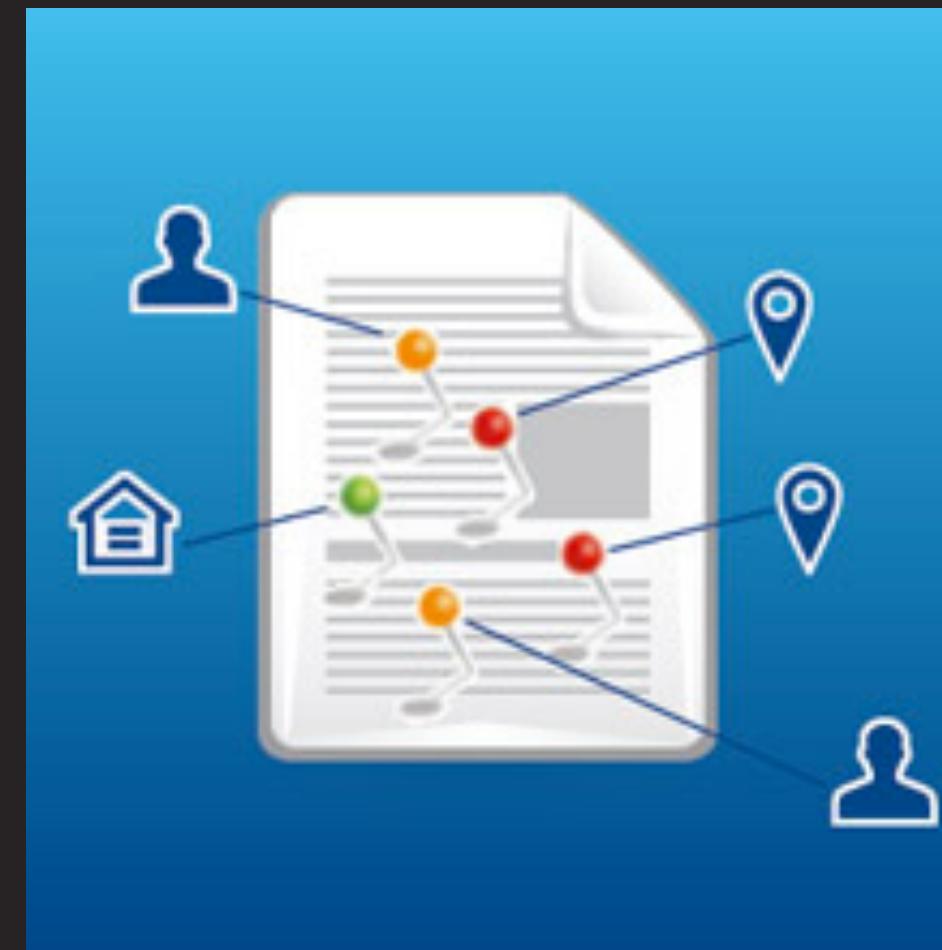
search result pulled from the knowledge graph

Goal: an open source knowledge graph

We want an open source, probabilistic, queryable version of what Google has. What Linux was to AT&T Unix.



Here's how we might generate that.



Algorithmic fact checking

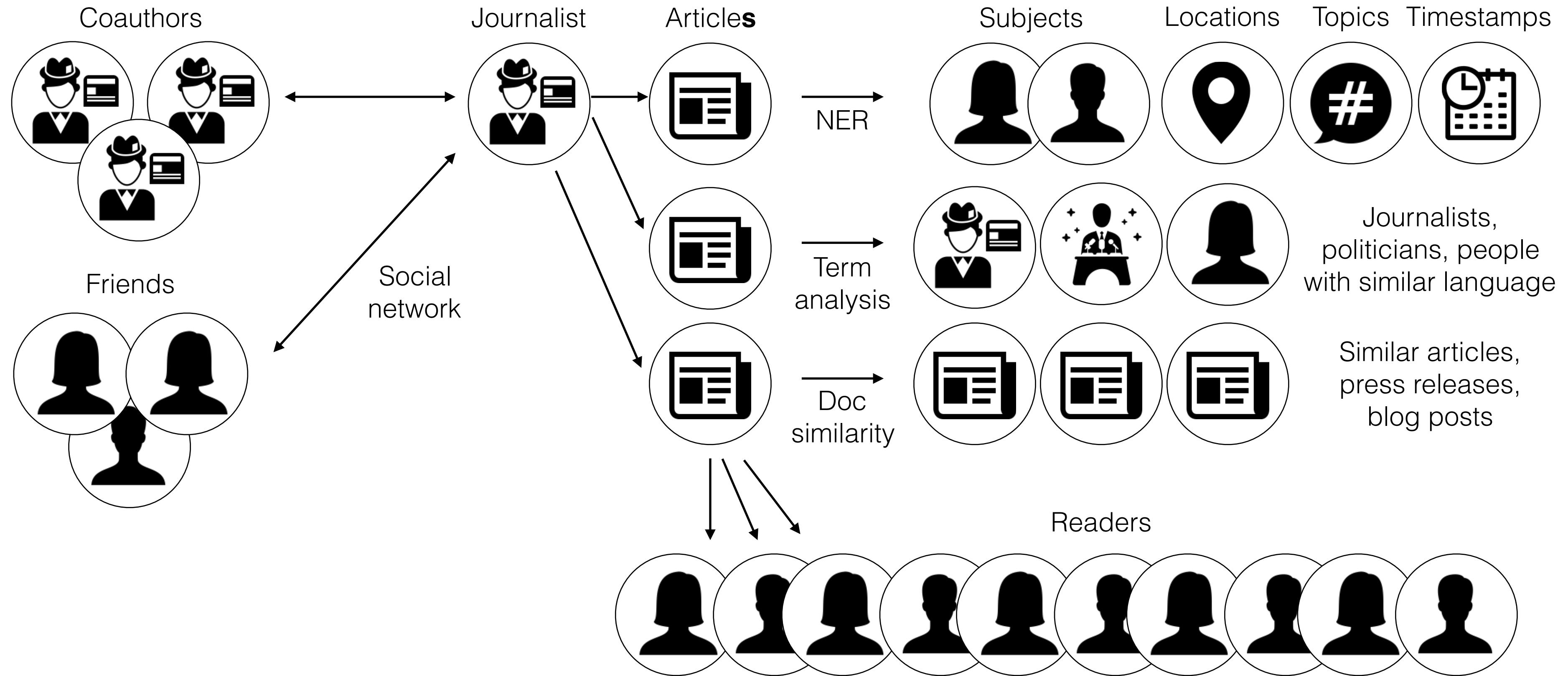
How to use NLP and friend relationships to fact check the feed

Overview

- If you simply mark legacy press as trusted, lose trust
- Instead, apply algorithmic checking to all news in the feed
- Build trust first, establish truth by triangulation

Concept: take in full context

Take in the full context of the reporter. Coauthors, friends, past articles, locations, topics, subjects, readers.



The Full Context

Can't assess truth of an article in isolation.
We need to use the full context.

Problem 1: Echo Chamber

- Many articles are rehashes of another piece
- Groupthink and plagiarism are on different ends of a continuum
- Solve by finding overlap and giving credit

Problem 1: Echo Chamber



Is Maureen Dowd Guilty of Plagiarism?

By Belinda Luscombe | Monday, May 18, 2009

Like 10

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Share

Read Later



Et tu, Ms. Dowd? Maureen Dowd, the love-her-or-hate-her Op-Ed columnist for the *New York Times*, scored one for the hate-her team on Saturday, when she got caught in an act of apparent plagiarism.

