

The Army that Never Existed: The Failure of Social Bots Research

Michael Kreil



data scientist data journalist open data activist



The New York Times

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CRITIC'S NOTEBOOK

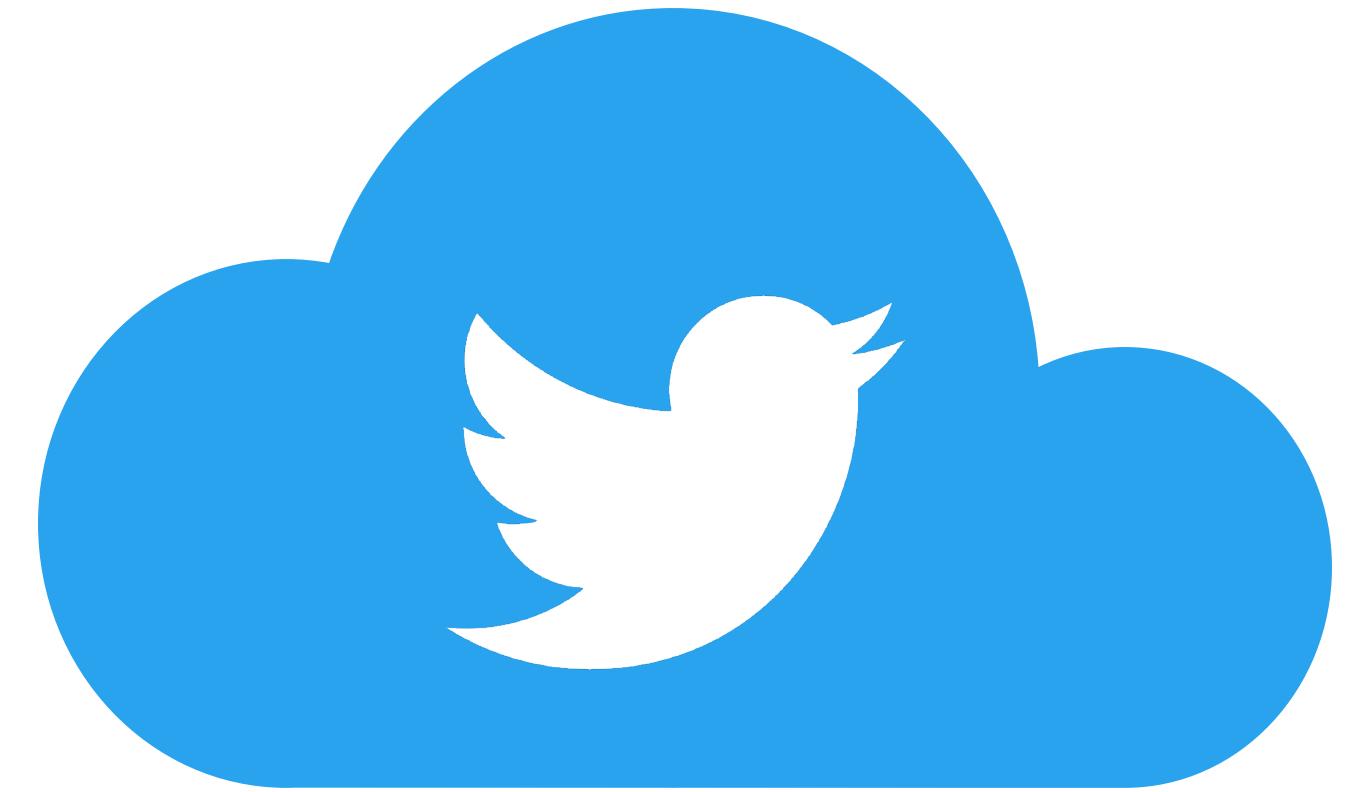
On Twitter, a Battle Among Political Bots

Some robot accounts protest; others expose racists; and at least one — aimed at people looking for a fight — keeps them busy talking to a brick wall.



Screenshot of the Twitter profile page for OpenFest (@openfestbg). The profile picture is a white rabbit icon. The bio reads: "да споделим свободата". Location: Sofia, Bulgaria. Joined August 2009. Following: 156; Followers: 1,196. A pinned tweet from Oct 19 says: "Чакането свърши! 😊 Ето я и няя - (почти) финалната програма на OpenFest 2019: openfest.org/2019/bg/full-s...". The timeline shows a schedule for the festival.

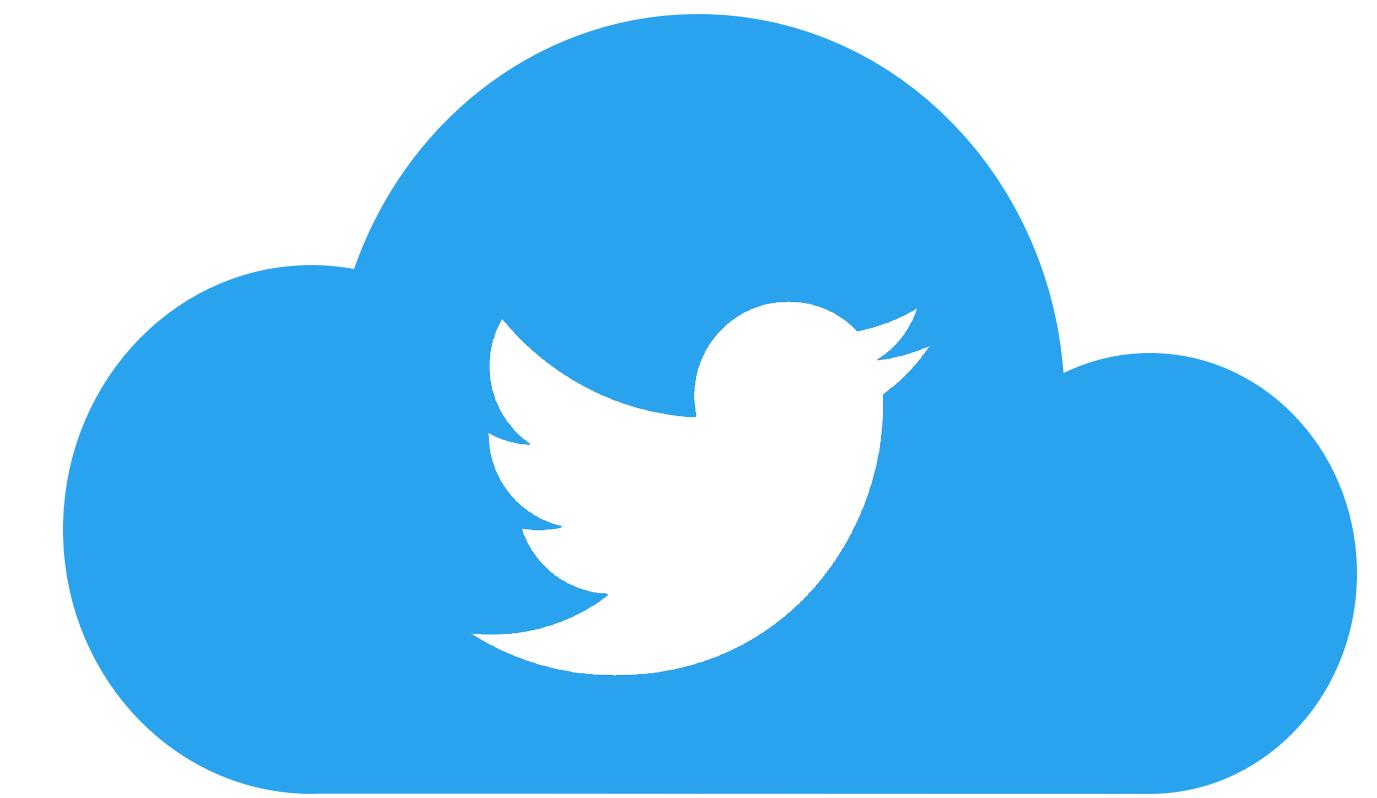
Time	Event	Speaker
10:30 - 11:15	Open Source as a Business: Strategy, Struggle & Success	Emmanuel Tolev
11:30 - 12:15	Anatomy of Cloud	Kak da se
11:30 - 12:15	The Army that Never Existed: The History of Social Bots Research	Michael Krell
11:30 - 12:15	A brief history of Web APIs: From CGI to GraphQL	Craig Dennerle
11:30 - 12:15	Conspiracy Marie GutBub	GutBub



A screenshot of a Twitter profile page for 'OpenFest' (@openfestbg). The profile picture is a white circle with a cartoon butterfly. The bio reads: 'да споделим свободата'. Location: Sofia, Bulgaria. Joined August 2009. Following: 156; Followers: 1,196. A pinned tweet at the top says: 'Чакането свърши! 😊 Ето я и няя - (почти) финалната програма на OpenFest 2019: openfest.org/2019/bg/full-s...'. Below the pinned tweet is a schedule table for the festival.

