

# Fact Checking and Information Retrieval

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School of Information  
The University of Texas at Austin

Lab: [ir.ischool.utexas.edu](http://ir.ischool.utexas.edu)

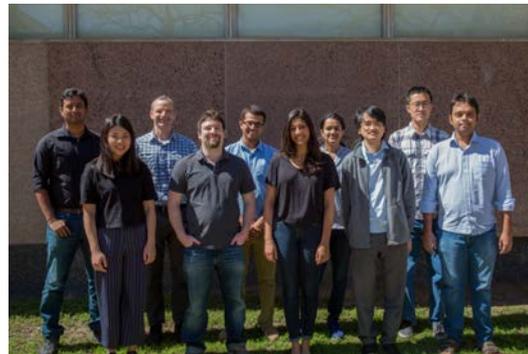
 @mattlease

Slides: [slideshare.net/mattlease](https://slideshare.net/mattlease)

# Information Retrieval & Crowdsourcing Lab

<http://ir.ischool.utexas.edu>

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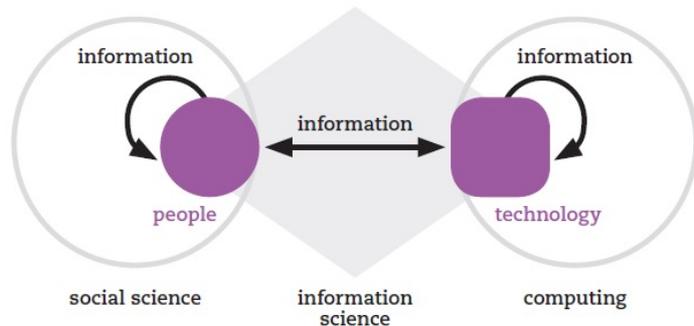
- Improve accuracy of **AI** prediction models
- Develop effective *human-in-the-loop* systems
- Design **HCI** methods for fast, accurate human work



# What's an Information School?

*“The place where people & technology meet”*

~ [Wobbrock et al., 2009](#)



**“iSchools” now exist at over 100 universities around the world**

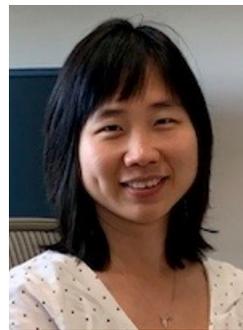
# Good Systems: an 8-year, \$10M UT Austin Grand Challenge

**Goal:** Design a future of Artificial Intelligence (AI) technologies to meet society's needs and values.



<http://goodsystems.utexas.edu>

# Good Systems: Disinformation Team



<https://sites.google.com/view/ut-misinformation-ai/>

# Eureka



<https://eureka.utexas.edu/>

Eureka is a searchable database supporting undergraduate participation in research and creative activity across The University of Texas at Austin. Students can **find faculty members** who regularly work on a given topic using the "Faculty" search, or browse a **listing of posted research assistantships** with the "Projects" search.

# Information Literacy

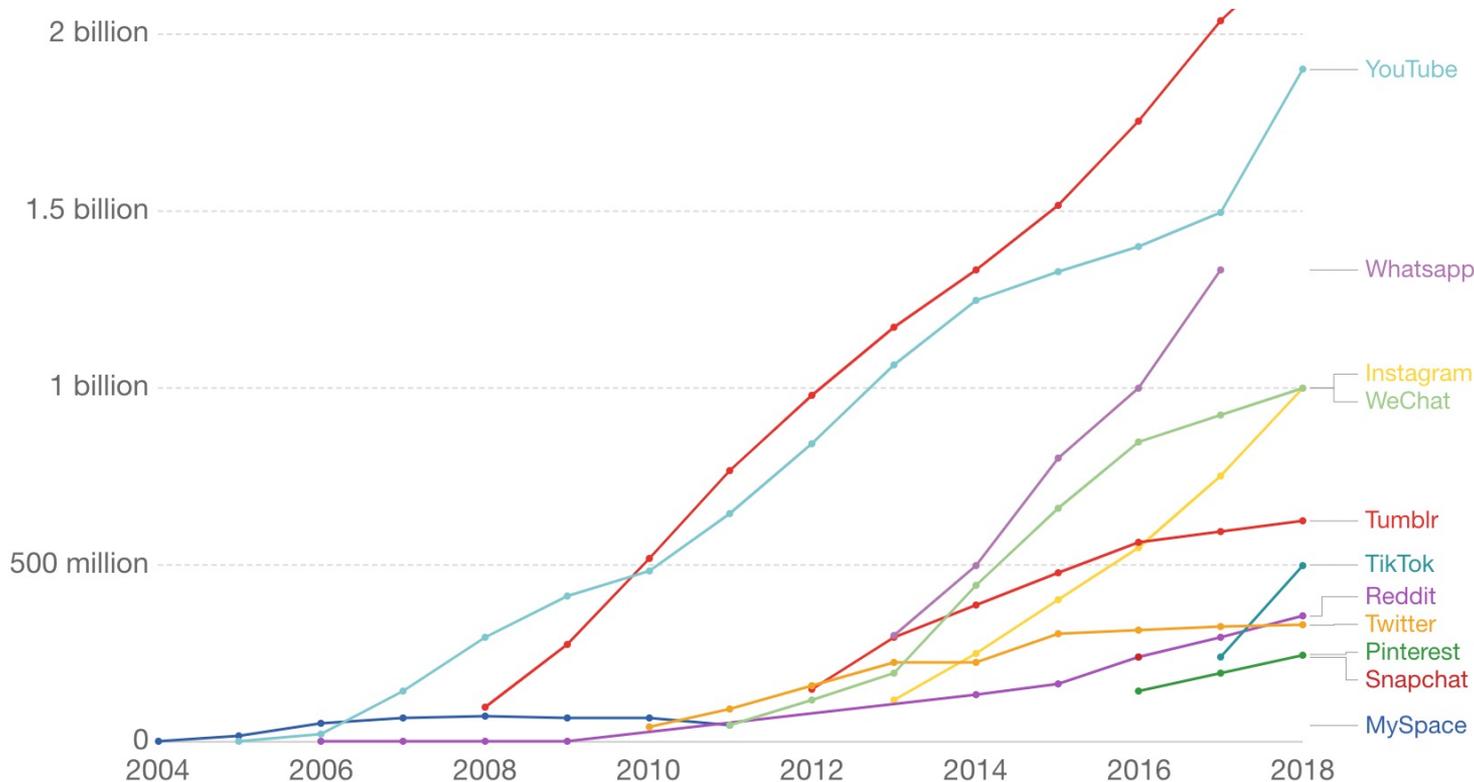
*National Information Literacy Awareness Month,  
US Presidential Proclamation, October 1, 2009.*



**“Though we may know how to find the information we need, we must also know how to evaluate it. Over the past decade, we have seen a crisis of authenticity emerge. We now live in a world where anyone can publish an opinion or perspective, true or not, and have that opinion amplified...”**

# Number of people using social media platforms

Estimates correspond to monthly active users (MAUs). Facebook, for example, measures MAUs as users that have logged in during the past 30 days. See source for more details.



# The Need for Content Moderation

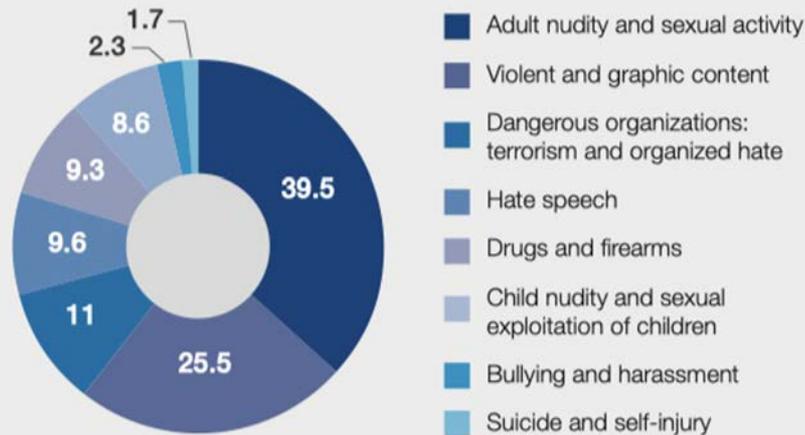
## YouTube videos removed

These figures are for the fourth quarter of 2019, the most recent available data.



## Facebook removals other than fake accounts and spam\*

First quarter of 2020, in millions.



\*Includes some content that is covered but not removed.

## TYPES OF INFORMATION DISORDER

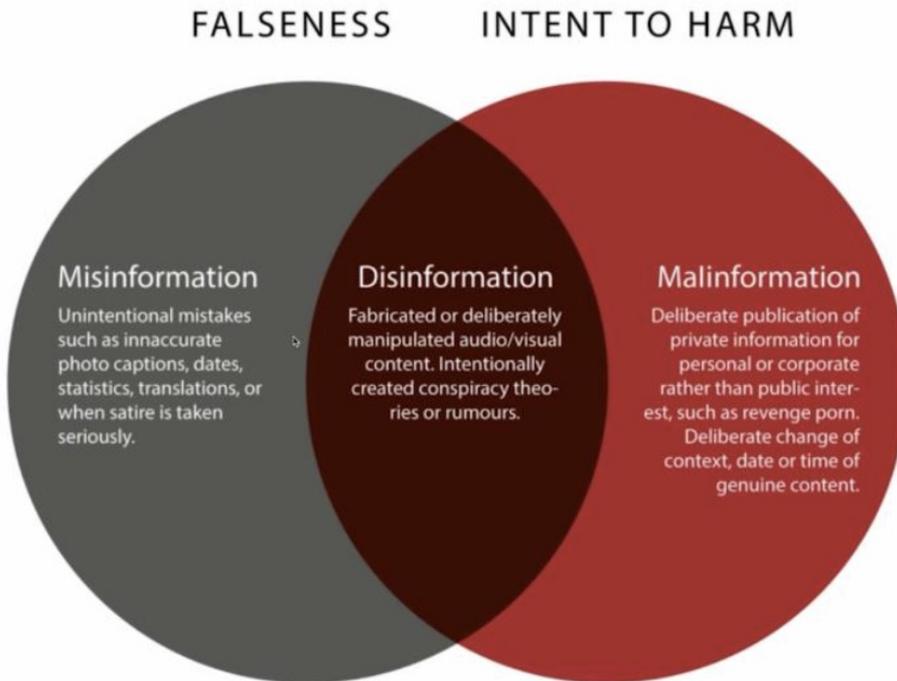


Table 1. Comparison Between Concepts Related to Fake News

<b>Concept</b>	<b>Authenticity</b>	<b>Intention</b>	<b>News?</b>
Deceptive news	Non-factual	Mislead	Yes
False news	Non-factual	Undefined	Yes
Satire news	Non-unified <sup>2</sup>	Entertain	Yes
Disinformation	Non-factual	Mislead	Undefined
Misinformation	Non-factual	Undefined	Undefined
Cherry-picking	Commonly factual	Mislead	Undefined
Clickbait	Undefined	Mislead	Undefined
Rumor	Undefined	Undefined	Undefined

The FAKE  
NEWS media ...  
is not my enemy,  
it is the enemy of  
the American  
People!