In her weekend column, Dowd sought to highlight the irony of the Republicans' holding House Speaker Nancy Pelosi's feet to the fire for not opposing Republican policies on torture aggressively enough. Interesting as this line of thinking might have been, it subsequently drowned in the backwash of controversy over her almost verbatim use of a 43-word paragraph that had already appeared in a column written by Josh Marshall on the political website Talking Points Memo. (Read about how to save your newspaper.)

New York Times columnist Maureen Dowd

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Three major publications have acknowledged plagiarism by Fareed Zakaria. Does CNN have no shame?



Ryan Cooper

SCIENCE

THE STATE OF THE UNIVERSE.

AUG. 31 2012 7:14 PM

Jonah Lehrer's Journalistic Misdeeds at Wired.com

An investigation reveals evidence of plagiarism, dodgy quotes, and factual inaccuracies.

By Charles Seife

710 0

Problem 1: Echo Chamber

The one word media outlets are using to describe Trump's speech

By NICK GASS | 07/22/16 08:47 AM EDT

 Share on Facebook

 Share on Twitter

In the national media's coverage of Donald Trump's marathon acceptance speech at the Republican National Convention, there was arguably one descriptor that ruled them all: "Dark."

The Dark, Resentful Voice Behind Trump's RNC Speech

Stephen Miller writes nonsense, soaked in blood.

By JIM NEWELL

SALON

TUESDAY, JULY 26, 2016 08:47 AM EDT

His dark materials: After that diabolical, masterful performance, Donald Trump could easily end up president

Score this: Trump's speech hits 7.5 on the Nuremberg scale, and the nightmare scenario inches closer to reality

By PHILIP BUMP AND AARON BLAKE

The Fix

Donald Trump's dark speech to the Republican National Convention, annotated

By PHILIP BUMP AND AARON BLAKE | JULY 21

Trump Paints Dark Portrait of Fading Nation Only He Can Save



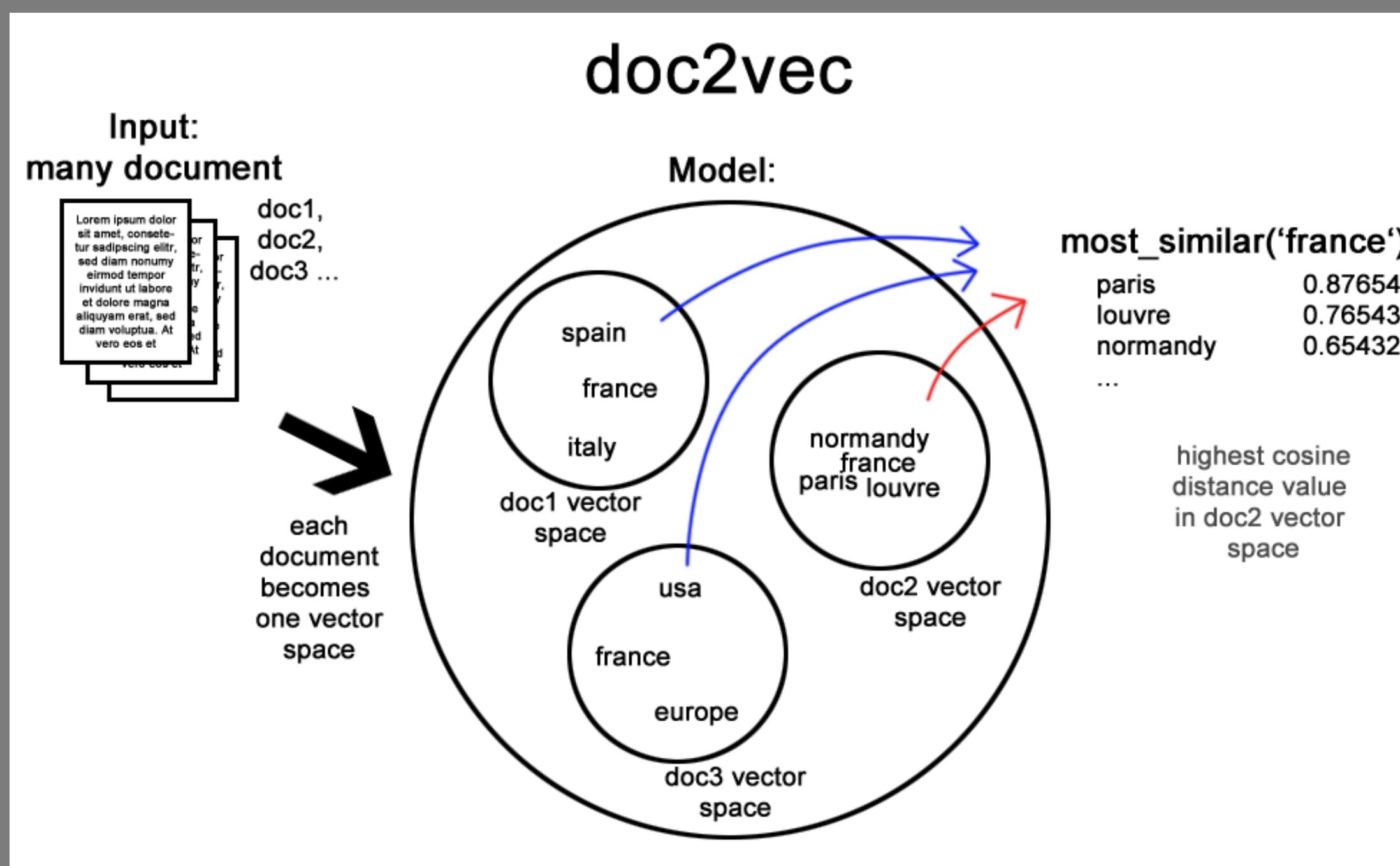
PHOTOGRAPH BY JEFF KOWALSKY / GETTY IMAGES

PHOTOGRAPH BY JEFF KOWALSKY

Solution to Echo Chamber: Document Similarity and Anti-Plagiarism Tech

Using the cosine the similarity between document d_j and query q can be calculated as:

$$\text{sim}(d_j, q) = \frac{\mathbf{d}_j \cdot \mathbf{q}}{\|\mathbf{d}_j\| \|\mathbf{q}\|} = \frac{\sum_{i=1}^N w_{i,j} w_{i,q}}{\sqrt{\sum_{i=1}^N w_{i,j}^2} \sqrt{\sum_{i=1}^N w_{i,q}^2}}$$



turnitin

feedback studio™

Similarity checking, online feedback, and rubric grading tools for evaluating student work

Problem 2: Familiarity

- Some journalists quote their friends
- Others are very far from subjects and readers
- Solve by showing social network distance

Problem 2: Familiarity (Too close)

site:nytimes.com gardiner harris steve nissen



All News Videos Maps Images More Search tools

About 74 results (0.52 seconds)

A Face-Off on the Safety of a Drug for Diabetes - The New York Times

www.nytimes.com/2010/02/23/health/23niss.html

Feb 22, 2010 - By GARDINER HARRIS FEB. ... Three years ago, Dr. Steven E. Nissen, a cardiologist at the Cleveland Clinic, conducted a landmark study that ...

Warning Urged on Stimulants Like Ritalin - The New York Times

www.nytimes.com/2006/02/10/health/.../warning-urged-on-stimulants-like-ritalin.html

Feb 10, 2006 - By GARDINER HARRIS FEB. ... the harm they may cause," said Dr. Steven Nissen, a cardiologist at the Cleveland Clinic and a panel member.

F.D.A. Orders Strong Warnings on Stimulants - The New York Times

www.nytimes.com/2006/08/21/health/21cnd-fda.html?hp&ex...en...ei...