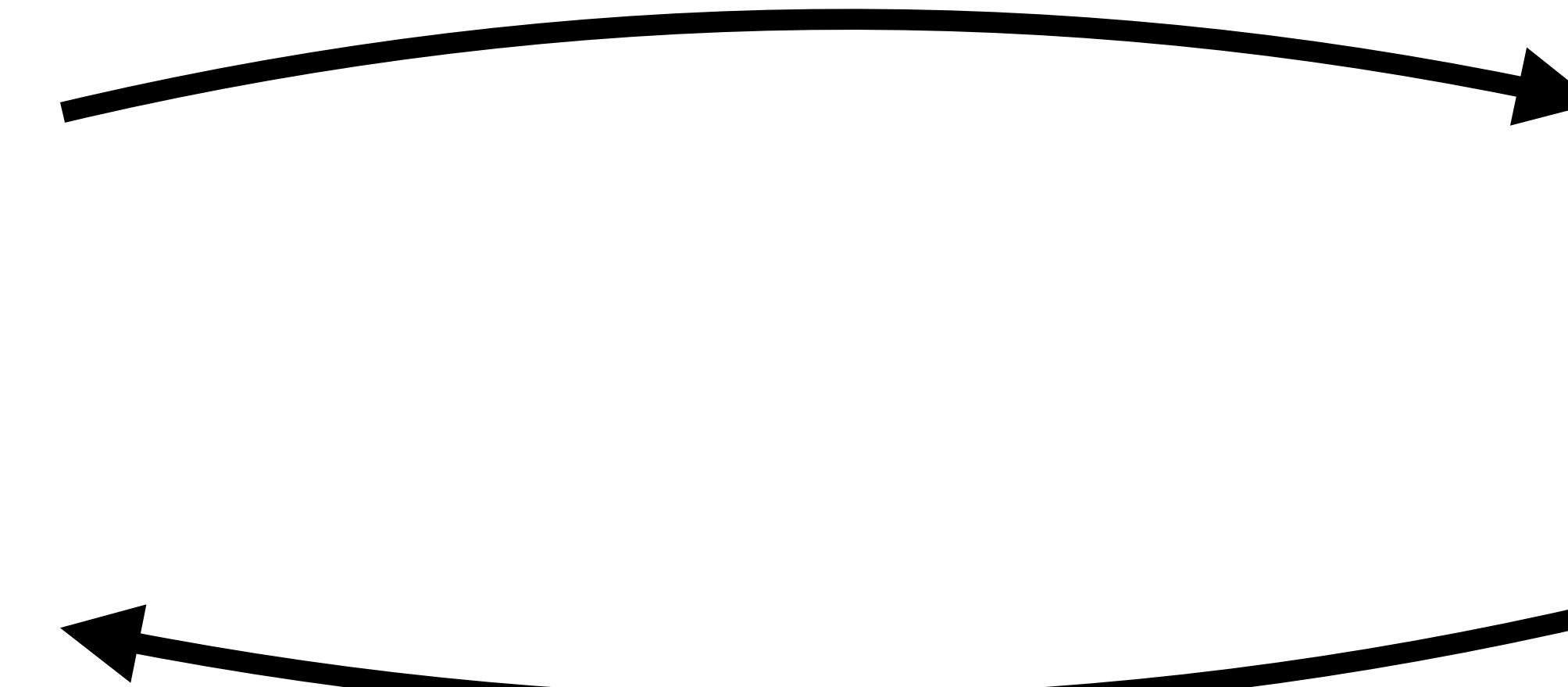
10:30 - 11:15	Keynote	The Army that Never Existed: The War on Social Bots Research Michael Krell	A brief history of Web APIs: From CGI to GraphQL Stefan Dobres	Conspiracy Marie Gutbub	Don't think outside the box, think what can you do with it!
11:30 - 12:15	Open Source as a Business: Strategy & Success Emanuel Tolev	Anatomy of Cloud	Kak da se	Gutbub	

twitter.com/get_tweet?id=1184477532474753024



A screenshot of a Twitter profile page for 'OpenFest' (@openfestbg). The profile picture is a white circle with a cartoon rabbit. The bio reads: 'да споделим свободата'. Location: Sofia, Bulgaria. Joined August 2009. Following: 156; Followers: 1,196. A pinned tweet at the top says: 'Чакането свърши! 😊 Ето я и няя - (почти) финалната програма на OpenFest 2019: openfest.org/2019/bg/full-s....' Below the pinned tweet is a schedule table for the festival.

`twitter.com/get_tweet?id=1184477532474753024`



created_at:"Wed Oct 16 14:33:44 +0000 2019",
id_str:"1184477532474753024",
full_text:"@MichaelKreil will present \"The Army that Never Existed: ...\"",
retweet_count:13,
favorite_count:13,
is_quote_status:true,
quoted_status_id_str:"1184475221866287104",
user_id_str:"50503396",
conversation_id_str:"1184477532474753024",
...

Michael Kreil on Twitter: "»@MichaelKreil will present "The Army that Never Existed: The F..."

Tweet

Michael Kreil
@MichaelKreil

»@MichaelKreil will present "The Army that Never Existed: The Failure of Social Bots Research"«
November 2nd in Sofia at @openfestbg:
openfest.org/2019/en/schedu...

OpenFest @openfestbg · Oct 16
И тази година ще имаме и лекции, които не са изцяло технически. @MichaelKreil ни е подготвил нещо със заглавие "The Army that Never Existed: The Failure of Social Bots Research", а какво точно, кога и в коя зала ще го чуем, ще обявим съвсем скоро.

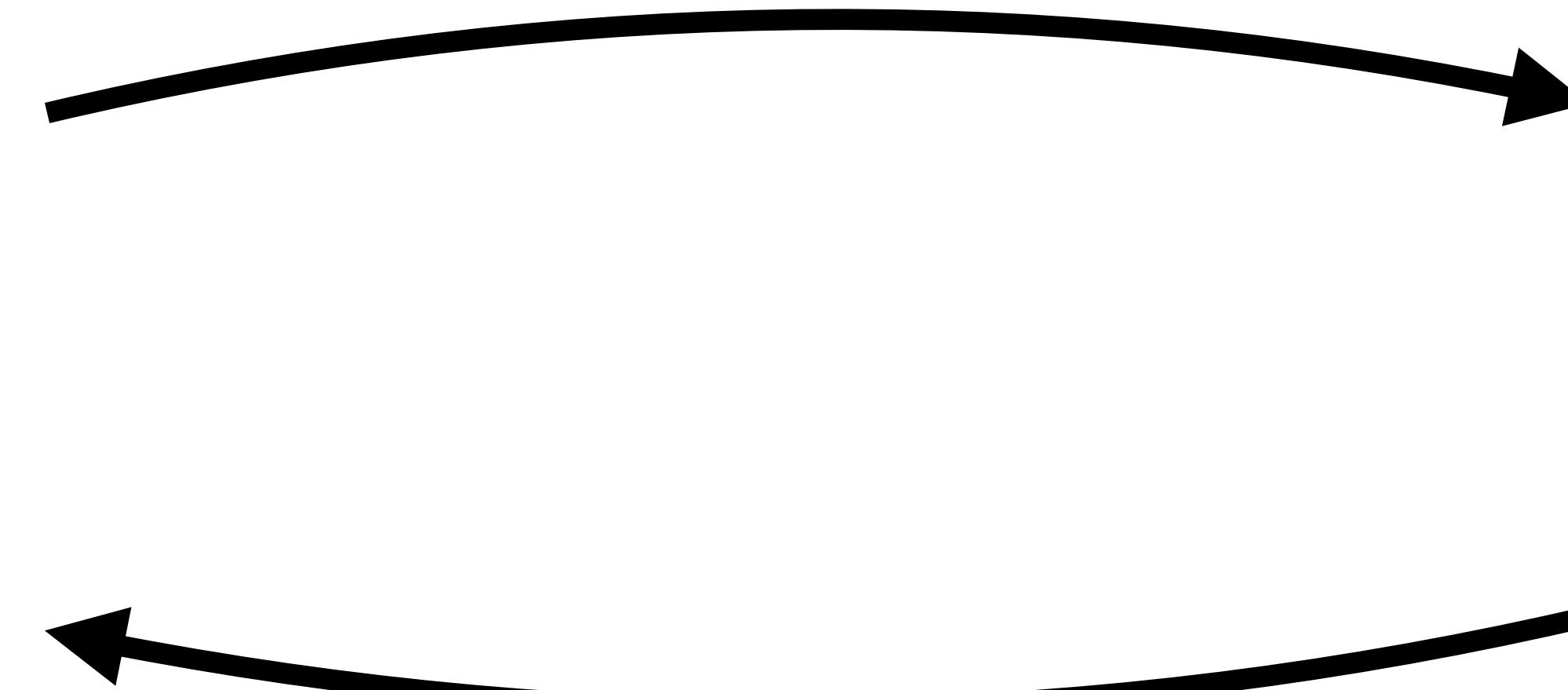
5:33 PM · Oct 16, 2019 · Twitter Web App