- Trump



Feb. 17, 2017



“Fake news” outperformed real news  
on Facebook in the 2016 U.S. elections



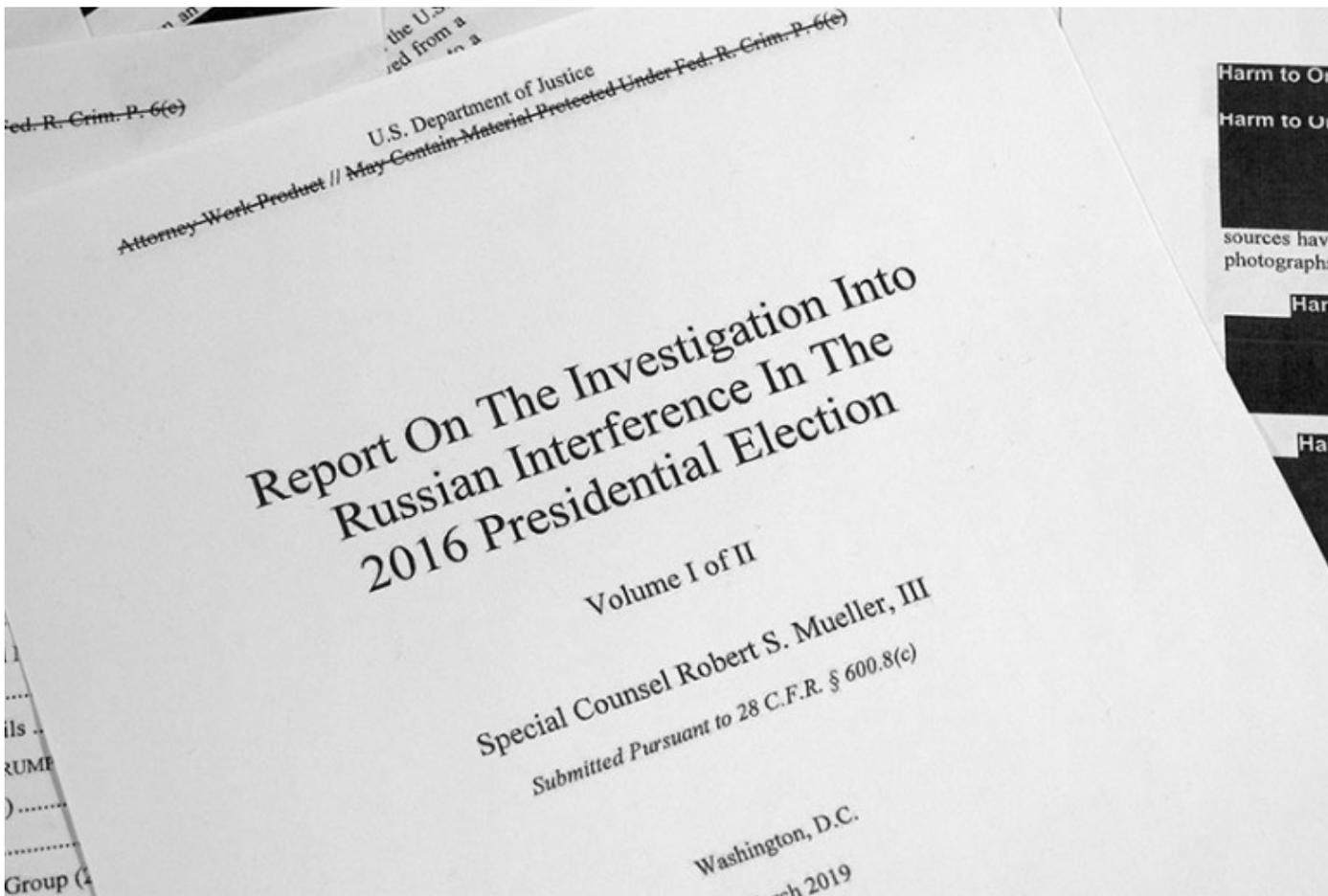
“Fake news” has led to violence



Seeing the term “fake news” prompts  
confusion about real news



Efforts to reduce “fake news” are not  
always successful



# Mis/Disinformation: a long history

*“Truthiness is tearing apart our country... It used to be, everyone was entitled to their own opinion, but not their own facts. But that’s not the case anymore.”*

– Stephen Colbert (Jan. 25, 2006)



“You furnish the pictures and I’ll furnish the war.”

– William Randolph Hearst (Jan. 25, 1898)



How can we **help**  
**people** separate fact  
from fiction on  
**social media**?

# Fact-checking



**Greg Abbott**

**POLITIFACT**

stated on April 11, 2021 in an interview:

**Texas “could be very close to herd immunity.”**

# Professional Fact-Checking



## TikTok posts

stated on July 26, 2021 in a TikTok post

**There is a “0.05% chance of dying from COVID.”**



By Gabrielle Settles · August 13, 2021



## Ken Paxton

stated on August 7, 2021 in an interview

**The Biden administration is “not even testing these people” being released by Border Patrol into the U.S.**



By Brandon Mulder · August 13, 2021



## Facebook posts

stated on August 10, 2021 in a Facebook post

**Says Gen. David H. Berger said, “No mandatory vaccinations for my Marines.”**



By Ciara O'Rourke · August 12, 2021

## High quality, but how do we scale up?



## CROWD-SOURCING TRUTH

Participate in the revolutionary social media platform designed to discover the truth!



### Read Breaking Global News

Access trending and truthful news content with no clutter.



### Review News For Corrections

Easily highlight, mark, and correct a variety of news sources while earning Credcoin.

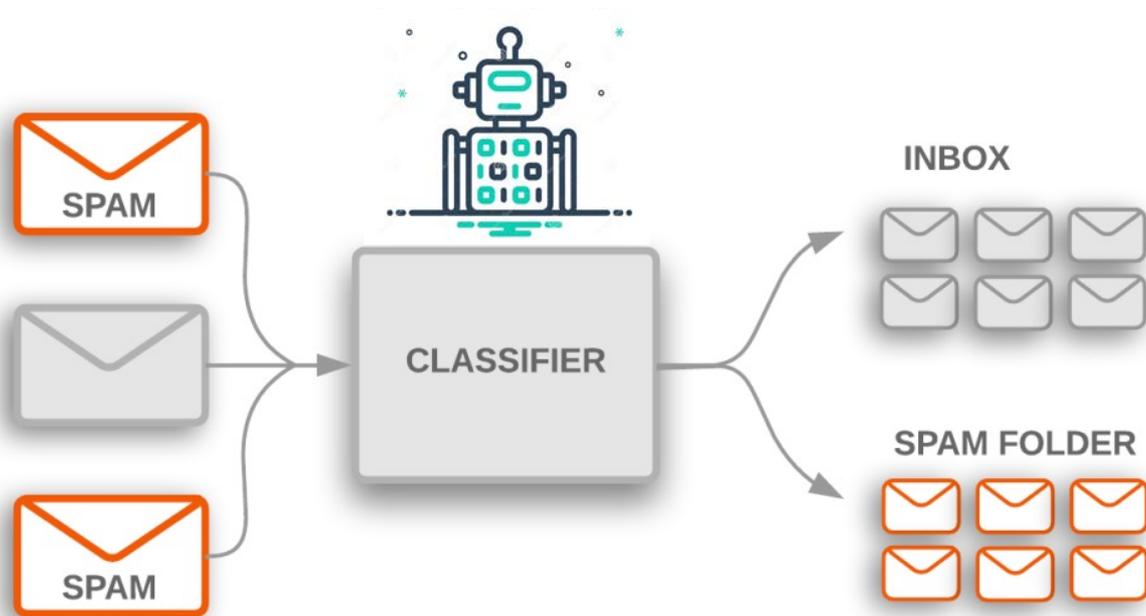


### Rate And Confirm Corrections

Collaborate with users, journalists and media by confirming (or rejecting) news article corrections.

More scalable, but how do we maintain professional quality?

# How about AI?



# Automated Fact-Checking



Exploring how artificial intelligence technologies could be leveraged to combat fake news.

[FNC-1 WINNERS AND RESULTS](#)

[OUR GITHUB REPOSITORIES](#)

[JOIN THE SLACK](#)

High scalability, but how do we maintain professional quality?

# Claim Verification, Given Evidence

**Given a claim:**

*Facebook Shut Down an AI Experiment Because Chatbots Developed Their Own Language.*

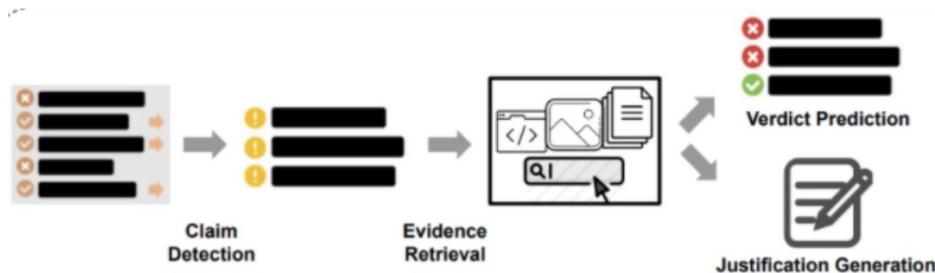
**and relevant article headlines:**

*No, Facebook Did Not Panic and Shut Down an AI Program That Was Getting Dangerously Smart.*

*source: gizmodo.com*

<b>Predict headline stance:</b>	For	Against	Observing
<b>Predict claim veracity:</b>	False	True	Unknown

# Automated Fact-Checking



## [A Survey on Automated Fact-Checking](#)

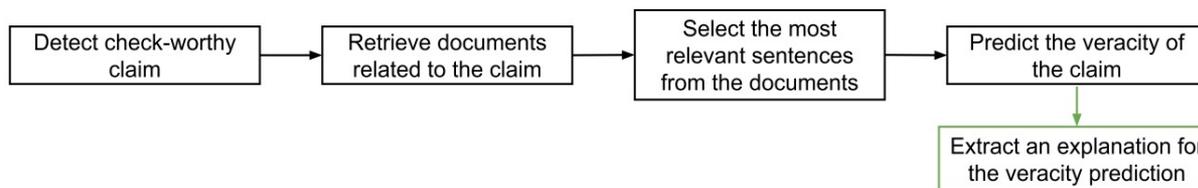
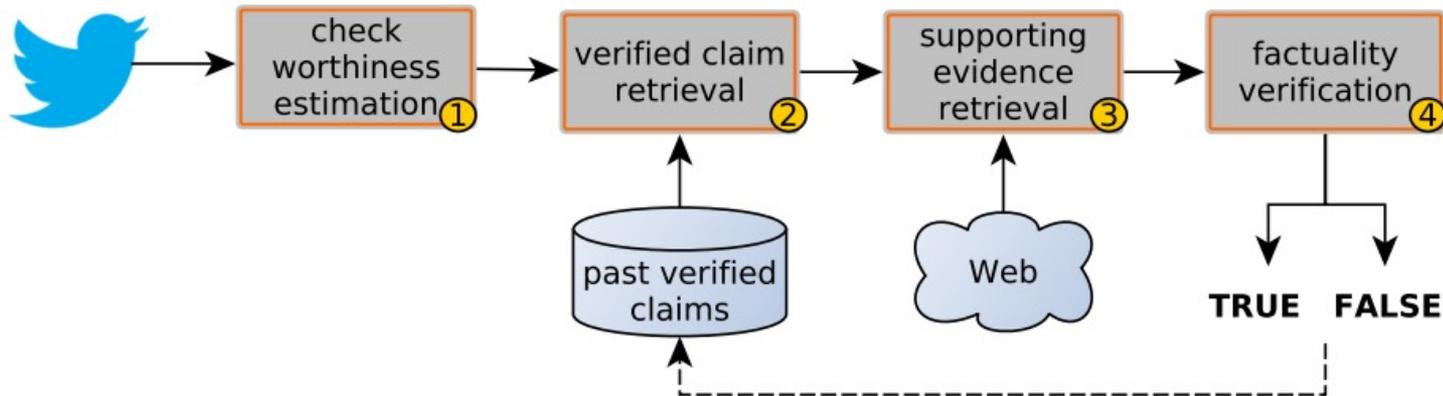


Figure 1: Pipeline for automated fact-checking with the explanation sub-task.