Aug 21, 2006 - By GARDINER HARRIS AUG. ... Dr. Steven E. Nissen, chairman of the cardiology department at the Cleveland Clinic Foundation and a ...

New F.D.A.: Transparency and Flexibility - The New York Times

www.nytimes.com/2010/09/25/health/policy/25avandia.html

Sep 24, 2010 - By GARDINER HARRIS SEPT. ... Some of the changes have been driven by people like Dr. Steven Nissen, a cardiologist at the Cleveland ...

Years Ago, Agency Was Warned of a Drug's Risks - The New York Times

www.nytimes.com/2007/05/24/business/24drug.html

May 24, 2007 - By STEPHANIE SAUL and GARDINER HARRIS MAY 24, 2007 ... the influential Cleveland Clinic heart specialist Dr. Steven E. Nissen, warned ...

Warning Urged on Stimulants Like Ritalin

By GARDINER HARRIS FEB. 10, 2006

"I must say that I have grave concerns about the use of these drugs and grave concerns about the harm they may cause," said Dr. Steven Nissen, a cardiologist at the Cleveland Clinic and a panel member.

Doctor Faces Suits Over Cardiac Stents

By GARDINER HARRIS DEC. 5, 2010

"What was going on in Baltimore is going on right now in every city in America," said Dr. Steven Nissen, chief of cardiovascular medicine at the Cleveland Clinic, who said he routinely treats patients who have been given multiple unneeded stents. "We're spending a fortune as a country on procedures that people don't need."

Study Questions Treatment Used in Heart Disease

By GARDINER HARRIS MAY 26, 2011

"This study shows that approving drugs and allowing them to stay on the market on the basis of how they affect lipids and other biomarkers is not good policy," said Dr. Steven Nissen, chairman of cardiovascular medicine

Problem 2: Familiarity (Too far)

Want to Know What America's Thinking? Try Asking



Liz Spayd
THE PUBLIC EDITOR NOV. 9, 2016



The real quote comes from a speech Kael delivered at the Modern Language Association, on Dec. 28, 1972, as cited by the New York Times (Via Wikipedia):

"I live in a rather special world. I only know one person who voted for Nixon. Where they are I don't know. They're outside my ken. But sometimes when I'm in a theater I can feel them."

Michael Moore Explains Correct Election Prediction: 'I am Trump's Demographic'