[View Tweet activity](#)

13 Retweets 13 Likes

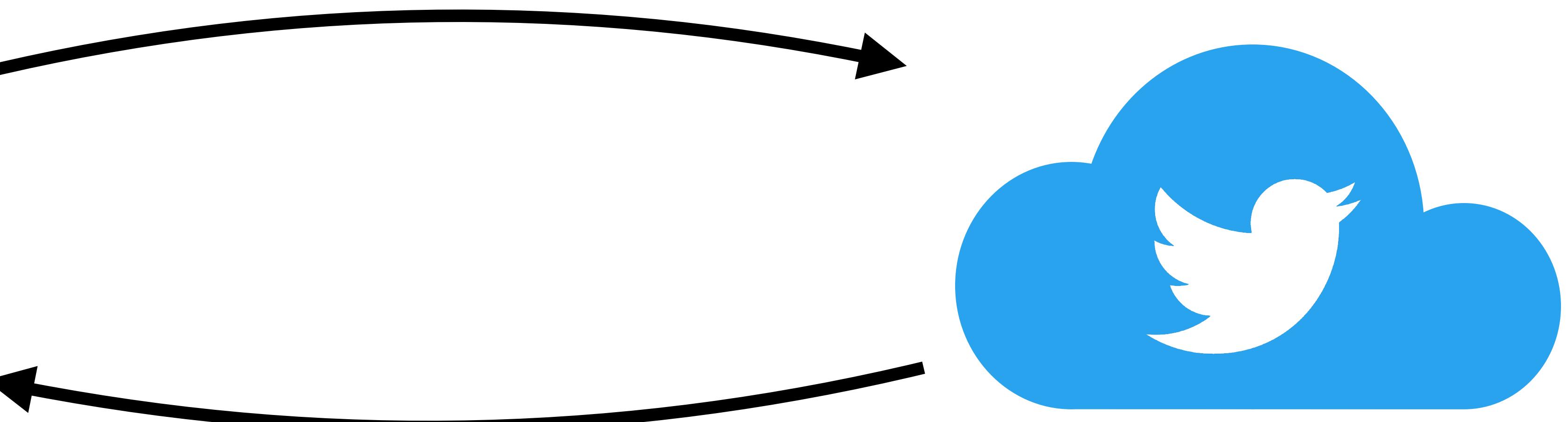
Reply Retweet Like Share

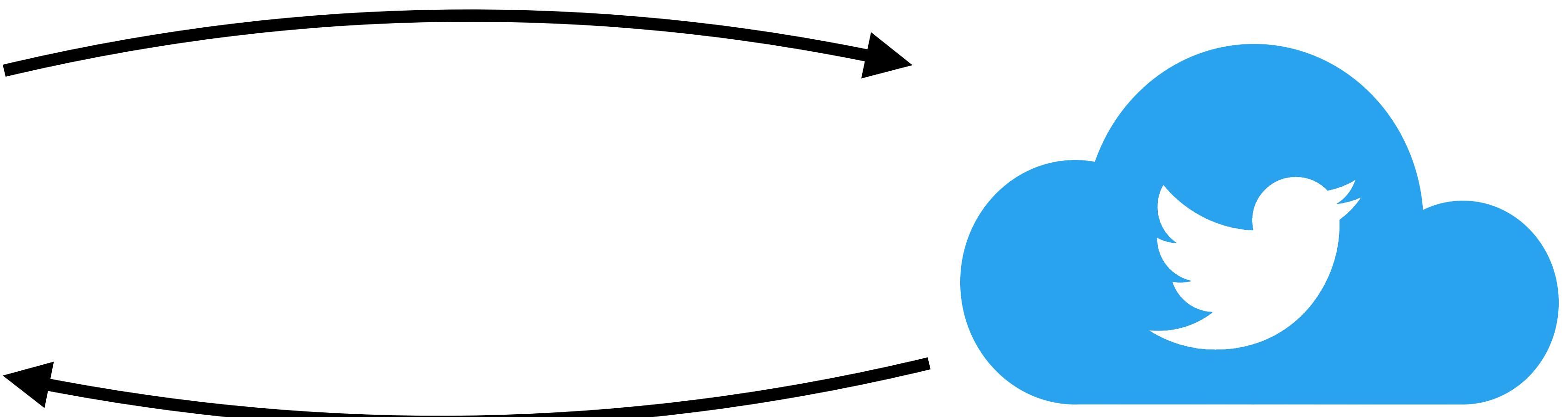
twitter.com/get_tweet?id=1184477532474753024

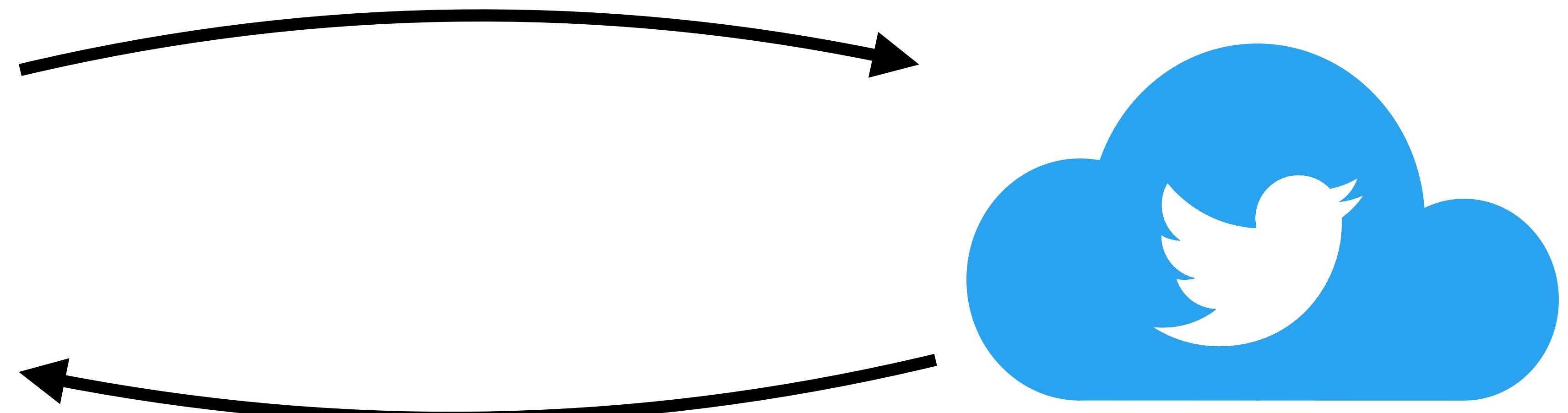
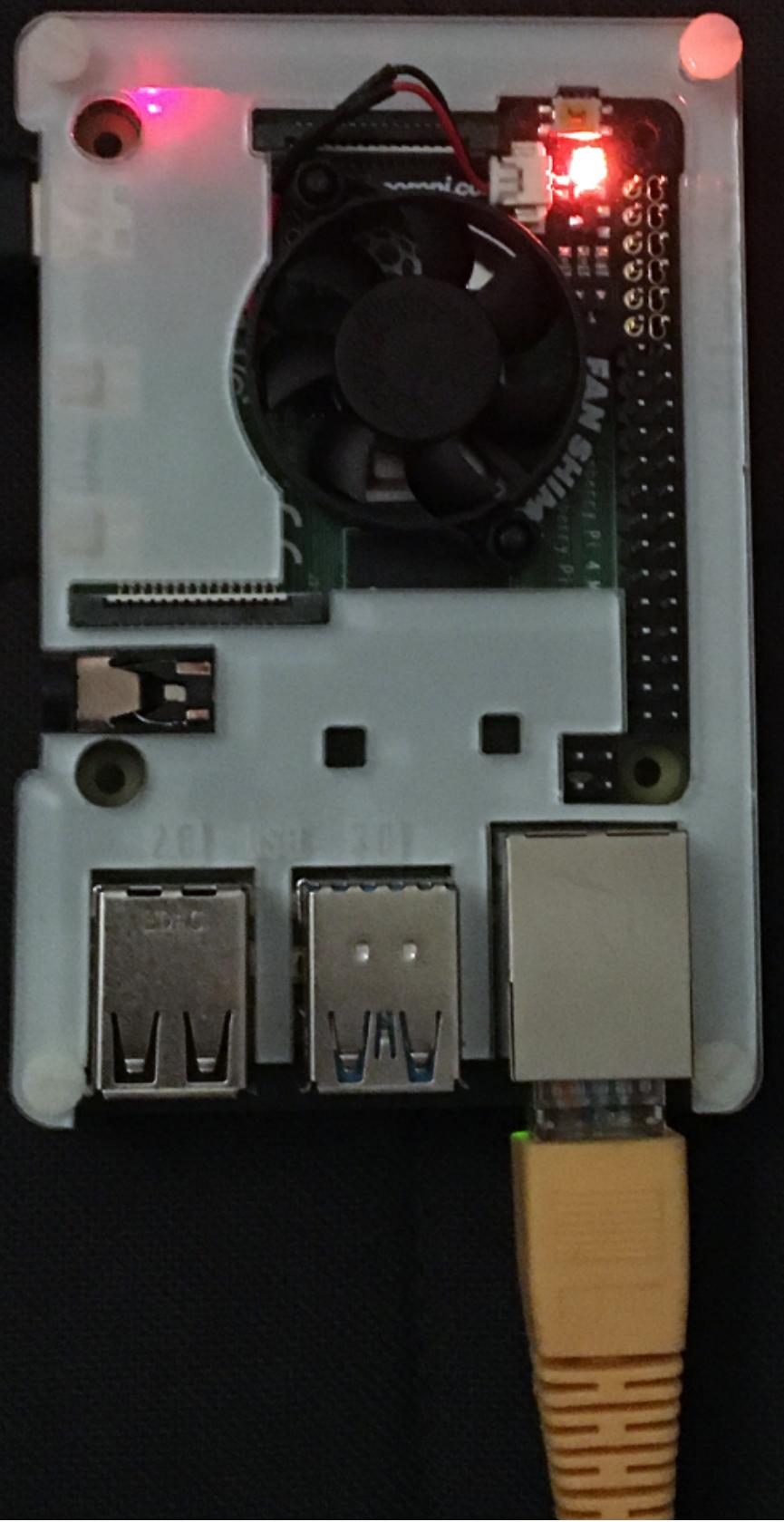