[Kotonya, Neema, Toni, Francesca, Explainable Automated Fact-Checking: A Survey](#)



**Fig. 1.** Information verification pipeline. Our tasks cover all four steps. (Box 1 maps to task 1 whereas boxes 3–4 map to task 2 of the 2018 and 2019 editions [10,29].)

[CheckThat! at CLEF 2020: Enabling the Automatic Identification and Verification of Claims in Social Media](#)

## The Case for Claim Difficulty Assessment in Automatic Fact Checking

5

Domain	%	Politifact Rank	Bing Rank	Domain	%	Politifact Rank	Bing Rank
<i>www.politifact.com</i>	7.2%	1	2	<i>www.foxnews.com</i>	0.5%	21	43
<i>www.nytimes.com</i>	2.5%	2	1	<i>thehill.com</i>	0.4%	22	291
<i>www.washingtonpost.com</i>	2.5%	3	12	<i>www.documentcloud.org</i>	0.4%	23	N/A
<i>www.youtube.com</i>	2.4%	4	11	<i>www.npr.org</i>	0.4%	24	18
<i>docs.google.com</i>	1.8%	5	16,752	<i>www.snopes.com</i>	0.4%	25	106
<i>twitter.com</i>	1.6%	6	195	<i>www.factcheck.org</i>	0.4%	26	26
<i>www.whitehouse.gov</i>	1.3%	7	218	<i>www.cbsnews.com</i>	0.4%	27	6
<i>www.facebook.com</i>	1.1%	8	189	<i>www.usatoday.com</i>	0.4%	28	29
<i>www.jsonline.com</i>	1.1%	9	267	<i>thomas.loc.gov</i>	0.3%	29	N/A
<i>www.tampabay.com</i>	1.0%	10	1,167	<i>www.opensecrets.org</i>	0.3%	30	4,124
<i>www.politico.com</i>	0.8%	11	31	<i>clerk.house.gov</i>	0.3%	31	33,600
<i>www.cbo.gov</i>	0.8%	12	1,196	<i>www.miamiherald.com</i>	0.3%	32	357
<i>alt.coxnewsweb.com</i>	0.7%	13	N/A	<i>www.huffingtonpost.com</i>	0.3%	33	36,200
<i>www.cnn.com</i>	0.7%	14	4	<i>www.kff.org</i>	0.3%	34	224
<i>www.census.gov</i>	0.7%	15	329	<i>www.reuters.com</i>	0.3%	35	39
<i>www.senate.gov</i>	0.6%	16	9,367	<i>www.nbcnews.com</i>	0.3%	36	300
<i>www.bls.gov</i>	0.6%	17	475	<i>www.statesman.com</i>	0.3%	37	441
<i>www.cdc.gov</i>	0.6%	18	269	<i>www.c-span.org</i>	0.3%	38	621
<i>www.congress.gov</i>	0.5%	19	8	<i>online.wsj.com</i>	0.3%	39	1,412
<i>abcnews.go.com</i>	0.5%	20	14	<i>www.forbes.com</i>	0.3%	40	10

**Table 2.** Sources cited by Politifact vs. sources retrieved by Bing (at the domain level). Col-

<https://arxiv.org/pdf/2109.09689.pdf>

# Example	Verdict	Difficulty
<b>1 Midtown crime is up by 30 percent the last quarter. [Crime, Florida, Rick Baker]</b> https://www.politifact.com/factchecks/2017/jul/11/rick-baker/did-crime-go-30-percent-midtown-last-quarter/ a [therealdeal.com] <i>Manhattan leasing strong in Q3; Midtown market stratifies ...</i> b [www.news-leader.com] <i>Springfield police say a spike in stolen cars led to a 2 percent increase in crime in the third quarter of 2016</i>	Mostly False	<b>Unjudgable.</b> Claim is ambiguous. Which midtown?
<b>2 There are more members of the U.S. Senate than the number of WI families who would benefit from GOP estate tax break. [Taxes, Wisconsin, Tammy Baldwin]</b> https://www.politifact.com/factchecks/2015/may/20/tammy-baldwin/are-there-more-us-senators-wisconsin-residents-who/ a [politicalticker.blogs.cnn.com] <i>The candidates for Senate in Wisconsin stuck to their talking points in an animated debate Monday night...</i> b [www.dailypress.com] <i>The Senate ... voted for a new tax break benefiting companies that shifted headquarters to foreign countries, but move back and invest in ...</i>	Mostly True	<b>Hard.</b> Poor source support. Lots of search results but none relevant.
<b>3 Mark Pocan's proposal to eliminate the U.S. Immigration and Customs Enforcement (ICE) would "eliminate border enforcement. [Immigration, Legal issues, Crime, Regulation, Wisconsin, Leah Vukmir]</b> https://www.politifact.com/factchecks/2018/jul/13/leah-vukmir/gop-us-senate-hopeful-leah-vukmirs-pants-fire-clai/ a [www.vox.com] <i>And it was split into three separate agencies: Legal immigration processing went to US Citizenship and Immigration Services, border enforcement went to Customs and Border Protection, and interior enforcement went to ICE.</i> b [news.yahoo.com] <i>Haggman said his reply is to point out that ICE is an internal enforcement agency and its absence wouldn't affect border security.</i>	Pants on Fire	<b>Easy.</b> Well supported by trustworthy sources. Claim directly validated.

<https://arxiv.org/pdf/2109.09689.pdf>

**4 Premeditation, in murder cases like the Oscar Pistorius case, can be formed in the twinkling of an eye. [Criminal justice, Legal issues, Crime, Nancy grace]**

<https://www.politifact.com/factchecks/2014/mar/31/nancy-grace/nancy-grace-talks-oscar-pistorious-trial-could-pre/>

- a *[Fox News Transcript] in law school they teach premeditation can be formed in an instant. people think you have to plan it out in advance. the reality is here this was an emotional crime.*
- b *[User comment] In other words, the killer had to have formed the present intention of killing her while not in the heat of passion or rage, and carried out the killing with the specific intention of killing her. Natyes is right that it can happen in a matter of minutes. at least under US law, but there has to be some time to reflect and the very specific state of mind of planning and intending to kill.*
- c\* *[dutoitattorneys.com] In a recent High Court ruling in the matter of State v Raath, the full bench of the Cape High Court found that where a father forced his son to remove a firearm from the safe so that he could kill the son's mother was not sufficient to constitute premeditated murder and it is with that in mind that we are of the view that there is no premeditation at this stage present in Ocar Pistorius' matter.*

Mostly  
False

**Hard.** Well supported but all sources are not trustworthy.

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**5 When President Abraham Lincoln signed his Emancipation Proclamation, “there were over 300,000 slaveholders who were fighting in the Union army.” [History, Chuck Baldwin]**

<https://www.politifact.com/factchecks/2015/jul/27/chuck-baldwin/no-300000-slave-owners-did-not-fight-union-side-ci/>

- a *[American Studies Journal] Eventually 184,000 black soldiers fought for the Union army and contributed significantly to the victory of the North. Reports of atrocities among black Union soldiers had shocked Lincoln, and he subsequently issued the General Order No. 252 on July 30, 1863 as an Order of Retaliation that clearly reflected his stance towards the status of African American soldiers*
- b *[International Studies Review] [T]he number of actual slaveholders in the South of the Union does not amount to more than 300,000, a narrow oligarchy that is confronted with many millions of so-called poor whites...*

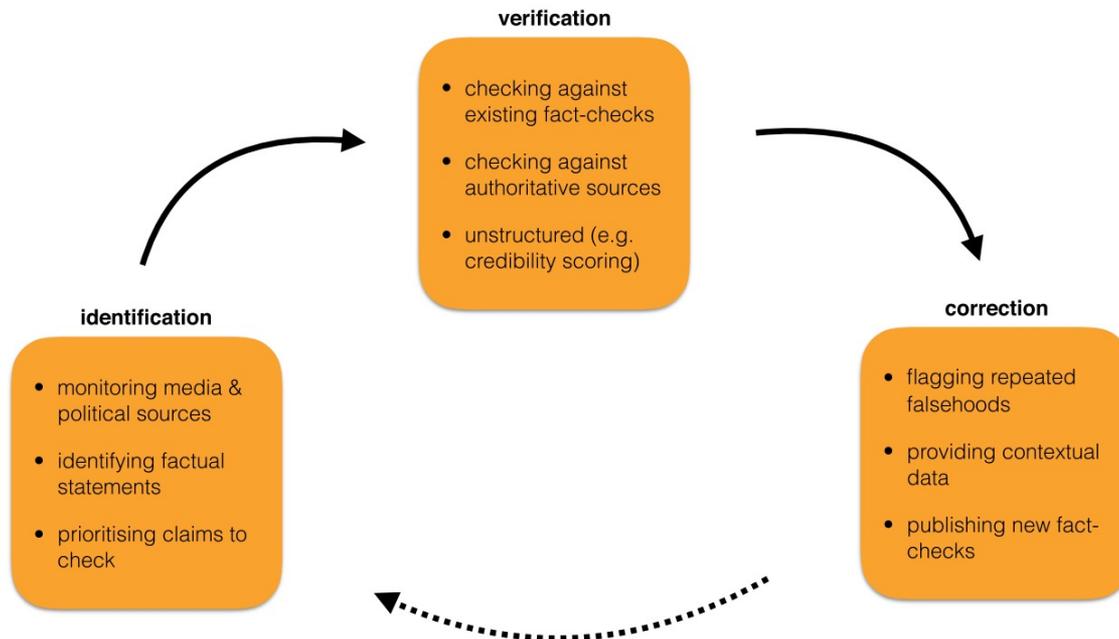
Pants  
on Fire

**Unjudgable.** Well supported by trustworthy sources but claim cannot be validated.

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<https://arxiv.org/pdf/2109.09689.pdf>

## CORE ELEMENTS OF AUTOMATED FACT-CHECKING



[Lucas, Graves, Understanding the Promise and Limits of Automated Fact-Checking](#)

# GDI Global Disinformation Index

## THE INDEX

We provide a non-partisan, trusted and independent rating of disinformation risks for news sites.

[Read our methodology](#)

### Structure

Automated classification of domains.

Assessed by AI and observable data.

### Content

Assessment of articles published for credibility, sensationalism, hate speech and impartiality.

Assessed by analysts and observable data.

### Operations

Assessment of domain and company level policies and safeguards.

Based on Journalism Trust Initiative.

Assessed by analysts and observable data.