BY BRIDGET JOHNSON NOVEMBER 11, 2016

100 COMMENTS

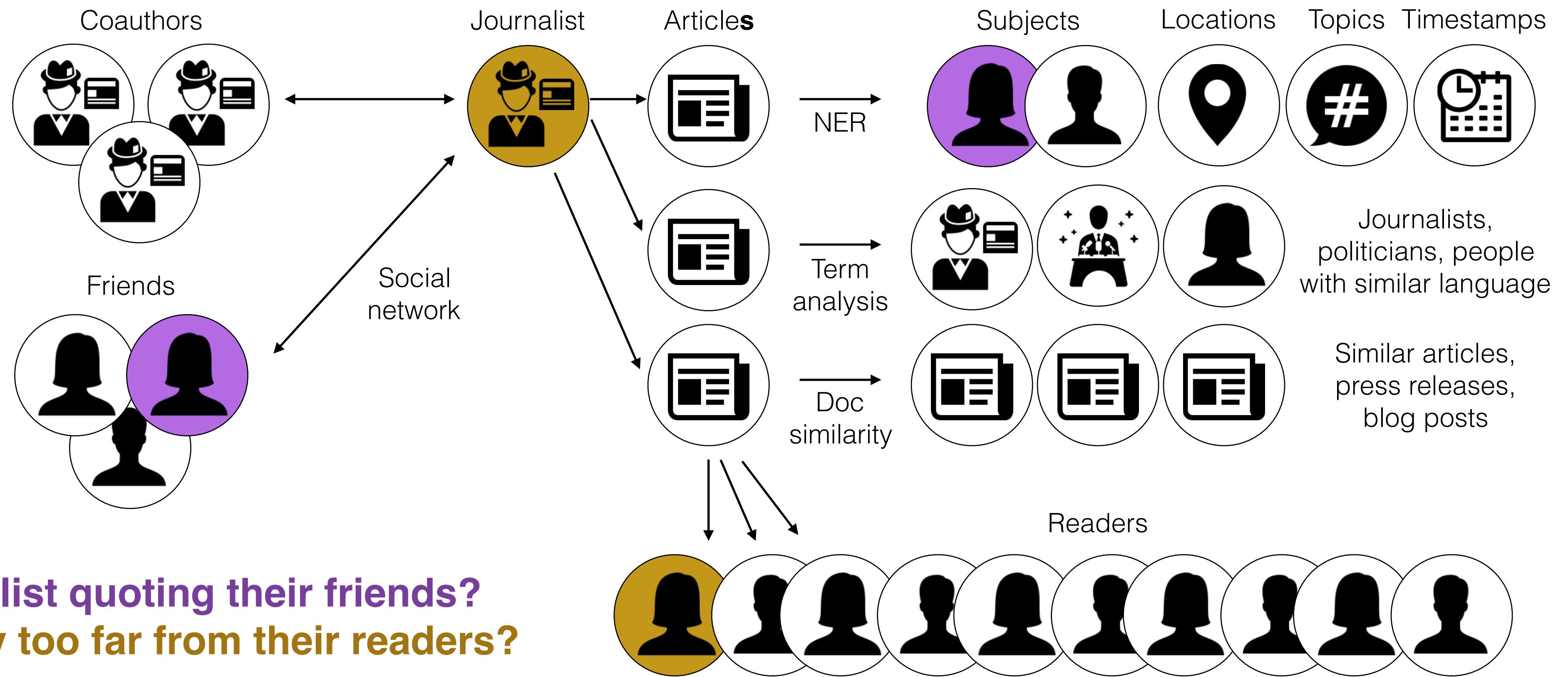


5 REASONS WHY TRUMP WILL WIN

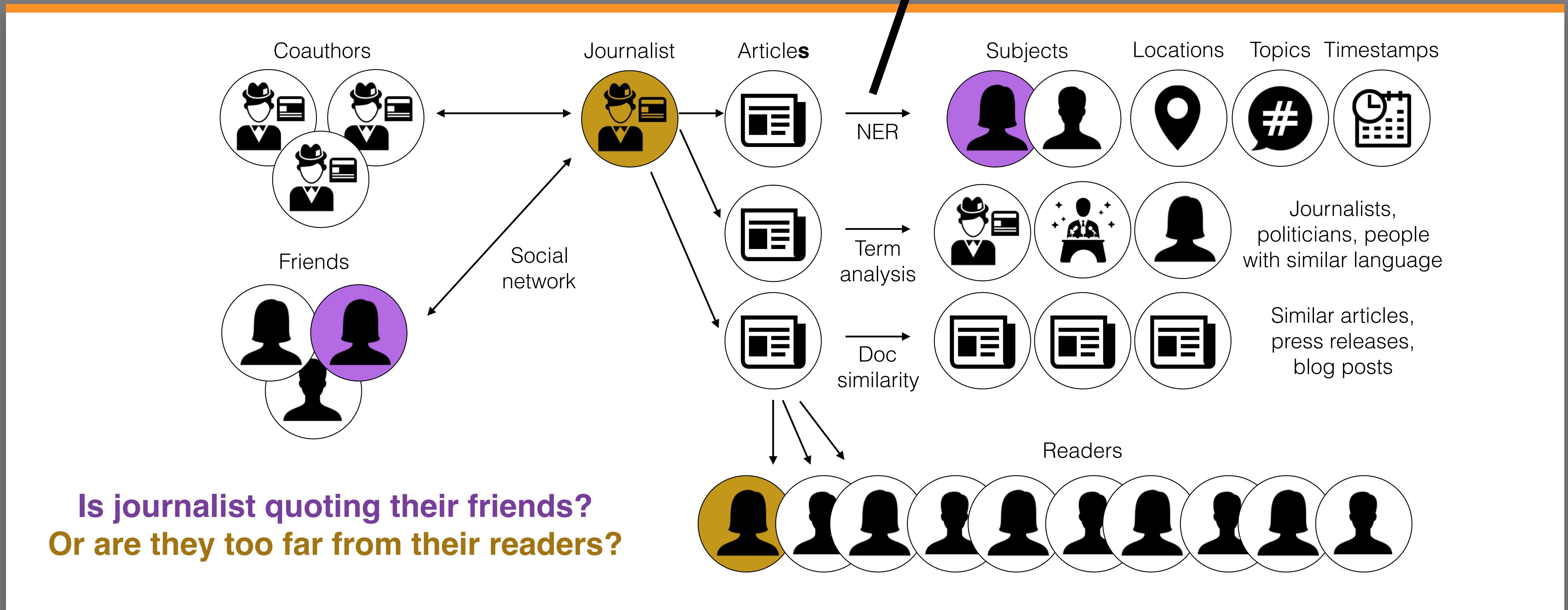
By Michael Moore

And this is where the math comes in. In 2012, Mitt Romney lost by 64 electoral votes. Add up the electoral votes cast by Michigan, Ohio, Pennsylvania and Wisconsin. It's 64. All Trump needs to do to win is to carry, as he's expected to do, the swath of traditional red states from Idaho to Georgia (states that'll **never** vote for Hillary Clinton), and then he just needs these four rust belt states. He doesn't need Florida. He doesn't need Colorado or Virginia. Just Michigan, Ohio, Pennsylvania and Wisconsin. And that will put him over the top. This is how it will happen in November.

Solution to Familiarity: Use NER, Show Social Network Distance



Solution to Familiarity: Use NER, Show Social Network Distance



Problem 3: Quote Distortion

- Many quotes are distorted or out of context
- They are then amplified to a large audience
- Solve by tagging users to let them respond inline

Problem 3: Quote Distortion

Facebook's fake news problem is way bigger than fake news

Algorithmic media consumption leaves readers lost at sea.

Updated by Matthew Yglesias | @mattyglesias | matt@vox.com | Nov 18, 2016, 9:00am EST

Origins of a mythical quote

Here's what happened:

- On November 8, Donald Trump won the US presidential election.
- On November 10, Nooyi spoke at a **New York Times DealBook conference**:
“Our employees were all crying. And the question that they're asking, especially who are not white, 'Are we safe?' Women are asking, 'Are we safe?' LGBT people are asking, 'Are we safe?' I never thought I would have to answer those questions.” She offered her employees reassurance: “What we heard was election talk.” She wasn't happy about the language Trump had used to address women, but it was a larger problem than Trump.
- Later that day, Business Insider's Kate Taylor wrote up the DealBook appearance with the headline **“PepsiCo CEO: Employees are scared for their safety after Trump’s election”** and offered what I would consider to be a fully accurate paraphrase of Nooyi's remarks about alarmed employees and her effort at deescalation.

- Then on November 13, the website **The Conservative Treehouse** read about **Nooyi's remarks and took exception to them**, writing the headline “Massive Stewardship Fail – PepsiCo CEO Tells Trump Supporters to Take Their Business Elsewhere.” The story does not say that Nooyi literally said Trump supporters should take their business elsewhere. It just says that Nooyi was critical of Trump (which she was), which means that Trump supporters should take their business elsewhere. But the headline — as is often the case with headlines — lacks any kind of nuance or clarity about what's really happening.
- Amy Moreno of TruthFeed then wrote a story called **“BREAKING: Pepsi STOCK Plummets After CEO Tells Trump Supporters to ‘Take Their Business Elsewhere.’”**

Now, at that point, Moreno has unleashed a whirlwind of falseness onto the world. Her headline has Nooyi, in quotation marks, saying something that she rather clearly didn't say. The story is false.

But it isn't “fake news” exactly. It's based on a real news event that has simply been aggregated and reaggregated, framed in different ways for different audiences. At some point in the telephone chain, the story goes from accurate to inaccurate. And the *method* is the same as the fake news method — maximum outrage, maximum engagement, minimum concern for context and accuracy.

Solution to Quote Distortion: Tag users directly and let them respond in the instant article so that everyone sees

CT **Conservative Tribune** November 16 at 2:40pm ·

Pepsi CEO [Indra Nooyi](#) made headlines after she smeared President-elect [Donald J. Trump](#) last week. Now she and the board of her company just got horrible news...
She definitely should have seen this one coming.

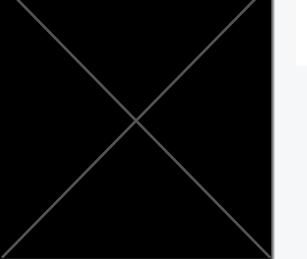


Pepsi CEO, Board Get Horrible News After Anti-Trump Remarks
Her remarks on Trump have cost her BIG TIME...
CONSERVATIVETRIBUNE.COM | BY WILMOT PROVISO

2.7K 624 Comments 514 Shares

Like Comment Share

 **Indra Nooyi**
Public Figure · 32,675 like this
Indra Nooyi, Chairman and Chief Executive Officer of PepsiCo.
 Like

 **Satoshi Nakamoto** tagged you in a post. To add this to your timeline, go to [Timeline Review](#).
November 12 at 11:16am

Instant Articles
A new way for publishers to create fast, interactive stories on Facebook

=
Allows public figures to respond inline

Solution to Quote Distortion: Here's how that could look.

glossily groomed speaker was just another "Miss California U.S.A." who's also been revealing a little too much of herself."

It's discomfiting to think that the woman who's making Joe Biden seem suave is second in line to the presidency.

Of course, a lot of the hoo-ha around Pelosi makes it sound as if she knew stuff that no one else had any inkling of, when in fact the entire world had a pretty good idea of what was happening. The Bushies plied their dark arts in broad daylight.

Besides, the question of what Pelosi knew or didn't, or when she did or didn't know, is irrelevant to how W. and Cheney broke the law and authorized torture.

Philip Zelikow, who was State Department counselor for Condi Rice and executive director of the 9/11 Commission, testified last week before Congress that torture was "a collective failure and it was a mistake," perhaps "a disaster."

After 9/11, he recalled, "the tough, gritty world of 'the field' worked its way into the consciousness of the nation's leaders. ... The cultural divide between the world of secretive, bearded operators in the field coming from their 3 a.m. meetings at safe houses, and the world of Washington policy makers in their wood-paneled suites" led the policy makers to become too deferential to C.I.A. operatives, and miss the fact that even they disagreed about torture.

Ali Soufan, the ex-F.B.I. agent who flatly calls torture "ineffective," helped get valuable information from Abu Zubaydah, an important Al Qaeda prisoner,

COMMUNITY ANNOTATION

Add your own annotation!

 Philip Zelikow 200 verified annotation

Ms. Dowd takes my quote out of context here – here's my full quote:

"This is now a historical problem. Our country quit doing this some time ago. I think that a lot of people agree with me in judging that this program was a mistake — a pretty big mistake. It was a collective failure. A lot of people in both parties of this country convinced themselves for years that we needed a program like this to protect America.

And so one of the reasons I support some kind of inquiry is to comprehend why so many people believed that a program like this was a good idea — since we now believe it was a mistake, o we can learn from the mistake. When there is this kind of collective failure, we need to learn from what happened.