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conversation_id_str:"1184477532474753024",
...

- twitter.com
- iPhone
- iPad
- Android
- HootSuite
- Tweetdeck
- Echofon
- Tweetbot
- Facebook
- Instagram
- Tumblr
- IFTTT
- ...







SPENDE EINEN TOKEN

Wir sind [Data Science & Stories](#).

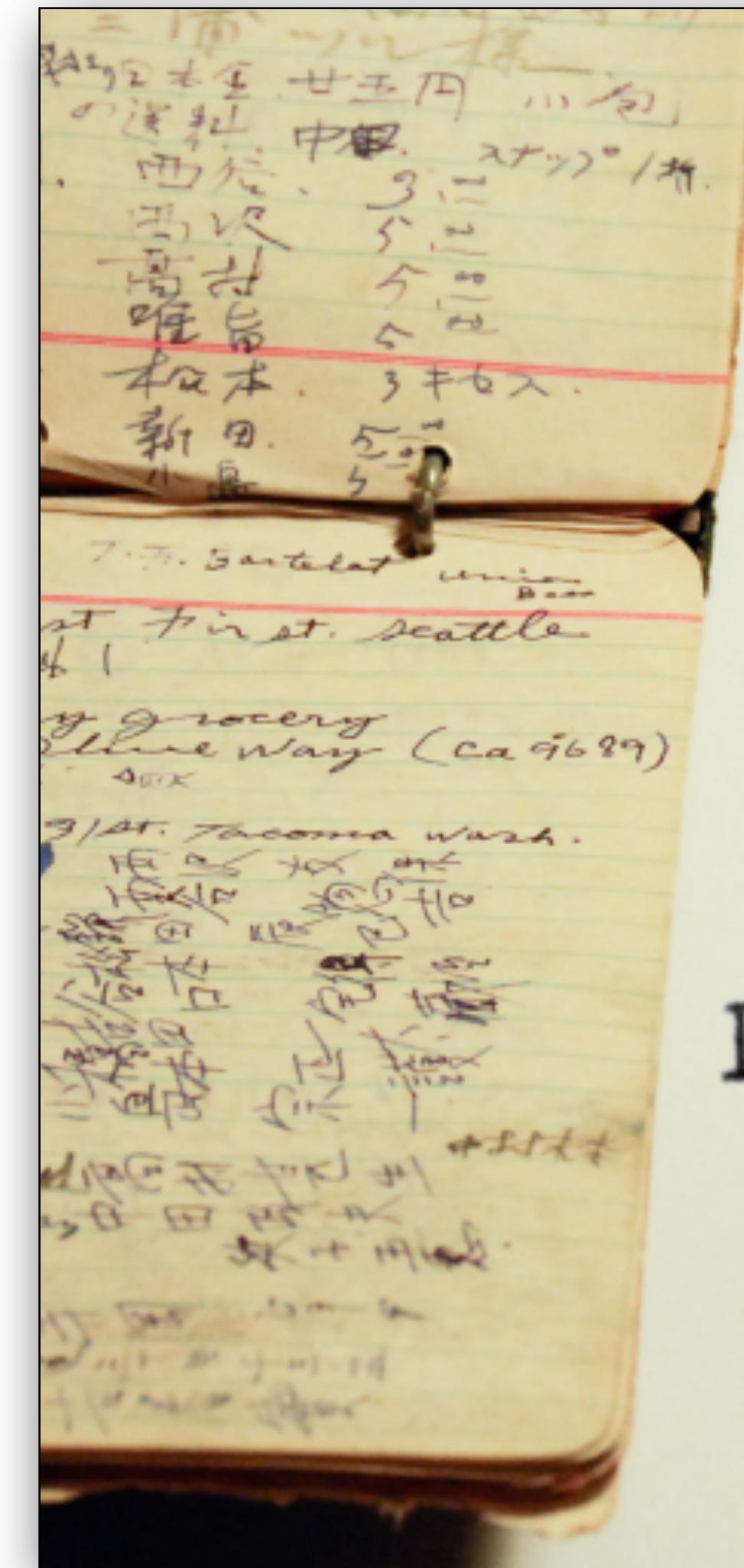
Wir sind Datenjournalisten und untersuchen die Strukturen in sozialer Netzwerke, wie sich Informationen in diesen verteilen und wie Filterblasen funktionieren. Das heißt, wir müssen viele Daten aus der Twitter-API sammeln. Leider ist die Anzahl der Twitter-API-Aufrufe pro Nutzer begrenzt, so dass unsere Datenerhebung ewig dauern würde.

Aber Du kannst uns helfen und mit **zwei Klicks** unserem Analysetool **Leserechte** geben.

Wir können damit nicht auf deine persönlichen Daten zugreifen oder Tweets schreiben!

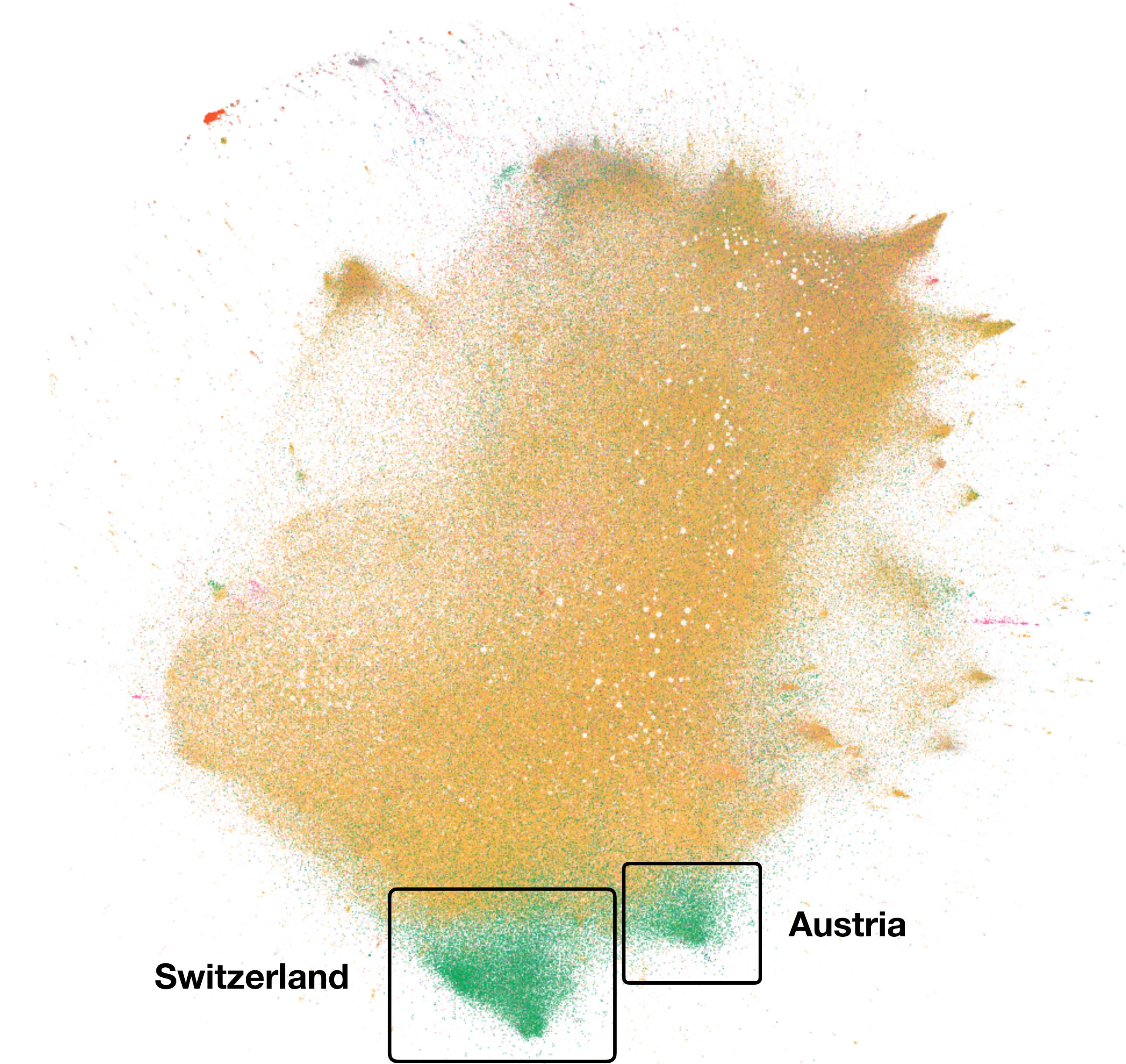
Bisher haben 693 Menschen unser Analysetool freigeschaltet.