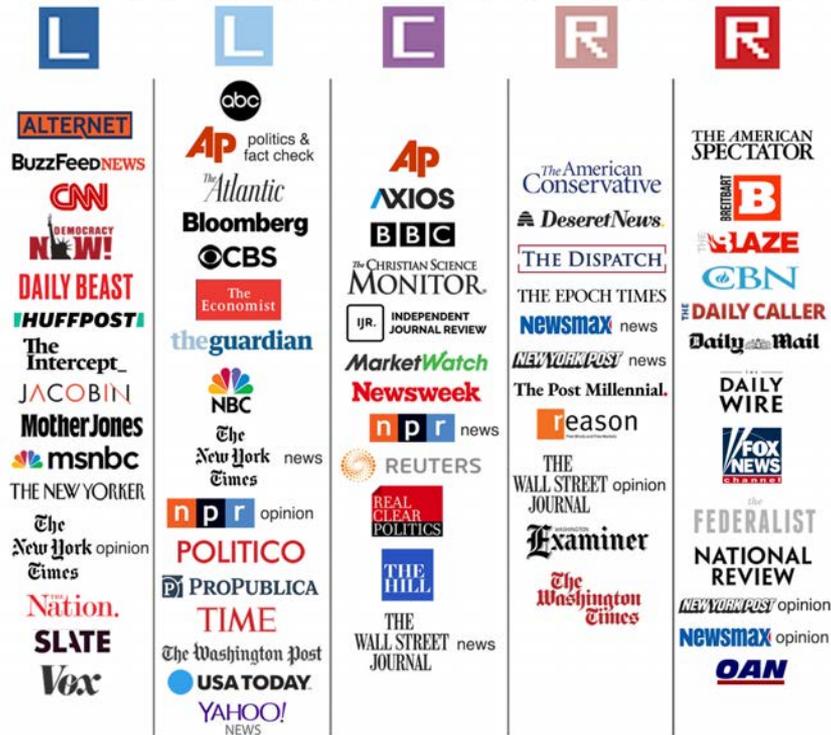
### Context

Assessment of overall perceptions of credibility and reliability of news domains.

Assessed by experts and perceptions data.

# AllSides™ Media Bias Chart™

All ratings are based on online content only — not TV, print, or radio content.  
 Ratings do not reflect accuracy or credibility; they reflect perspective only.



**L** LEFT **L** LEAN LEFT **C** CENTER **R** LEAN RIGHT **R** RIGHT

AllSides Media Bias Ratings™ are based on multi-partisan, scientific analysis.  
 Visit AllSides.com to view hundreds of media bias ratings.

## Time Line

2008

2009

Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan

**Meme**

“ laura bush and cindy mccain ”

 ▼ **Other Mentions (Same Source)**

2008: 09/02 09/03 09/06

 ▼ **Other Mentions (General)**

04/21/2008 www.perspectives.com

09/03/2008 www.blogher.com

09/03/2008 d-day.blogspot.com

More

 ▼ **Meme Related Phrases**

 laura bush and cindy mccain  
 16 mentions, 04/21/2008 - 09/25/2008

 laura bush and cindy mccain's speech  
 8 mentions, 09/03/2008 - 09/18/2008

 the first lady and cindy mccain  
 5 mentions, 09/04/2008 - 11/02/2008

 ▼ **Memes of the Day**

1. laura bush and cindy mccain
2. eight deaths were attributed to the storm in the
3. on this labor day weekend
4. the great threat to the obama biden

Tonight's line-up will feature a speech delivered via video by President George Bush, whose Monday night address was canceled due to the storm while **Laura Bush and Cindy McCain** stepped in. Also speaking will be Democratic senator and former vice president candidate Joe Lieberman, who is supporting presumptive GOP nominee John McCain over Democratic nominee Barack Obama. Former Tennessee Sen. Fred Thompson also will speak. While Backyard Conservative attends the event with videographer Leah Peterson, BlogHer will host a live-blog tonight by Chilihead.

The RNC held some programs Monday, including this leadership summit for young women videoblogged by Backyard Conservative for BlogHer. In addition, CNN reports that nearly 300 protesters were arrested after a march by about 5,000 people.

Other than Blogger Nice Deb, who is not a fan of protests, you wouldn't know about the protests from reading too many political blogs by women. Most are still talking about Alaska Gov. Sarah Palin, who is Sen. McCain's pick for vice president. On Monday Palin confirmed that her 17-year-old daughter is pregnant. In the past 24 hours, that discussion has evolved into an emotional conversation in the BlogHersphere about her personal decision to seek and hold elected office while being a mother of five children -- while other BlogHers question other peoples' willingness to judge Palin's decisions and still others ask

**Feedback**

Does the highlighted phrase reveal an interesting connection between the sources?



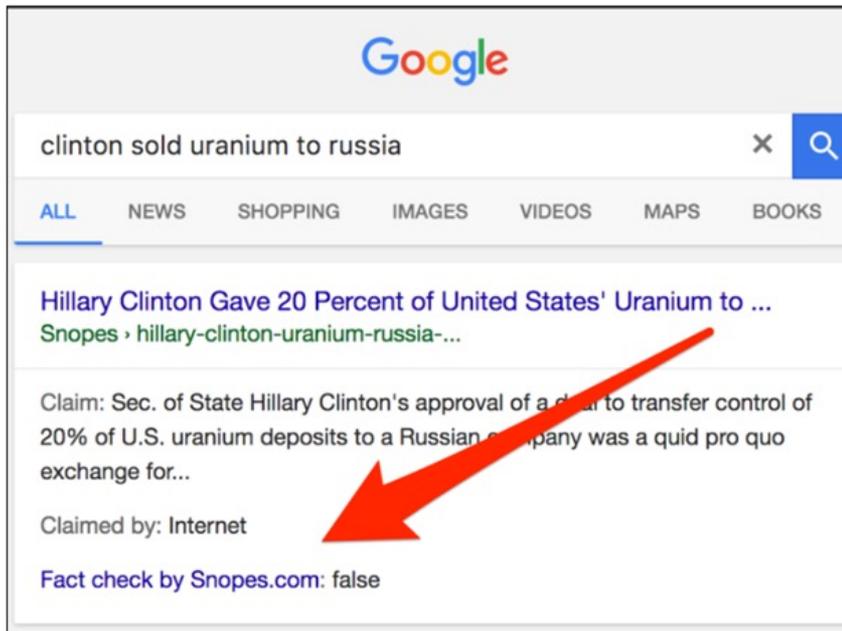
# MemeBrowser (Ryu et al., ACM HyperText'12)

# Google expands fact-checking effort to all searches worldwide

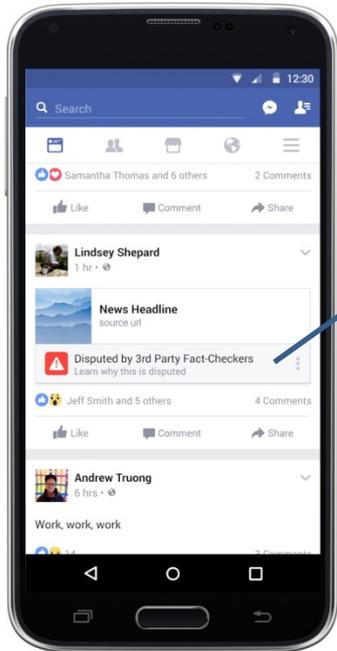
Is an online claim true or not? Google hopes special callouts for fact-checking articles will help searchers get the right answers or better make their own decisions.

## Search Engine Land

Danny Sullivan,  
 April 7, 2017



# Flagging content



“Disputed by 3<sup>rd</sup> Party  
Fact-Checkers”

Not always effective, red flag can  
attract attention

**TECHNOLOGY**

## Is There Any Hope for Facebook's Fact-Checking Efforts?

Research is making clear just how hard it is to stop people from believing false stories on social media.

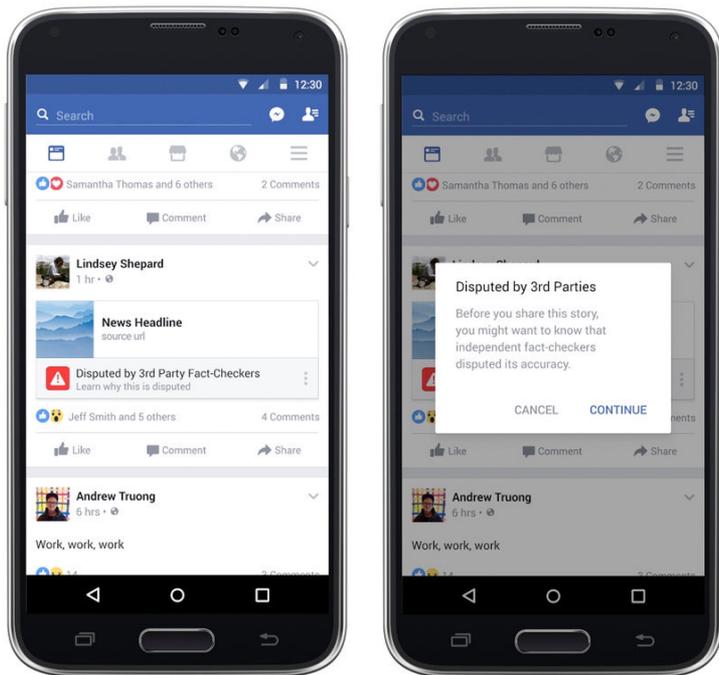


JON CHRISTIAN SEP 19, 2017

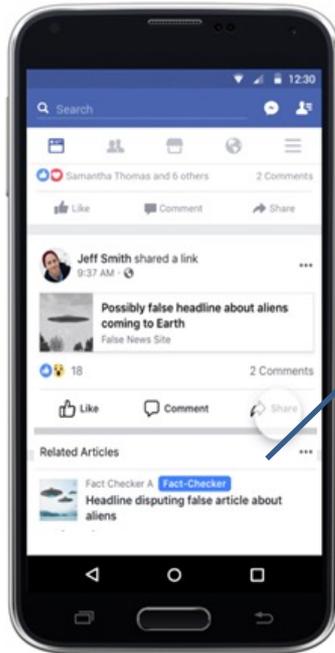


Tessa Lyons, a Facebook News Feed product manager:  
“...putting a strong image, like a red flag, next to an article may actually entrench deeply held beliefs — the opposite effect to what we intended.”