My point was the exact opposite of what Ms. Dowd asserts here – that our torture policies were a *collective* failure, rather than one on the part of Cheney and the GOP alone. What Ms. Pelosi knew or didn't know, and when, when *is* relevant.

  Share ADDED 3 HOURS AGO Leave a comment

Problem 4: Expertise

- Many journalists are generalists, not specialists
- Often, specialist information is distorted or inaccurate
- Solve by tagging experts and asking for comment

Problem 4: Lack of Expertise

Michael Crichton > Quotes > Quotable Quote



“Briefly stated, the Gell-Mann Amnesia effect is as follows. You open the newspaper to an article on some subject you know well. In Murray's case, physics. In mine, show business. You read the article and see the journalist has absolutely no understanding of either the facts or the issues. Often, the article is so wrong it actually presents the story backward—reversing cause and effect. I call these the "wet streets cause rain" stories. Paper's full of them. In any case, you read with exasperation or amusement the multiple errors in a story, and then turn the page to national or international affairs, and read as if the rest of the newspaper was somehow more accurate about Palestine than the baloney you just read. You turn the page, and forget what you know.”

Problem 4: Lack of Expertise

Michael Crichton > Quotes > Quotable Quote



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and then turn the page to national or international news. You wonder if the newspaper was somehow more accurate.

You turn the page, and forget what you

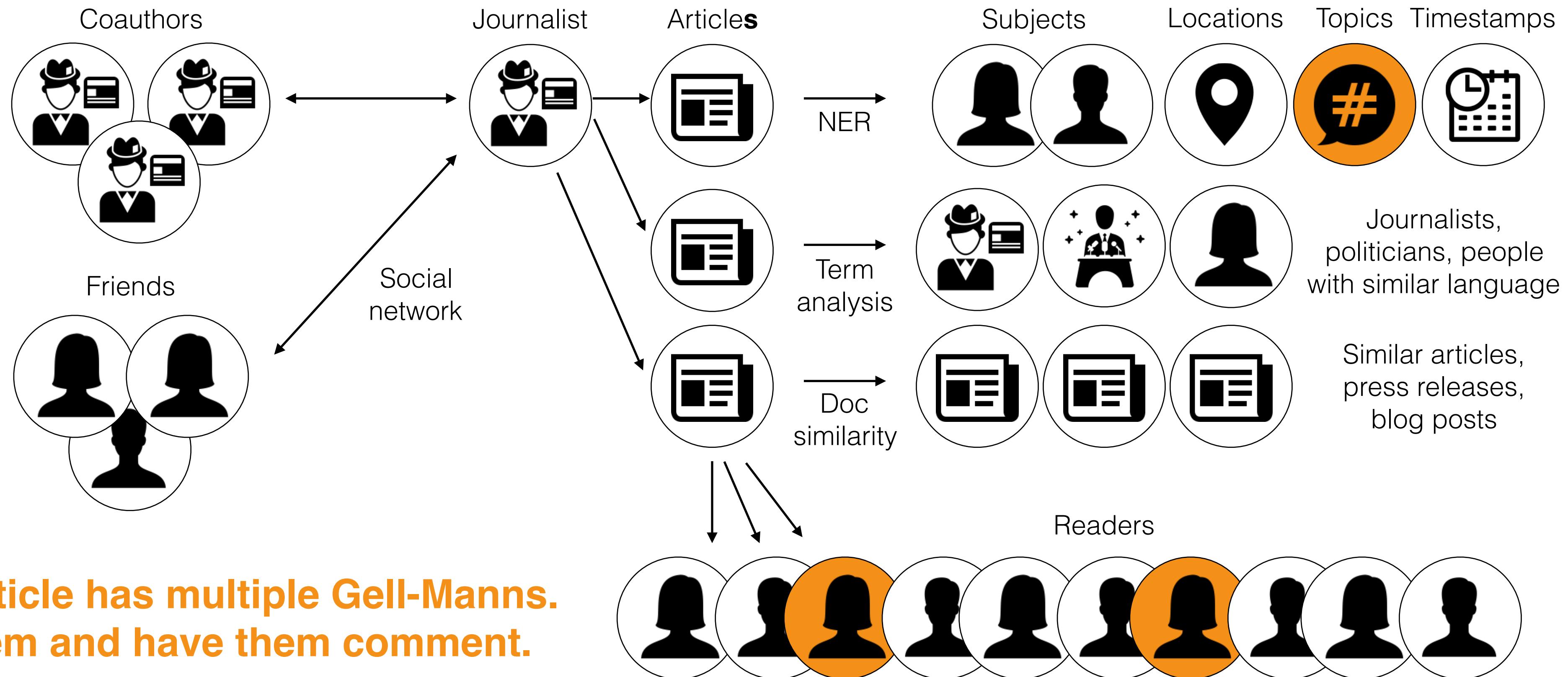
Malcolm Gladwell, Eclectic Detective

By STEVEN PINKER

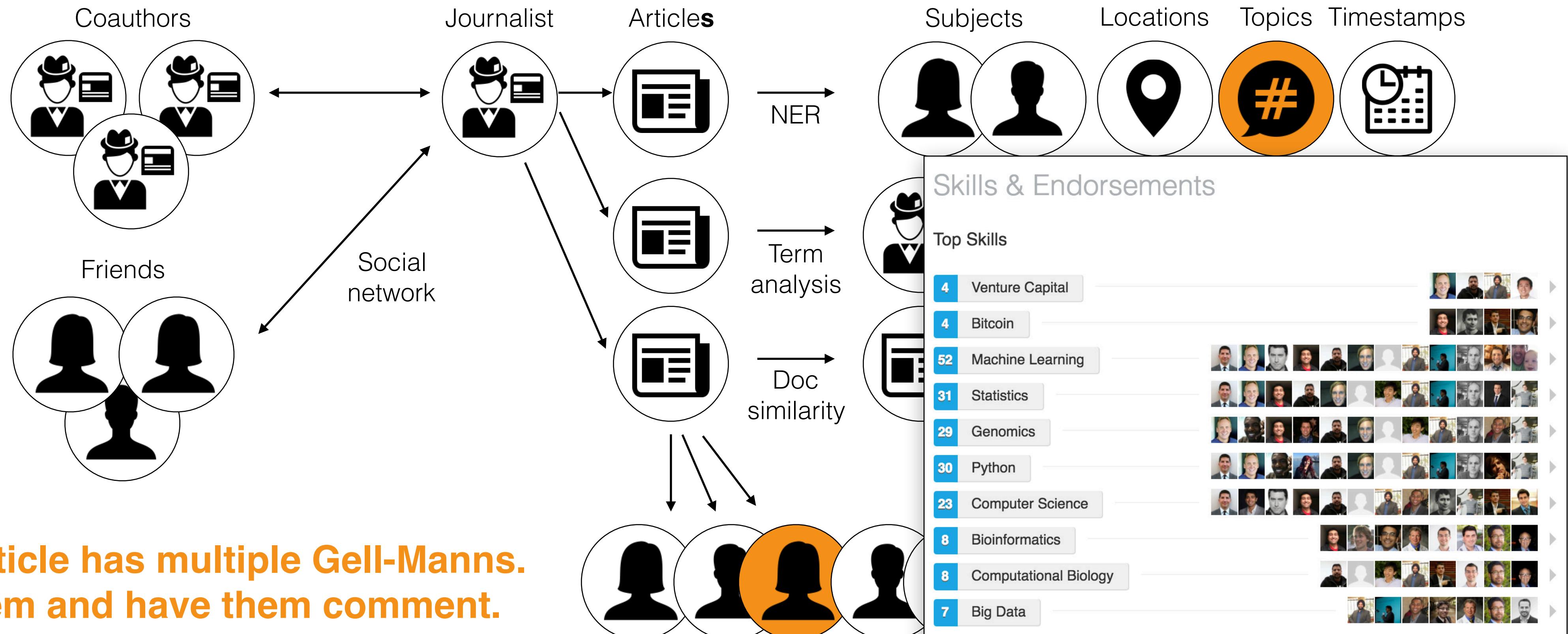
Published: November 7, 2009

An eclectic essayist is necessarily a dilettante, which is not in itself a bad thing. But Gladwell frequently holds forth about statistics and psychology, and his lack of technical grounding in these subjects can be jarring. He provides misleading definitions of “homology,” “sagittal plane” and “power law” and quotes an expert speaking about an “igong value” (that’s eigenvalue, a basic concept in linear algebra). In the spirit of Gladwell, who likes to give portentous names to his aperçus, I will call this the Igon Value Problem: when a writer’s education on a topic consists in interviewing an expert, he is apt to offer generalizations that are banal, obtuse or flat wrong.