SPENDE EINEN TOKEN



**Logbuch:
Netzpolitik**

1.6 million german speaking Twitter accounts



„my kung fu is strong“

„my kung fu is strong“

Let's find social bots!

Automated Pro-Trump Bots Overwhelmed Pro-Clinton Messages, Researchers Say



Trump's Twitter debate lead was 'swelled by bots'

By Shiroma Silva
BBC News

① 18 October 2016

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Technology

Propaganda flowed heavily into battleground states around election, study says

By Craig Timberg

September 28, 2017

Propaganda and other forms of "junk news" on Twitter flowed more heavily in a dozen battleground states than in the nation overall in the days immediately before and after the 2016 presidential election, suggesting that a coordinated effort targeted the most pivotal voters, researchers from Oxford University [reported](#) Thursday.

The volumes of low-quality information on Twitter —

MOTHERBOARD
TECH BY VICE

Election 2016 Belongs to the Twitter Bots

A new study finds 20 percent of election tweets were generated by bots.

By Daniel Oberhaus

Nov 7 2016, 8:50pm f t g



Automated Pro-Trump Bots Overwhelmed Pro-Clinton Messages, Researchers Say



Technology

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The volumes of low-quality information on Twitter —

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Technology

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By Daniel Oberhaus

Nov 7 2016, 8:50pm f t

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BBC

Buzzfeed

CBC

CNET

Engadget

Financial Times

IEEE SPECTRUM

Independent

NPR

NewScientist

The Atlantic

The Telegraph

The New York Times

The Washington Post

Forbes

MOTHERBOARD

PHYS.ORG

WIRED

CNBC

Fast Company

MIT Technology Review

Pew Research Center

The Conversation

The Sun

US News

The Guardian

Bloomberg

Businessinsider

Mashable

TechCrunch

The Hill

The Sydney Morning Herald

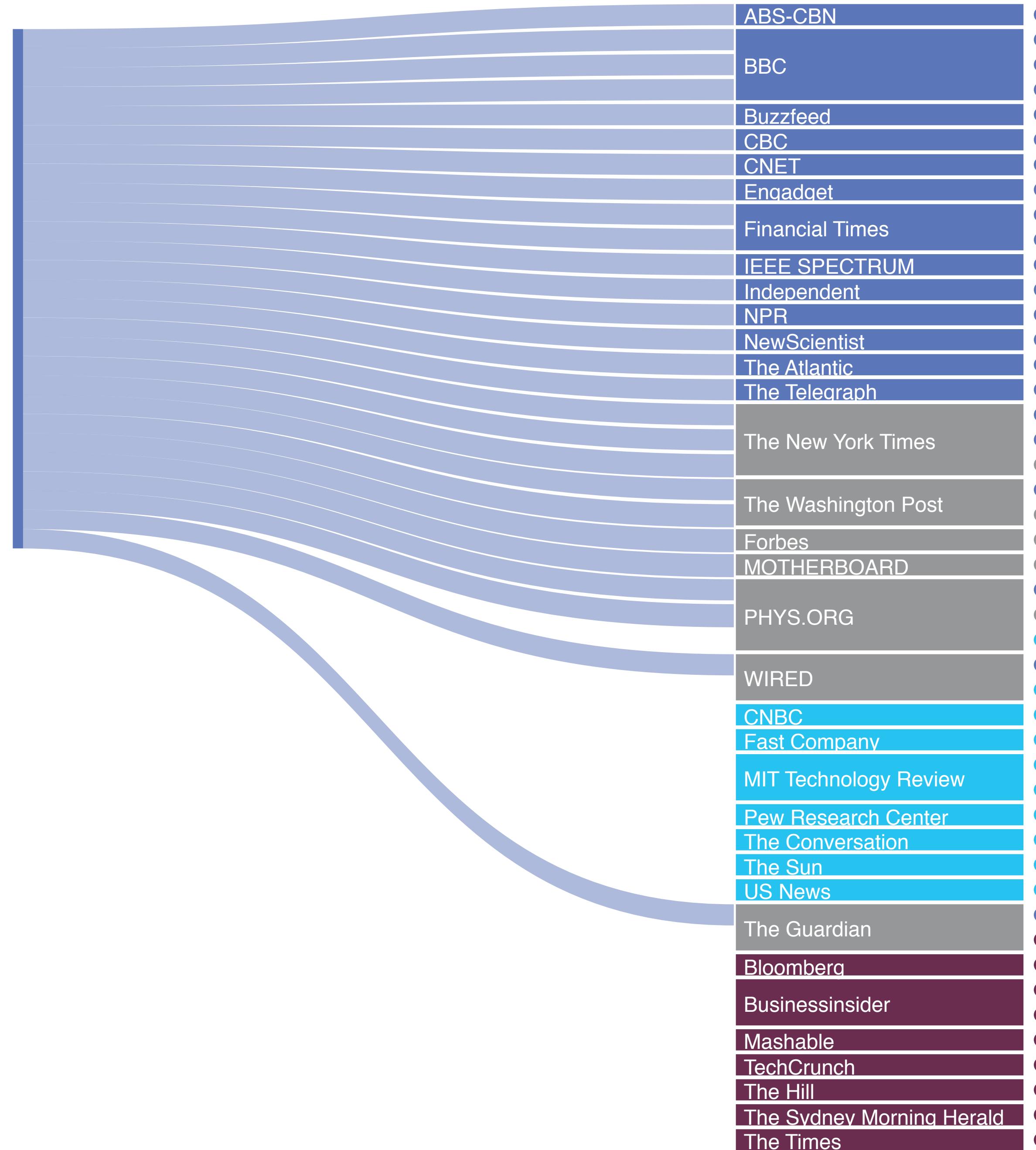
The Times



Oxford

27 times

"The Computational
Propaganda Project
of Oxford University"