# Slowing spread by slowing action

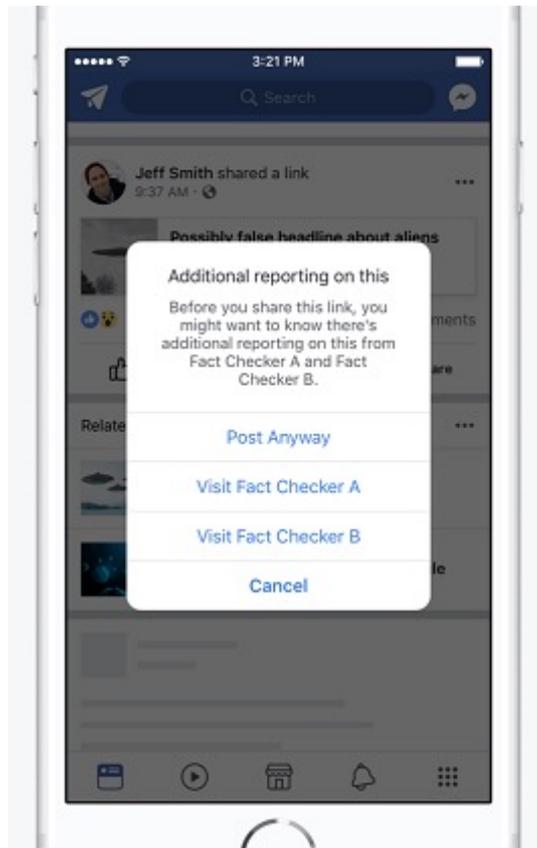
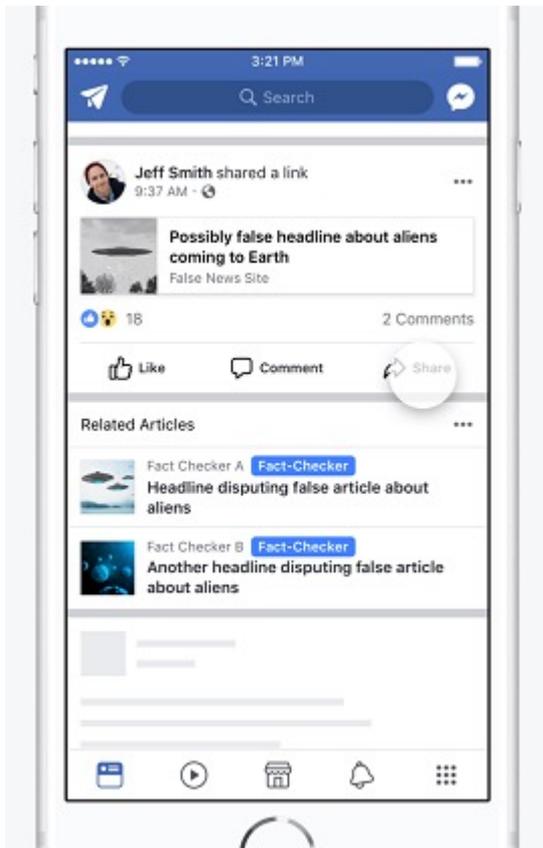


# Providing related articles



Related Articles from Fact-Checking Organizations

Works in some situations, better if it also includes a description of the fact-checking organization

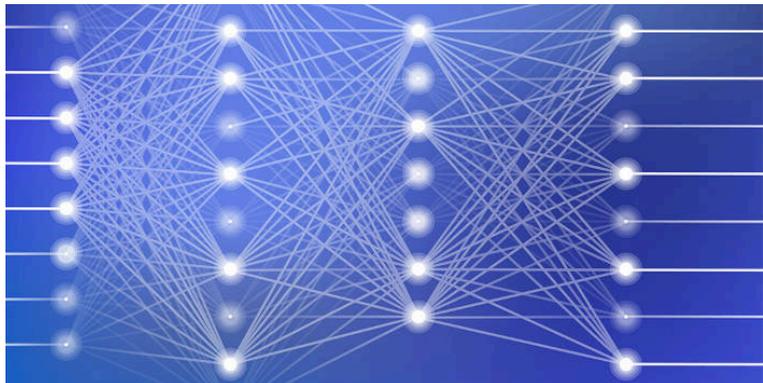


# Questions for Search Engines

- How do we balance search results which match existing beliefs vs. challenging users with alternative views?
- If people choose news outlets in part due to political leaning, could vertical search engines rank & filter results to match audience views?
- How do we frame, measure, and address potential harm of search results (e.g. “alternative” facts), be they errors or intended diversity?
- How do we evaluate information gain alongside potential varying severity of harm to some number of users?



the  
**DEEP  
LEARNING  
Revolution**



**AI Trained on Decades of Food Research - Making Brand-New Foods**

*An AI System Spontaneously Develops Baby-Like Ability to*

**AI can learn real-world skills from**

**AI is now better at predicting mortality than human doctors**

**A new AI acquired humanlike 'number sense' on its own**

**Here Comes the World's First AI-Generated Whisky**

# *Human Help Wanted: Why AI Is Terrible at Content Moderation*

AI's frequent failure to understand context means that, for now, monitoring user-generated content on the web will remain a cat-and-mouse game that requires plenty of human labor.



By [Ben Dickson](#) July 10, 2019



# What happened when humans stopped managing social media content

**POLITICO**

BY MARK SCOTT AND LAURA KAYALI

*This article is part of a special report, [The Essential Tech Worker](#).*

October 21, 2020 | 5:56 pm

As the coronavirus pandemic swept the world, social media giants like Facebook, Google and Twitter did what other companies did. They sent workers home — including the tens of thousands of people tasked with sifting through mountains of online material and weeding out hateful, illegal and sexually explicit content.

The COVID-driven experiment represented a real-world baptism of fire for something social media companies have long dreamed of: using machine-learning tools and artificial intelligence — not humans — to police posts on their platforms.

In their place, the companies turned to algorithms to do the job. It did not go well

By **Ananya Bhattacharya**

Tech reporter

Published February 24, 2021

THE HUMAN TOUCH

## How Covid-19 lockdowns weakened Facebook's content moderation algorithms

Facebook [sent thousands of content moderators home](#) due to coronavirus—and its algorithms suffered.

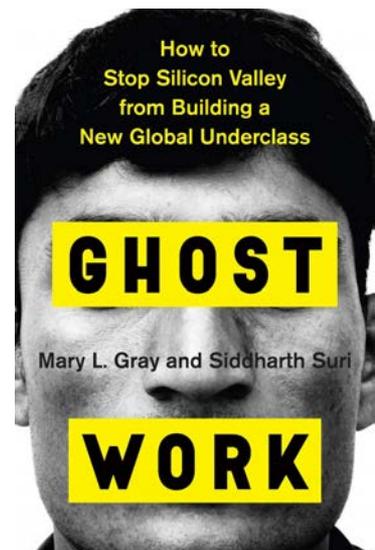
During a company briefing today (Feb. 24), Facebook's organic content policy manager Varun Reddy acknowledged that because a lot of human reviewers across the globe had to be sent home during the early months of the pandemic, the feedback loop for monitoring content was fractured. The AI learns from human moderators, he explained, adding that the reduction in human vetting volumes has changed “how effective the AI is over time,” he said.

# The Myth of Automation

From the industrial revolution to today's information revolution, technological advances have not reduced the use of human labor to deliver the “last mile” of required capabilities for practical adoption

Frontier continually advances, yet always remains

- Gray and Suri (2019) “ghost work”
- Ekbia and Nardi (2014) “heteromation”
- Irani and Silberman (2013) “invisible work”



# Human Computation



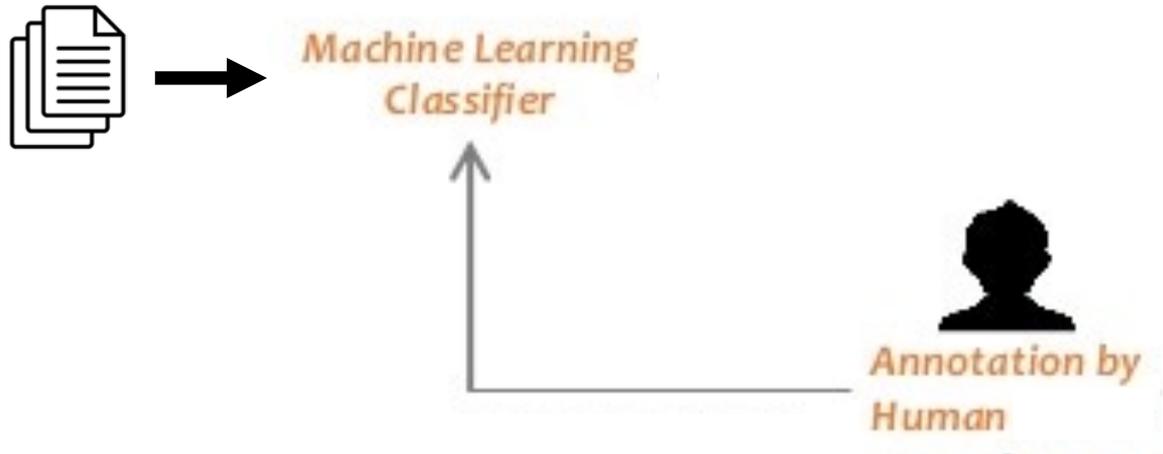
JEFF BARR and LUIS FELIPE CABRERA, AMAZON WEB SERVICES

May 2006 ACM QUEUE

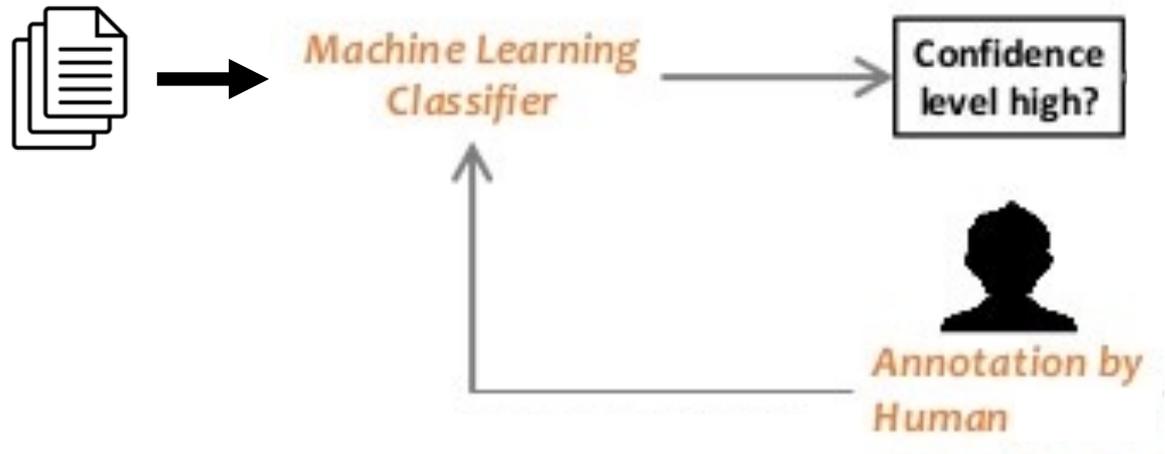
**New technology allows software  
to tap real human intelligence.**

*“Software developers with innovative ideas for businesses and technologies are constrained by the limits of artificial intelligence... **If software developers could programmatically access and incorporate human intelligence into their applications, a whole new class of innovative businesses and applications would be possible...** people are freer to innovate because they can now imbue software with real human intelligence.”*