Solution to Lack of Expertise: Tag experts and have them comment



Solution to Lack of Expertise: Can find experts by Linked-in style peer annotation



Solution to Lack of Expertise: Can also find experts by document clustering



Insert your title and/or abstract here: (or, click [here](#) to search using keywords)

PURPOSE:

Recent developments in genomics have led to expanded carrier screening panels capable of assessing hundreds of causal mutations for genetic disease. This new technology enables simultaneous measurement of carrier frequencies for many diseases. As the resultant rank-ordering of carrier frequencies impacts the design and prioritization of screening programs, the accuracy of this ranking is a public health concern.

METHODS:

A total of 23,453 individuals from many obstetric, genetics, and infertility clinics were referred for routine recessive disease carrier screening. Multiplex carrier screening was performed and results were aggregated for this study.

RESULTS:

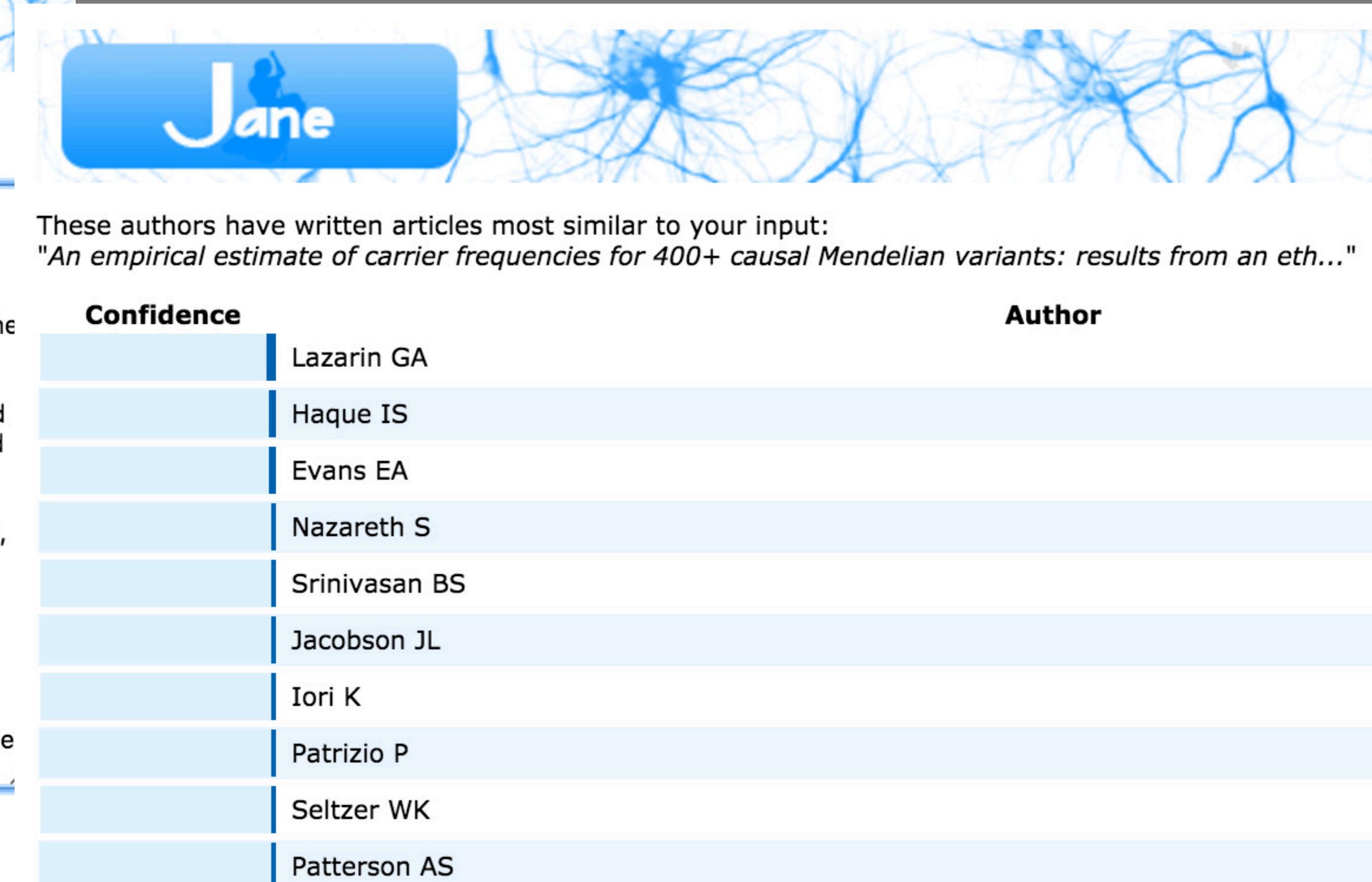
Twenty-four percent of individuals were identified as carriers for at least one of 108 disorders, and 5.2% were carriers for multiple disorders. We report tabulations of carrier frequency by self-identified ethnicity and disease.

CONCLUSION:

To our knowledge, this study of a large, ethnically diverse clinical sample provides the most accurate measurements to date of carrier frequencies for hundreds of recessive alleles. The study also yields information on the clinical considerations associated with routine use of expanded panels and provides support for a pan-ethnic screening paradigm that minimizes the use of "racial" categories by the physician, as recommended by recent guidelines.

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Problem 5: Unconscious Bias

- Journalists are human and often have unconscious biases
- Often, they enter unconsciously via the use of language
- Solve by tagging experts and asking for comment

Problem 5: Unconscious bias

Letters to the Editor

Language that revealed The Post's political bias

at

Two editorials in the March 6 Post highlighted a bias in the choice of words used to describe Republicans and Democrats and their positions. In "[The price of governing](#)," the Democrats who find the "decidedly liberal" Chicago Mayor Rahm Emanuel not "liberal" enough were referred to, benignly, as "party purists." On the other hand, in "[To the right](#)," the Virginia Republicans who supposedly control the party apparatus are referred to, pejoratively, as "hard-line conservatives" who seek to nominate "hard-line" and "ideological" candidates.

Does The Post think that only the Republican Party has hard-liners and ideologues? From where I sit, many Democrats would merit those labels — Sen. Elizabeth Warren (D-Mass.), for example.