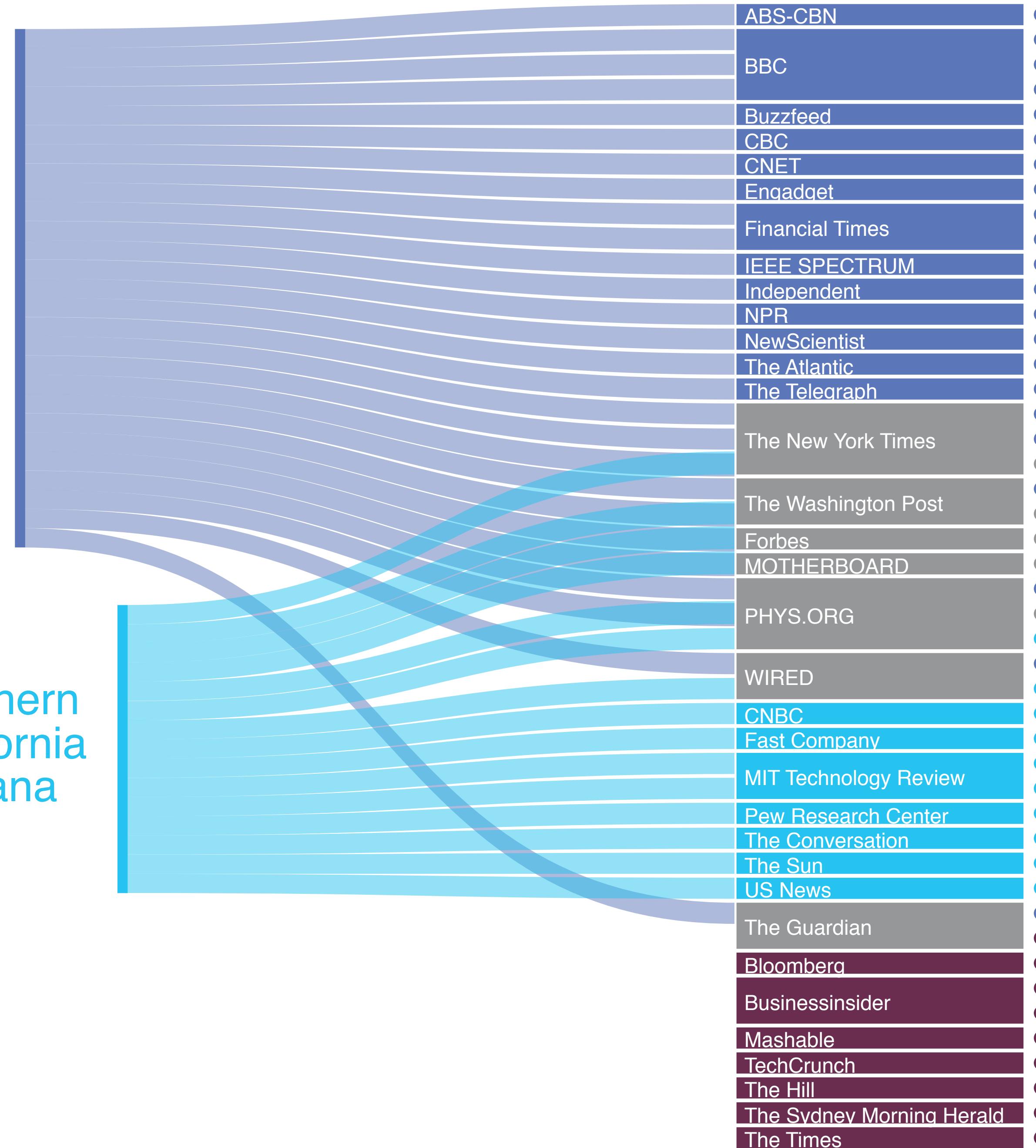
Oxford

27 times

"The Computational
Propaganda Project
of Oxford University"

Southern California /Indiana

15 times



Oxford

27 times

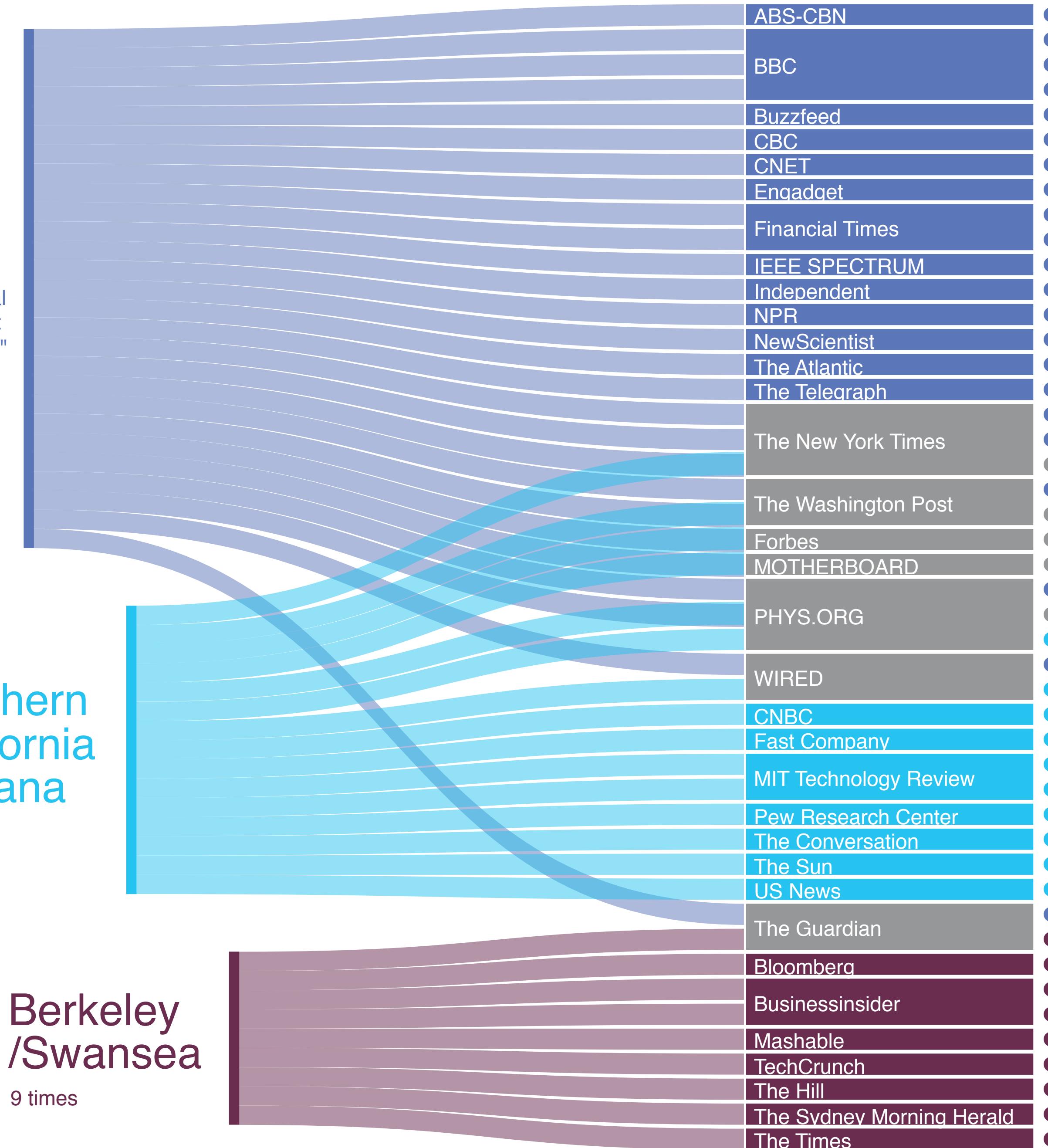
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Southern California /Indiana

15 times

Berkeley /Swansea

9 times



Comprop/Oxford

- Bots, #StrongerIn, and #Brexit: Computational Propaganda during the UK-EU Referendum
- Bots and Automation over Twitter during the First U.S. Presidential Debate
- Bots and Automation over Twitter during the Second U.S. Presidential Debate
- Bots and Automation over Twitter during the Third U.S. Presidential Debate
- Bots and Automation over Twitter during the U.S. Election

Bots and Automation over Twitter during the U.S. Election

COMPROP DATA MEMO 2016.4 / 17 NOV 2016

Bence Kollanyi
Corvinus University
kollanyi@gmail.com
[@bencekollanyi](https://twitter.com/bencekollanyi)

Philip N. Howard
Oxford University
philip.howard@oii.ox.ac.uk
[@pnhoward](https://twitter.com/pnhoward)

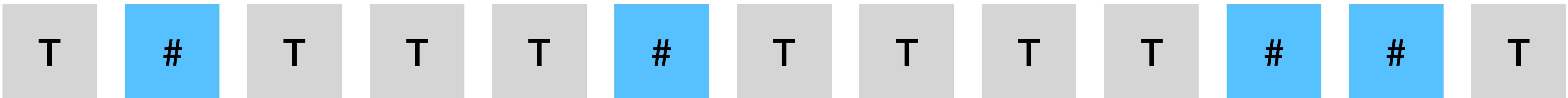
Samuel C. Woolley
University of Washington
samwooll@uw.edu
[@samuelwoolley](https://twitter.com/samuelwoolley)

ABOUT THE PROJECT

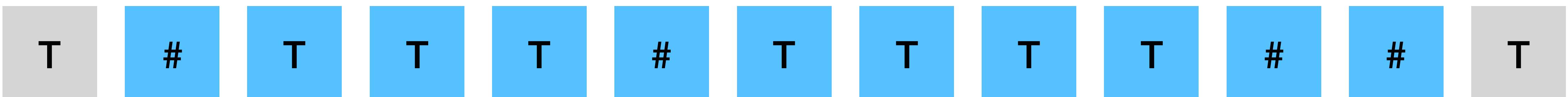
The Project on Computational Propaganda (www.politicalbots.org) involves international, and interdisciplinary, researchers in the investigation of the impact of automated scripts—computational propaganda—on public life. *Data Memos* are designed to present quick snapshots of analysis on current events in a short format. They reflect methodological experience and considered analysis, but have not been peer-reviewed. *Working Papers* present deeper analysis and extended arguments that have been collegially reviewed and that engage with public issues. The Project’s articles, book chapters and books are significant manuscripts that have been through peer review and formally published.

accounts are often bots that are either irregularly curated by people or actively maintained by people who employ scheduling algorithms and other applications for automating social media communication. We define a high level of automation as accounts that post at least 50 times a day using one of these election related hashtags, meaning 450 or more tweets on at least one of these hashtags during the data collection period.