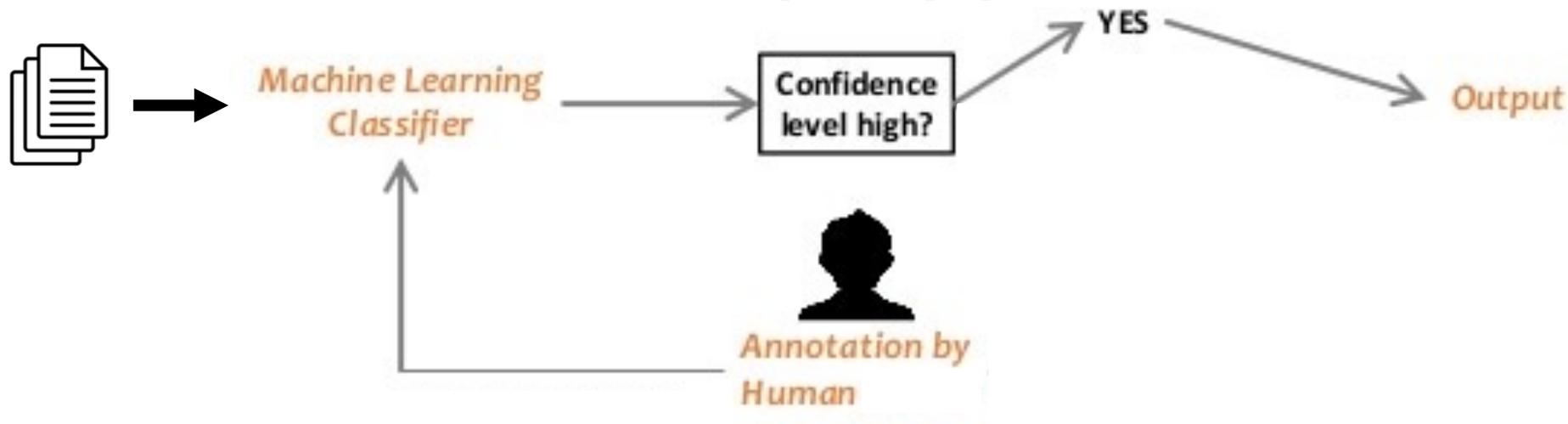
# Human-in-the-loop Approach



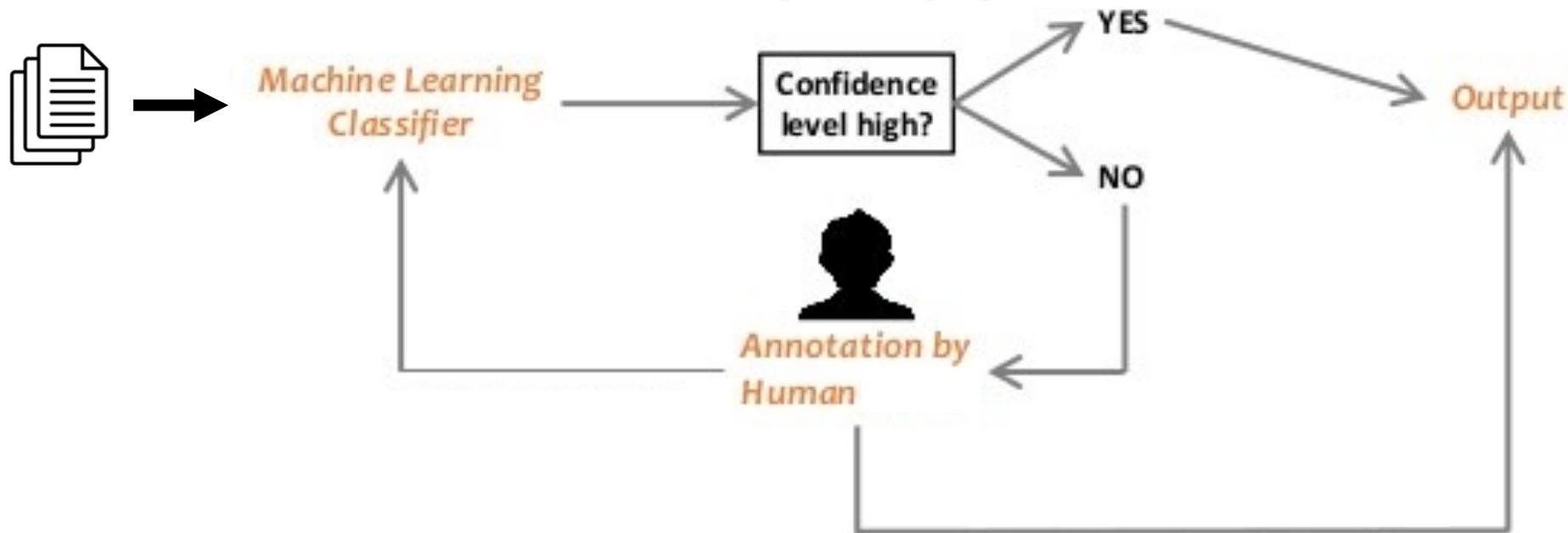
# Human-in-the-loop Approach



# Human-in-the-loop Approach



# Human-in-the-loop Approach



# Who is the human in-the-loop?

- **The user** (e.g., platform moderator, fact-checker, end-user, etc.)
  - Decision support systems (e.g., who gets a bank loan or parole)
  - Division of labor design for complementary roles / strengths
    - e.g., Google
- **Behind-the-scenes "cloud" workers**
  - Crowdsourcing / human computation

*Round Table at the CLEF-2020 CheckThat! Lab on September 22, 2020:  
David Corney, Full Fact*

## What do fact checkers want?

1. To know what is the most important claim to check today *Check-worthiness*
2. To know when someone says something that they've already checked *Verified claim retrieval*
3. To check claims as quickly as possible *Evidence retrieval / claim verification*

**IJCAI-2021: Automated Fact-Checking for Assisting Human Fact-Checkers.**  
Preslav Nakov, David Corney, Maram Hasanain, Firoj Alam, Tamer Elsayed,  
Alberto Barrón-Cedeño, Paolo Papotti, Shaden Shaar, Giovanni Da San Martino



# Explainable Fact-Checking

- **Goal:** Is “fact” vs. “fake” all that people want to know?
- **Trust:** Why trust a “black box” classifier?
- **Error:** How can we design intentionally for AI fallibility?
- **Bias:** How can we detect & mitigate bias (user or AI)?
- **Partnership:** How can we combine human intellect & experience with AI speed & scalability? (designing for *humans-in-the-loop*)

# Believe it or not: Designing a Human-AI Partnership for Mixed-Initiative Fact-Checking

AAAI-18:  
Thirty-Second AAAI Conference on  
Artificial Intelligence

UIST 2018

with An Thanh Nguyen (UT), Byron Wallace (Northeastern), & more!



Lab: [ir.ischool.utexas.edu](http://ir.ischool.utexas.edu)

 @mattlease

Slides: [slideshare.net/mattlease](http://slideshare.net/mattlease)



The University of Texas at Austin  
School of Information

# Demo!

## Claim Checker

Enter a Claim

Check Claim

Try A Random Claim

Example Claims:

Vice Media CEO Shane Smith paid 300,000 for a Las Vegas dinner

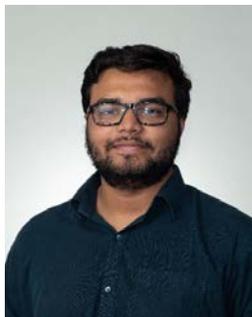
ISIS fighters were caught trying to enter the U.S. via the U.S.-Mexico border

A N.Y. high schooler earned 72 million in the stock market

# But what about user bias?



# CobWeb: A Research Prototype for Exploring User Bias in Political Fact-Checking



Anubrata Das, Kunjan Mehta and Matthew Lease

*ACM SIGIR 2019 Workshop on Fair, Accountable, Confidential, Transparent, and Safe Information Retrieval (FACTS-IR). July 25, 2019*

Claim: "Some Story your Friend told you about"

(Click or hover over ? for help)



We introduce “political leaning” (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?

News Source ?	Source Political Leaning ?	Source Reputation ?	Deny/Neutral/Support ?
abc.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
lion.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
xyz.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
politexas.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
usp.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>

Stance

Claim: "Some Story your Friend told you about"

(Click or hover over ? for help)



We introduce "political leaning" (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?

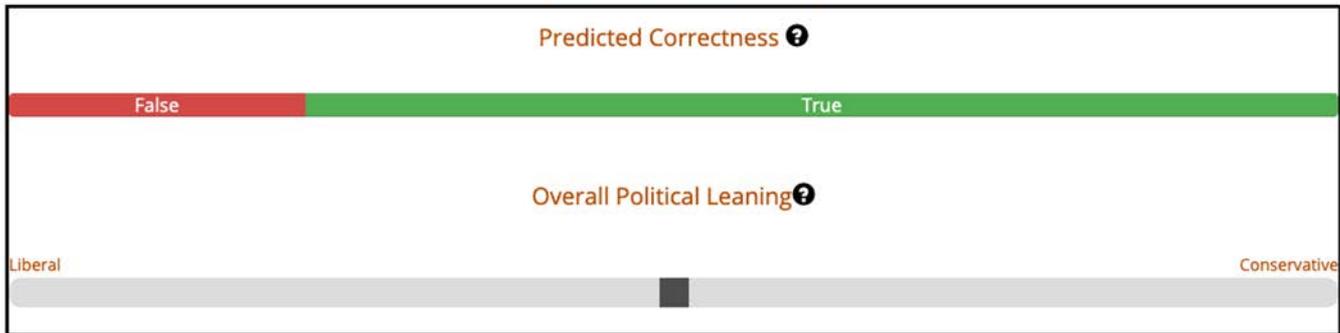
News Source ?	Source Political Leaning ?	Source Reputation ?	Deny/Neutral/Support ?
abc.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
lion.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
xyz.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
politexas.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
usp.com	Lib <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>

Imaginary Source Bias

Stance

Claim: "Some Story your Friend told you about"

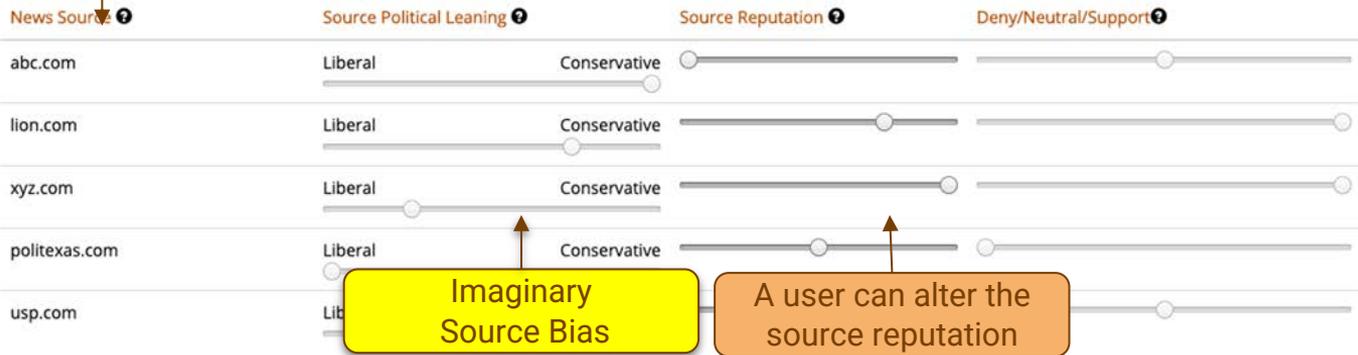
(Click or hover over ? for help)



We introduce “political leaning” (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?