The New York Times Magazine

How 'Bias' Went From a Psychological Observation to a Political Accusation

First Words

By EMILY BAZELON OCT. 18, 2016



Solution to Unconscious bias: Label based on most similar labeled partisan

Shedding (a Thousand Points of) Light on Biased Language

Tae Yano

School of Computer Science
Carnegie Mellon University
Pittsburgh, PA 15213, USA
taey@cs.cmu.edu

Philip Resnik

Department of Linguistics and UMIACS
University of Maryland
College Park, MD 20742, USA
resnik@umiacs.umd.edu

Noah A. Smith

School of Computer Science
Carnegie Mellon University
Pittsburgh, PA 15213, USA
nasmith@cs.cmu.edu

Abstract

This paper considers the linguistic indicators of bias in political text. We used Amazon Mechanical Turk judgments about sentences from American political blogs, asking annotators to indicate whether a sentence showed bias, and if so, in which political direction and through which word tokens. We also asked annotators questions about their own political views. We conducted a preliminary analysis of the data, exploring how different groups perceive bias in different blogs, and showing some lexical indicators strongly associated with perceived bias.

- To what extent a sentence or clause is biased (none, somewhat, very);
- The nature of the bias (very liberal, moderately liberal, moderately conservative, very conservative, biased but not sure which direction); and
- Which words in the sentence give away the author's bias, similar to "rationale" annotations in Zaidan et al. (2007).

For example, a participant might identify a moderate liberal bias in this sentence,

Solution to Unconscious bias: Label based on most similar labeled partisan

Shedding (a Thousand Points of) Light on Biased Language

Tae Yano

School of Computer Science
Carnegie Mellon University
Pittsburgh, PA 15213, USA
taey@cs.cmu.edu

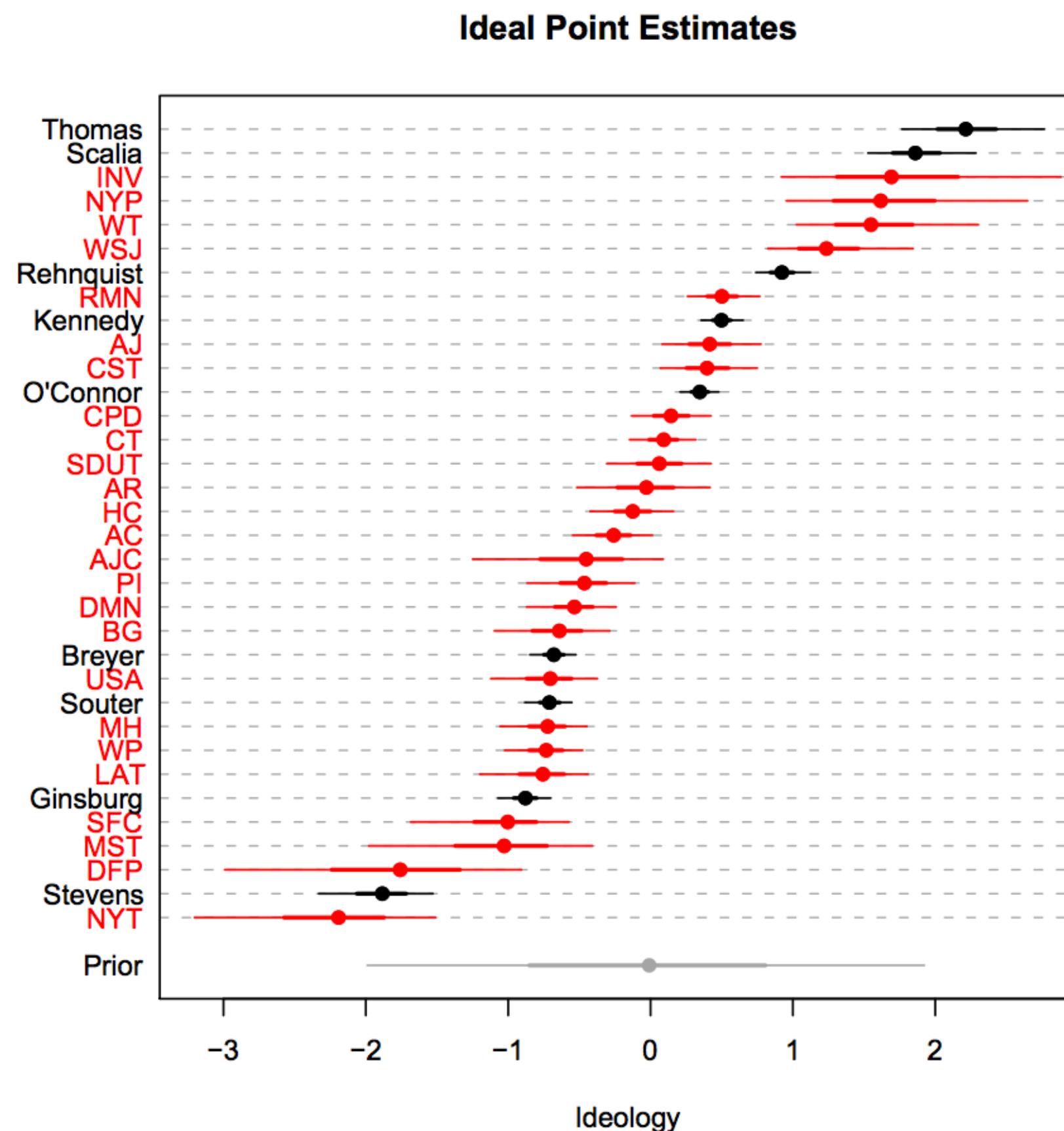
Philip Resnik

Department of Linguistics and UMIACS
University of Maryland
College Park. MD 20742. USA

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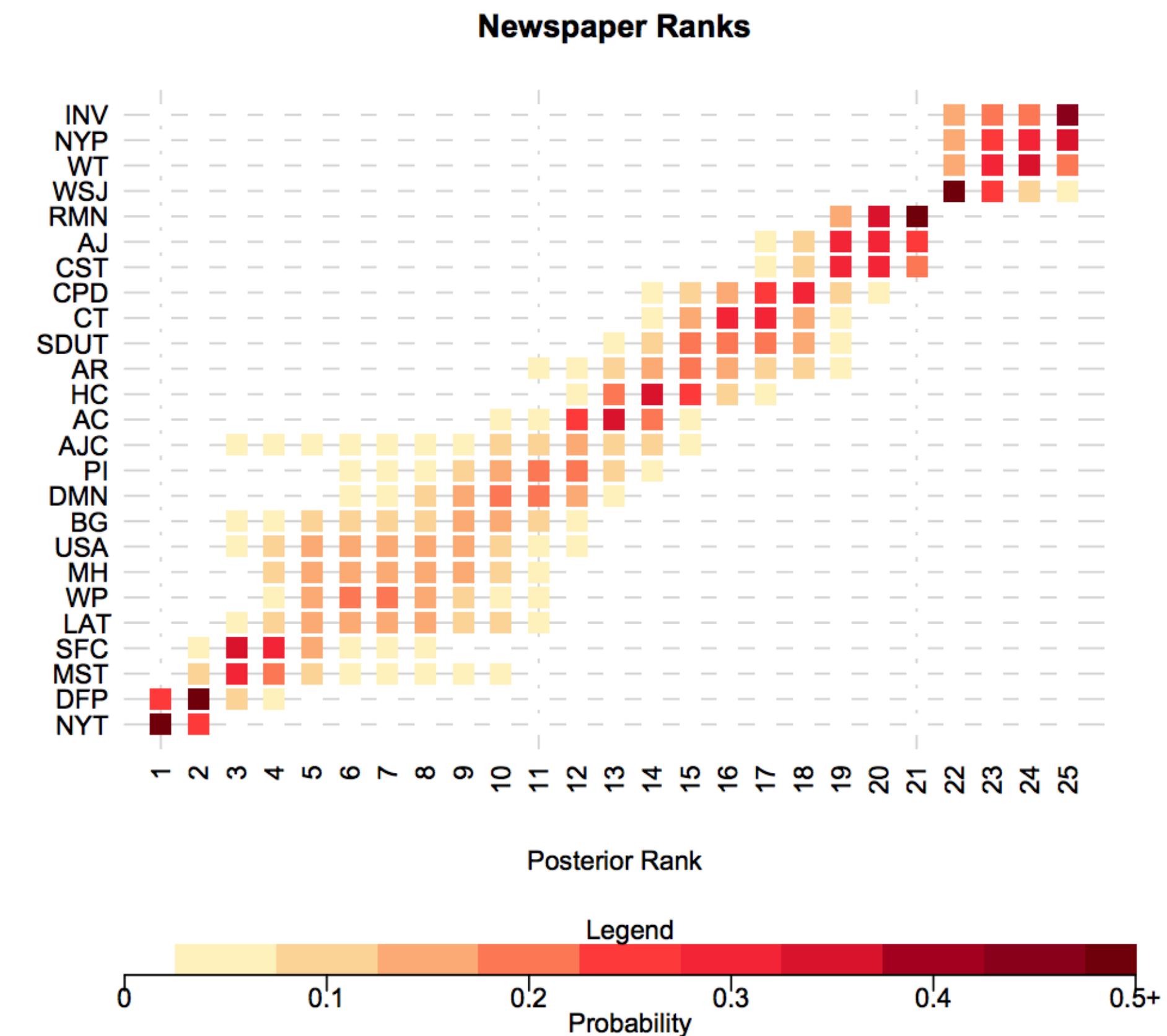
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This paper considers the linguistic indicators of in political text. We used Amazon Mechanical judgments about sentences from American political blogs, asking annotators to indicate whether a sentence showed bias, and if so, in which political direction and through which word tokens. We asked annotators questions about their own political views. We conducted a preliminary analysis of the data, exploring how different groups perceive bias in different blogs, and showing some lexical indicators strongly associated with perceived bias.