What the paper claims:



What actually reproduces the results:



So basically:
"We define Social Bots as accounts
that tweet more than 50 times a day..."

So basically:
"We define Social Bots as accounts
that tweet more than 50 times a day..."

famous accounts with more than 50 tweets/day:	
Starbucks (151.7)	nytimes (108.3)
McDonalds (127.1)	CNN (156.6)
AskPlayStation (275.6)	NBA (115)
British Airways (280.8)	NFL (81.1)
journalist Glenn Greenwald (50.2)	TheEconomist (92.2)
author Cory Doctorow (142.2)	Reuters (318.4)
	WSJ (93.3)
	TIME (78.9)
	Forbes (81.6)

social bot tweets
during US election:

17.9%



social bot tweets
by verified accounts:

30.9%

Questions to Comprop/Oxford:

- Does using a pro Trump hashtag mean, someone is pro Trump?
- Spam accounts are usually using trending hashtags.
- 50 tweets per day is heavy automation?
- Why 50 and not 30 or 100?
- Do you have any proof, that you found Social Bots.
- Did this had any influence?
- Why is ComProp not sharing the data and source code?
- Why do they make it hard to verify their results?

Summary:
**Comprop/Oxford detected active users,
like supporters, journalists and spammers**

Oxford

27 times

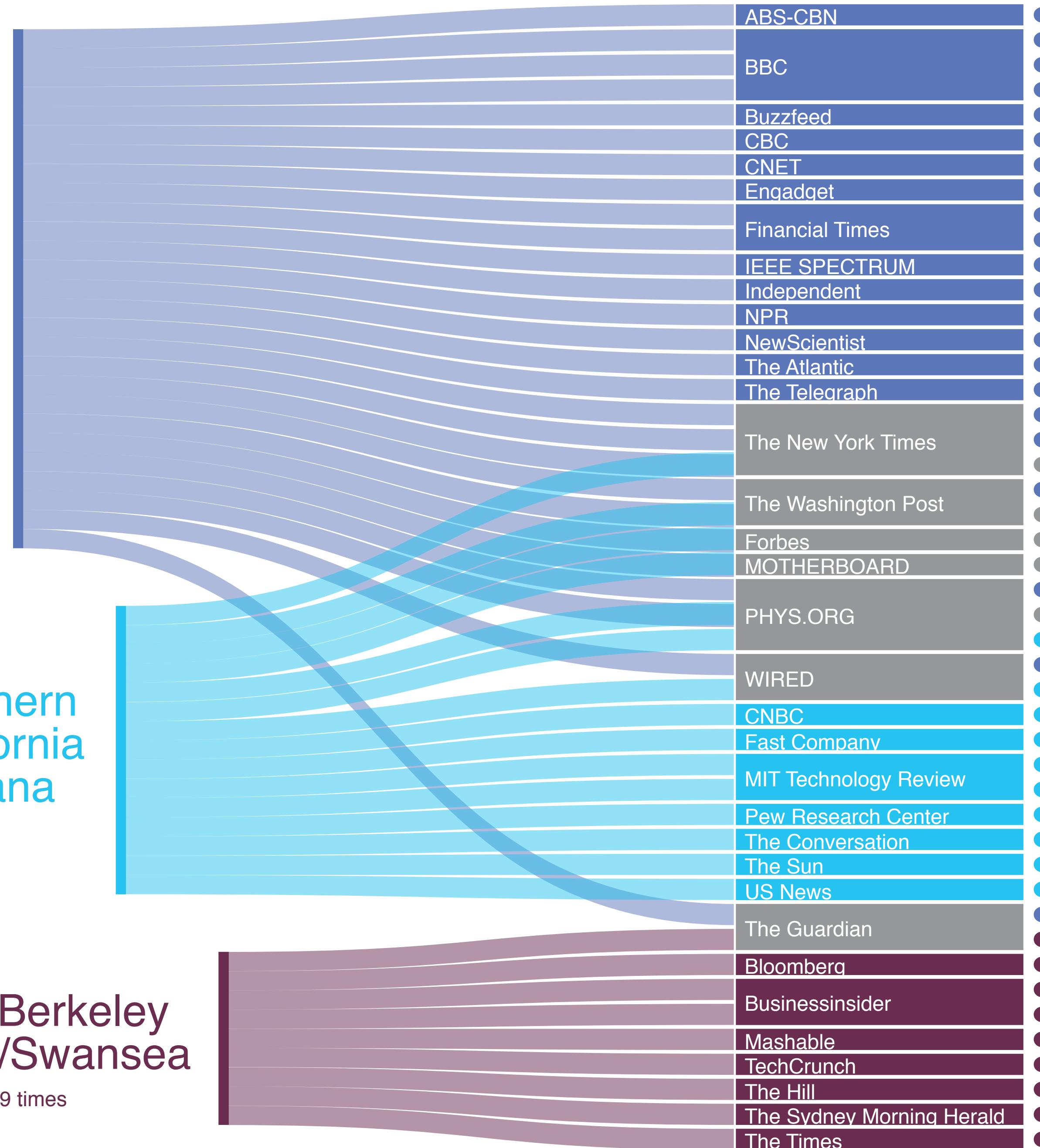
"The Computational Propaganda Project of Oxford University"

Southern California /Indiana

15 times

Berkeley /Swansea

9 times



„Bots and Automation over Twitter during the U.S. Election“ did not reach the scientific quality to be published in any scientific journal!

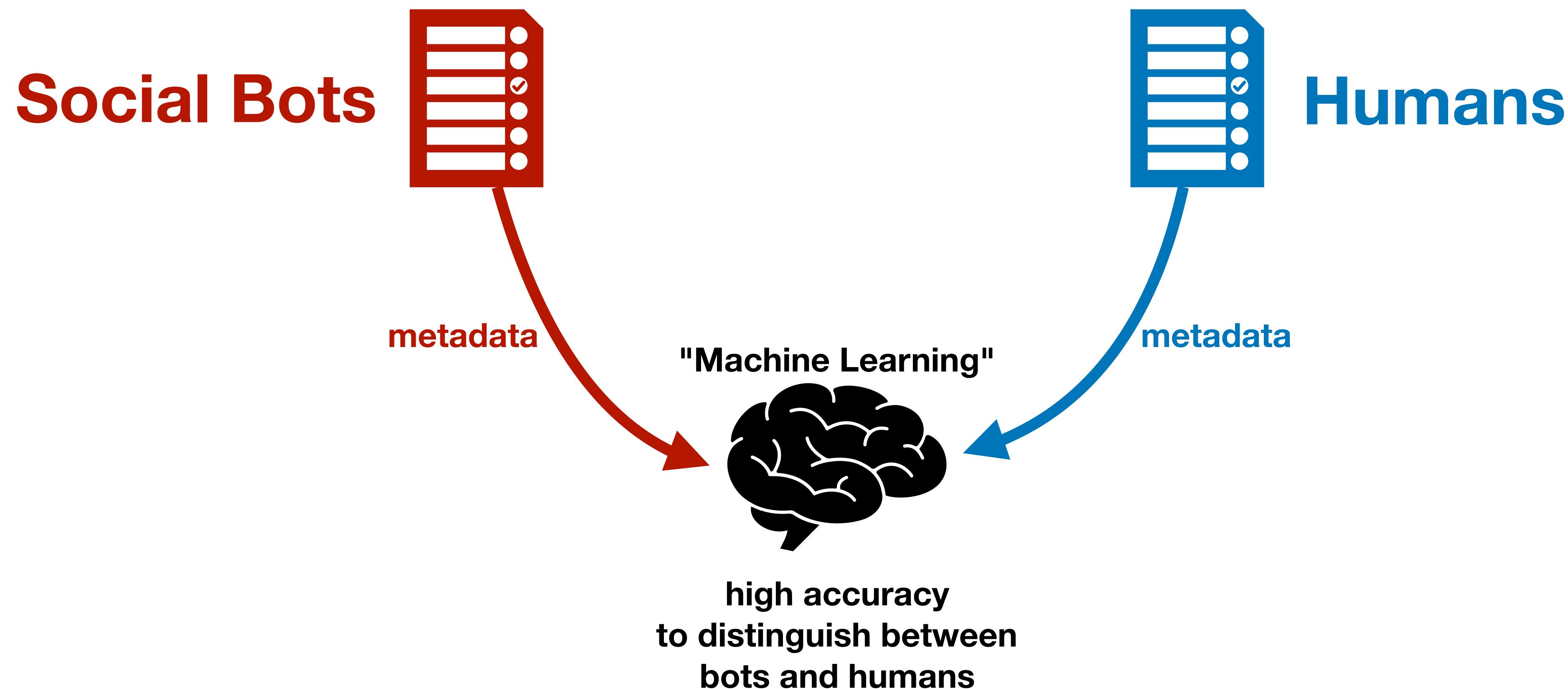
But it was good enough to be covered by major media outlets!