Imaginary Source Bias

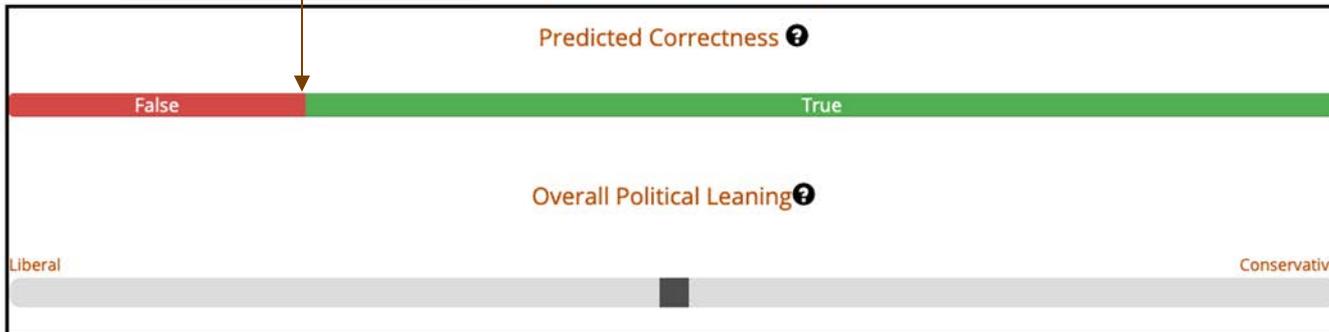
A user can alter the source reputation

Stance

Changing reputation scores changes the predicted correctness

Some Story your Friend told you about"

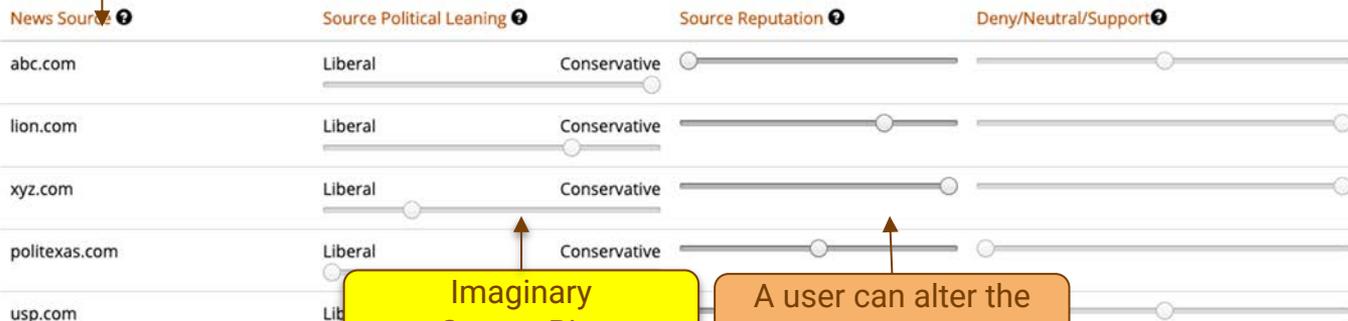
(Click or hover over ? for help)



We introduce "political leaning" (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?



Imaginary Source Bias

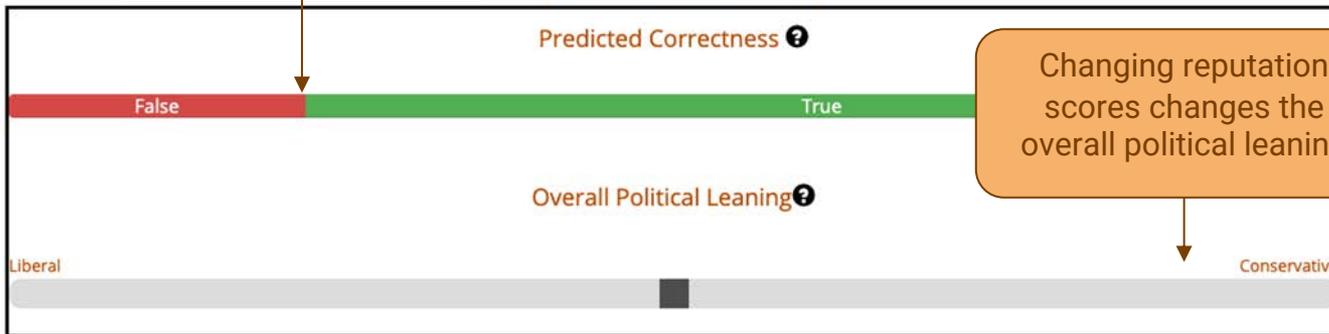
A user can alter the source reputation

Stance

Changing reputation scores changes the predicted correctness

Some Story your Friend told you about"

(Click or hover over ? for help)



Changing reputation scores changes the overall political leaning

We introduce "political leaning" (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?

News Source ?	Source Political Leaning ?	Source Reputation ?	Deny/Neutral/Support ?
abc.com	Liberal <input type="range"/>	Conservative <input type="range"/>	<input type="range"/>
lion.com	Liberal <input type="range"/>	Conservative <input type="range"/>	<input type="range"/>
xyz.com	Liberal <input type="range"/>	Conservative <input type="range"/>	<input type="range"/>
politexas.com	Liberal <input type="range"/>	Conservative <input type="range"/>	<input type="range"/>
usp.com	Liberal <input type="range"/>	Conservative <input type="range"/>	<input type="range"/>

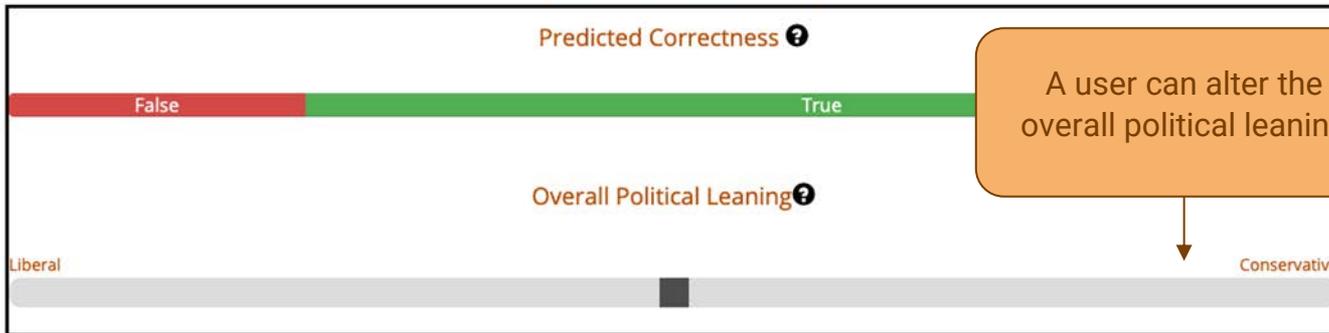
Imaginary Source Bias

A user can alter the source reputation

Stance

Claim: "Some Story your Friend told you about"

(Click or hover over ? for help)



We introduce "political leaning" (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?

News Source ?	Source Political Leaning ?	Source Reputation ?	Deny/Neutral/Support ?
abc.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
lion.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
xyz.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
politexas.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>
usp.com	Liberal <input type="range"/> Conservative	<input type="range"/>	<input type="range"/>

Imaginary Source Bias

Stance

Claim: "Some Story your Friend told you about"

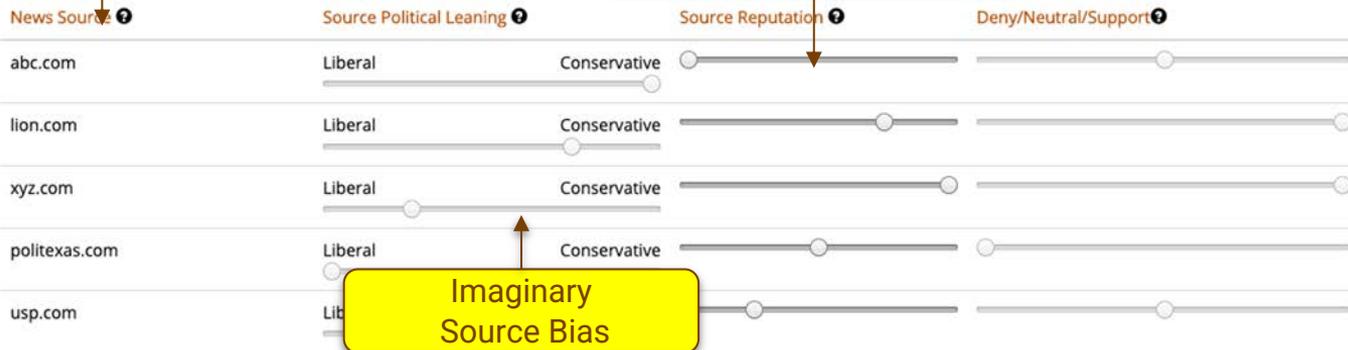
(Click or hover over ? for help)



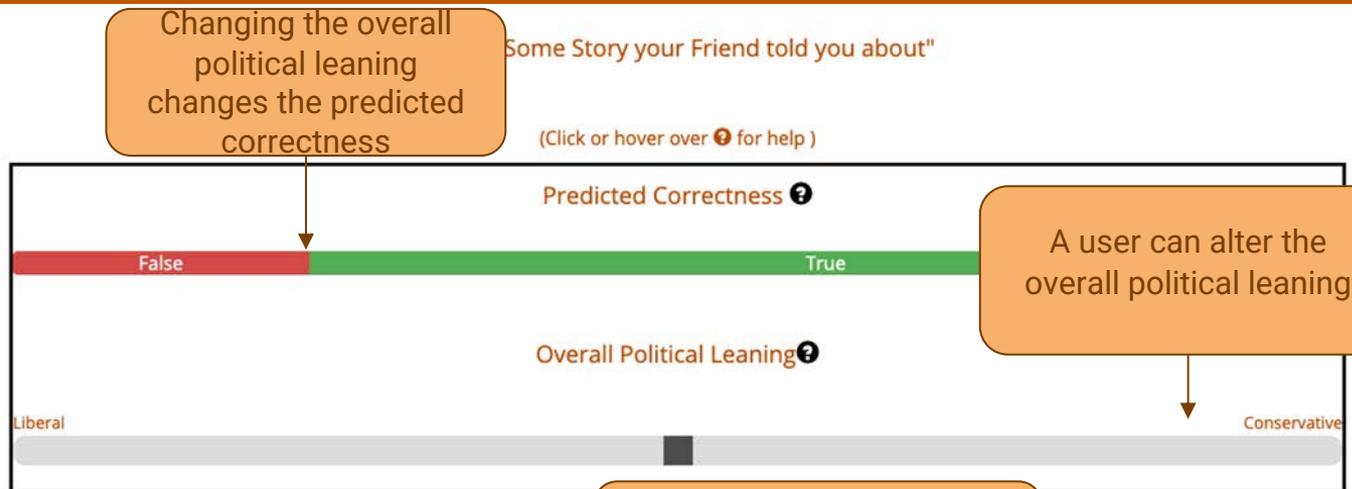
We introduce "political leaning" (bias) as a function of the *adjusted* reputation of the news sources

Sources

Changing the overall political leaning changes the source reputations



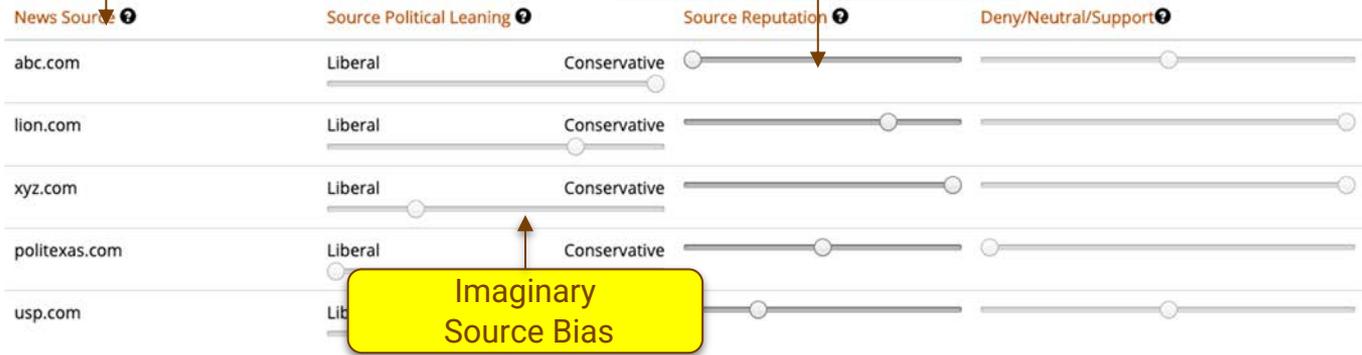
Stance



We introduce “political leaning” (bias) as a function of the *adjusted* reputation of the news sources