The Spatial Model of Voting: Theory and Empirics

CSLS Empirical Methods Workshop



Problem 6: Omission of Context

- Journalists often have editorial pressure for a narrative
- This can mean omission of context
- Solve by engaging users to provide primary evidence

Problem 6: Omission of Context

A Muted Beginning to Sales of Apple's iPhone Through China Mobile

By ERIC PFANNER JAN. 17, 2014



Timothy D. Cook, center left, Apple's chief executive, with Xi Guohua, the chairman of China Mobile, on Friday in Beijing. Alexander F. Yuan/Associated Press

A hint of the challenges was apparent on Friday, when customers were finally able to buy iPhones from China Mobile. At a store in Beijing, only about a dozen customers showed up to buy iPhones, despite the appearance of Timothy D. Cook, Apple's chief executive. It was a far cry from the long lines that usually accompany a big introduction in the United States

Problem 6: Omission of Context

A Muted Beginning to Sales of Apple's iPhone Through China Mobile

By ERIC PFANNER JAN. 17, 2014



Timothy D. Cook, center left, Apple's chief executive, with Xi Guohua, the chairman of China Mobile, on Friday in Beijing. Alexander F. Yuan/Associated Press

A hint of the challenges was apparent on Friday, when customers were finally able to buy iPhones from China Mobile. At a store in Beijing, only about a dozen customers showed up to buy iPhones, despite the appearance of Timothy D. Cook, Apple's chief executive. It was a far cry from the long lines that usually accompany a big introduction in the United States

Photos of the launch of Apple's iPhone at China Mobile

by Philip Elmer-DeWitt @philiped JANUARY 17, 2014, 2:01 PM EST

With those caveats in mind, let's look at a selection of photos taken around China Friday and collected on [Flickr](#) by Jahangir Naina, an IT specialist living in Singapore.



Solution to Omission of Context: Tag Spatiotemporally proximal users for comment

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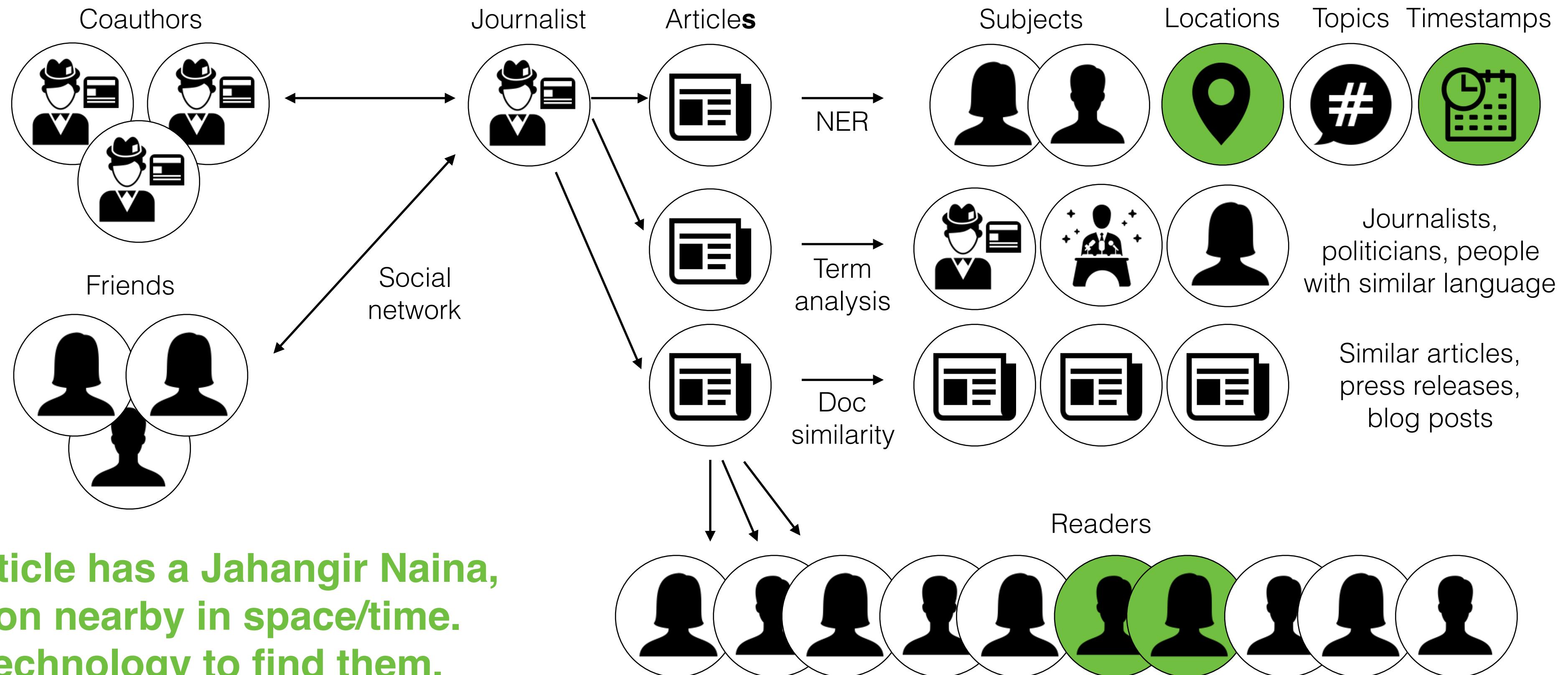
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Net Result

- All citizens have ability to check facts
- Writers get quantitative boxscore, rebuild trust
- Users can participate in a truly social media

Summary

1. Determination of truth is upstream of everything
2. The ledger of record is actually part 2
3. Algorithmic fact checking is part 1
4. Parse the assertions before we write them on chain

Next Steps

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