Sources

Changing the overall political leaning changes the source reputations



Stance

# Work by others...



**Reuters** Credible Fake No users have voted yet

GPT-2 Output Detector: 98.979% Human-Generated

Credibility Classifier: 84.475% Potentially Credible

N/A (Not Twitter Post)

### Most U.S. COVID-19 vaccines go idle as New York, Florida move to penalize hospitals

NEW YORK (Reuters) -More than two-thirds of the 15 million coronavirus vaccines shipped within the United States have gone unused, U.S. health officials said on Monday, as the governors of New York and Florida vowed to curb the spread of the more infectious coronavirus variant originally detected in Britain. "I don't want the vaccine in a fridge." [Click to read more]



**The Guardian on MSN.com** Credible Fake No users have voted yet

GPT-2 Output Detector: 93.17% Machine-Generated

Credibility Classifier: 94.083% Potentially Credible

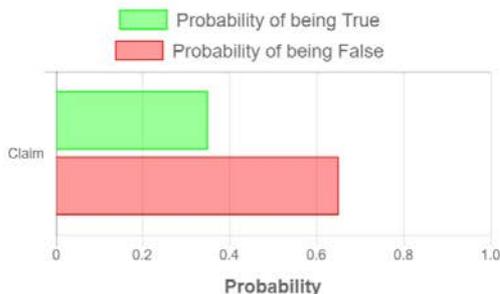
N/A (Not Twitter Post)

### Zimbabwe enters Covid lockdown amid fears over crowded new year parties

© Provided by The Guardian Photograph: Tsvangirayi Mukwazhi/AP Parties and new year celebrations that attracted thousands of revellers with little social distancing or mask wearing have triggered panic and a strict 30-day lockdown. Showing huge crowds partying with no regard to Covid-19 regulations prompted an outcry on social ... [Click to read more]

# CredEye

## Credibility Assessment



Do you agree with the assessment?



Feedback?

## Evidence

Show Details:

ON

*This week, a scientific research facility in Wyoming made a startling discovery that is certain to change the way millions of Americans look at the environmentalism movement, after they found conclusive evidence that solar panels not only convert the sun's energy into usable energy, but that they are also draining the sun of its own energy, possibly with catastrophic consequences far worse than global warming. Scientists at the Wyoming Institute of Technology, a privately-owned think tank located in Cheyenne, Wyoming, discovered that energy radiated from the sun isn't merely captured in solar panels, but that energy is directly physically drawn from the sun by those panels, in a process they refer to as forced photovoltaic drainage. Put into laymen's terms, the solar panels capture the sun's energy, but pull on the sun over time, forcing more energy to be released than the sun is actually producing. WIT claims in a scientific white paper published on Wednesday. Imagine a waterfall, dumping water.*

—nationalreport.net

Credibility Score: 0.45 Web-source Trustworthiness: 0.423 Article Stance (Refute Score): 0.414

An article claiming that solar panels drain the sun's energy has turned out to be a hoax. The story was posted on National Report, a satirical website well known for publishing fake stories with sensational headlines. The bogus report read: "A scientific research facility in Wyoming made a startling discovery that is certain to change the way millions of Americans look at the environmentalism movement, after they found conclusive evidence that solar panels not only convert the sun's energy into usable energy, but that they are also draining the sun of its own energy, possibly

[http://people.mpi-inf.mpg.de/~kpopat/publications/www18\\_demo.pdf](http://people.mpi-inf.mpg.de/~kpopat/publications/www18_demo.pdf)

# Perspectrum

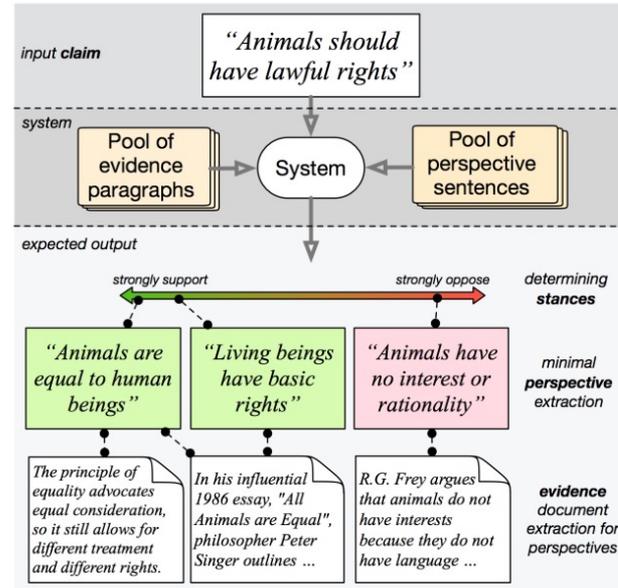


Figure 1: Given a *claim*, a hypothetical system is expected to discover various *perspectives* that are substantiated with *evidence* and their *stance* with respect to the claim.

Seeing Things from a Different Angle: Discovering Diverse Perspectives about Claims

<https://arxiv.org/pdf/1906.03538.pdf>

# Fakta

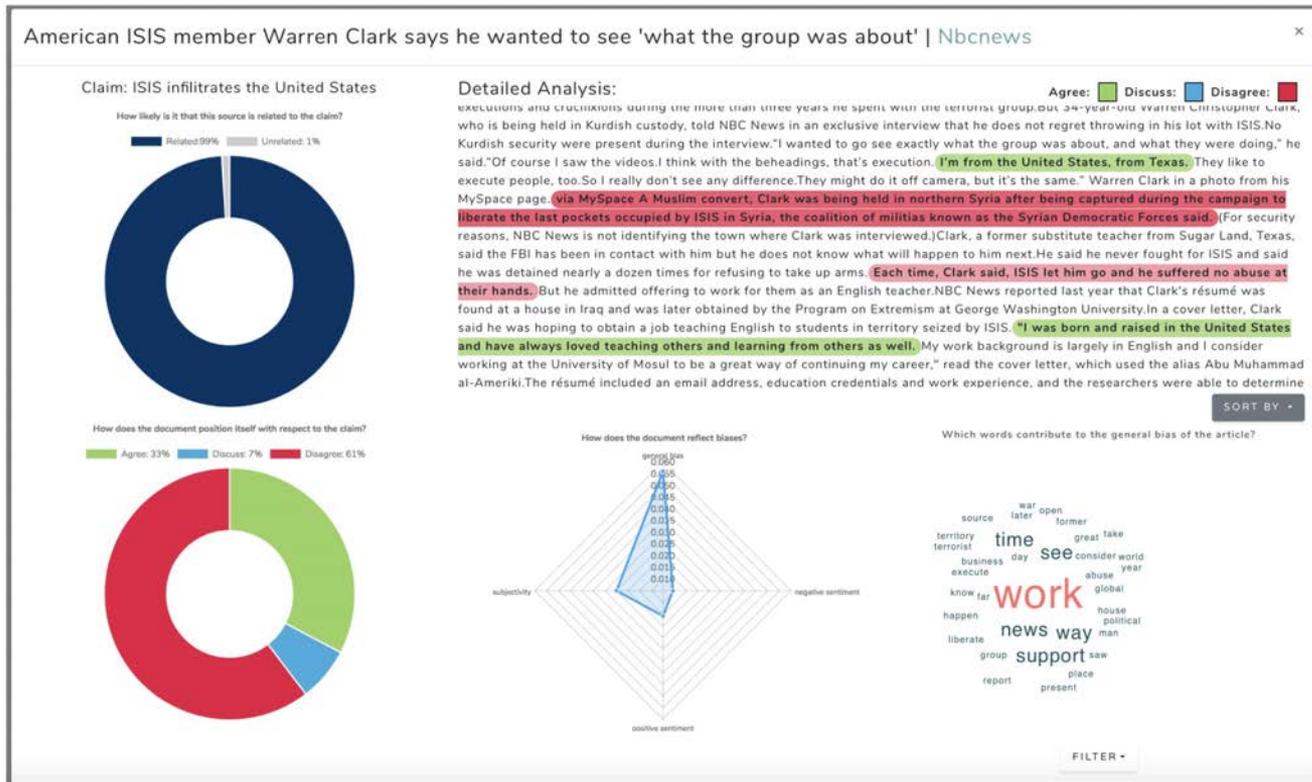


Figure 2: Screenshot of FAKTA for a document retrieved for the claim "ISIS infiltrates the United States."

VERIFI
test

0204394856597183

Reset

Type	Account	Timeline	Language Features
			Fair Lyt Bias Fear Anger Pos Neg Sbj
Fake	03		23 15 24 30 58 18 33 4
Real	07		40 45 78 4 31 0 21 7
Fake	43		0 14 36 25 56 33 23 3
Fake	13		0 12 15 43 52 17 50 4
Fake	37		60 19 42 36 48 4 24 5
Real	29		28 27 66 13 46 12 22 7
	12		63 21 64 13 51 7 32 7

Tweets in extent

**People**

Ariana Grande, Melania Trump, Clinton, Obama, Trump, Hillary Clinton, Kushner, etc.

**Organizations**

White House, NATO, Russian, FBI, American, British, etc.

70 Monday, May-22-2017, 11:00 pm  
Microsoft is actively blocking "command-line" apps - Linux is just too powerful for Windows 10 so Microsoft ...

18 Monday, May-22-2017, 11:00 pm  
South Korea: The Campaign to Liberate Rep Lee Seok-ki Imprisoned by Impeached President Park

14 Monday, May-22-2017, 11:00 pm  
Singapore Exchange is close to a deal with the city's regulator to develop a system for startup IPOs, sources say...

42 Monday, May-22-2017, 11:00 pm  
Democrats accomplish nothing by pretending Trump hasn't earned at least an impeachment inquiry...

03 Monday, May-22-2017, 11:00 pm  
Peter Kirby And Ginny Silcox Talk Chemtrails With Project Camelot NEW INTERVIEW

61 Monday, May-22-2017, 11:00 pm  
The first eyewitness accounts of the Manchester explosion are heartbreaking:

53 Monday, May-22-2017, 11:00 pm  
Weather control: Proof "We're living in a test already" #weather #geoengineering

38 Monday, May-22-2017, 11:00 pm  
Several Baltimore officers involved in the Freddie

<http://verifi.herokuapp.com/>



Found 30 arguments (15 pro; 15 con) in 8 documents (classified 119 sentences in 2.3 s)

**PRO**

documents.worldbank.org / Feb 13, 2016

This will aid the international community's efforts to help those developing countries most vulnerable to climate change meet adaptation costs. 99.69%

**PRO**

documents.worldbank.org / Feb 8, 2016

Disaster risk management implies addressing the underlying social, economic and environmental vulnerabilities and thereby reduce the probability of a disaster occurring. 99.68%

**CON**

documents.worldbank.org / Feb 8, 2016

Indeed, in many countries, these existing mechanisms are already insufficient of the current level of vulnerability. 99.29%

**CON**

documents.worldbank.org / Feb 8, 2016

Disasters are associated with extreme events. 99.26%

**CON**

abcnews.go.com / Feb 11, 2016

<https://botometer.osome.iu.edu/>

# Botometer<sup>®</sup>

An OSoMe project (bot•o•meter)



Botometer (formerly BotOrNot) checks the activity of a Twitter account and gives it a score. Higher scores mean more bot-like activity.

# Thank you!



We thank our many talented crowd workers for their contributions to our research!



Lab: [ir.ischool.utexas.edu](http://ir.ischool.utexas.edu)

 @mattlease

Slides: [slideshare.net/mattlease](https://slideshare.net/mattlease)