Maybe because the theory is more exciting than reality?

Southern California/Indiana

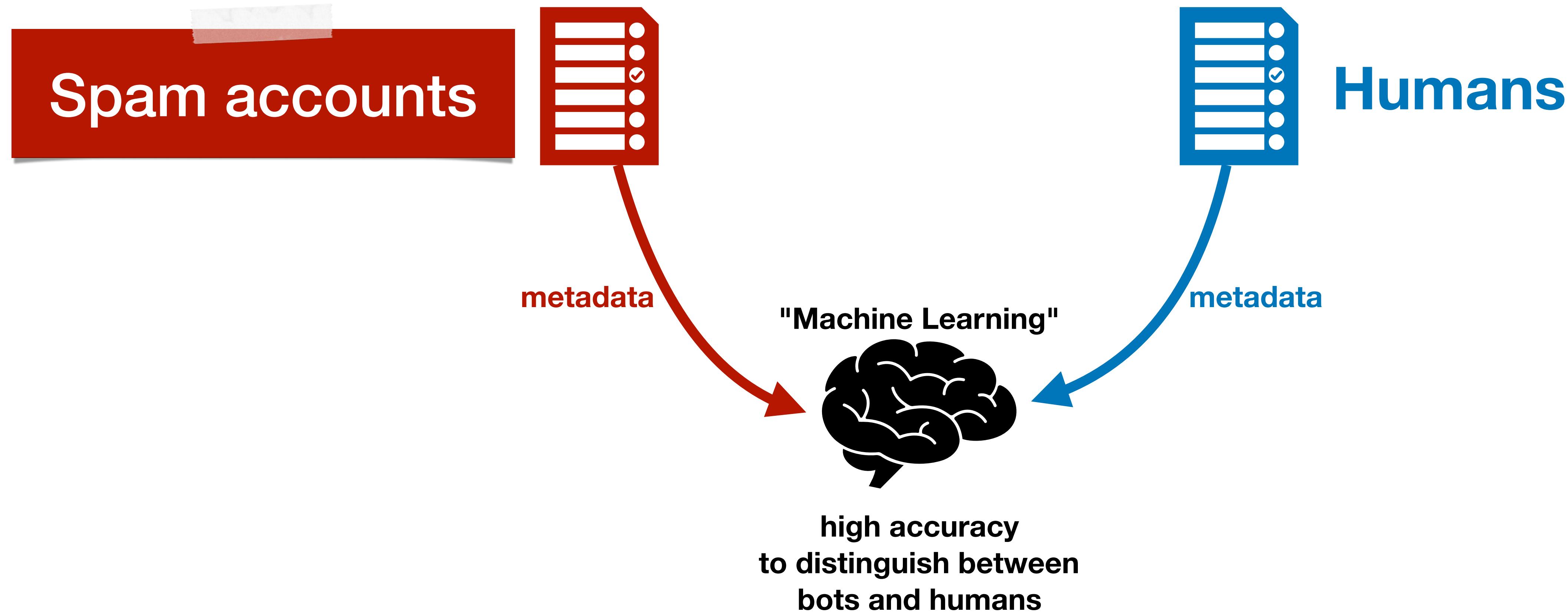
Botometer

aka BotOrNot



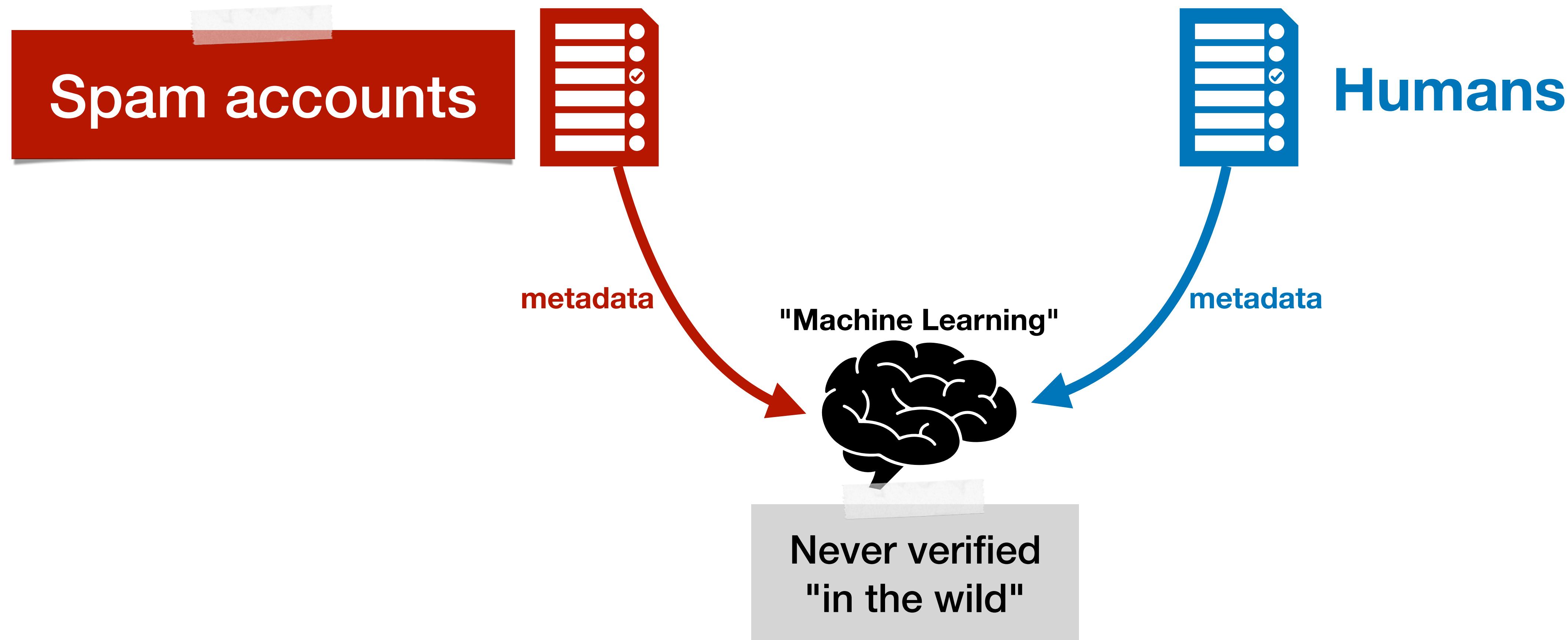
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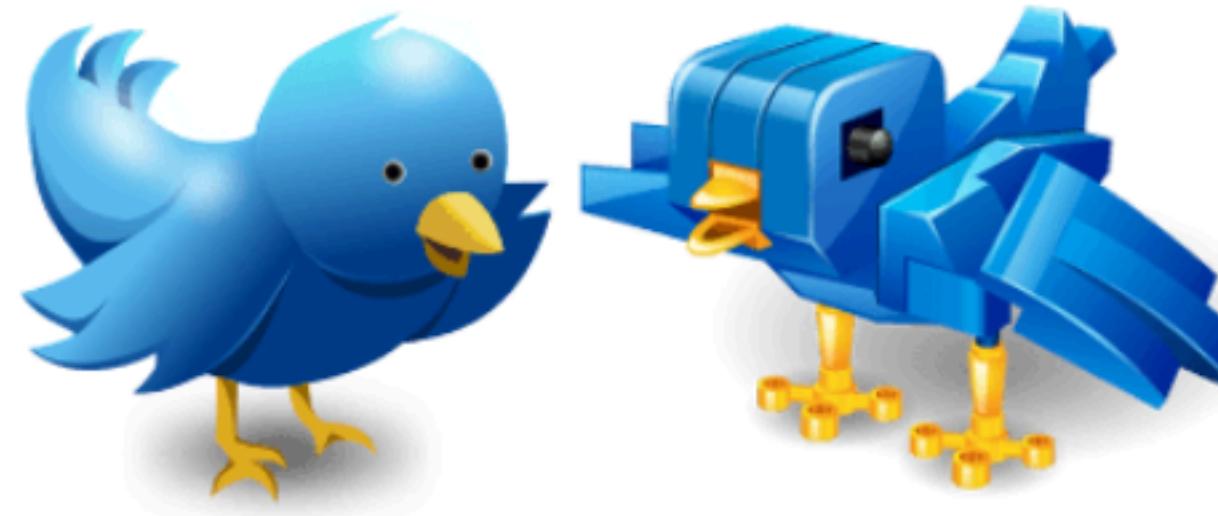


Botometer



Botometer®

An [OSoMe](#) project (bot•o•meter)



Botometer (formerly BotOrNot) checks the activity of a Twitter account and gives it a score based on how likely the account is to be a bot. Higher scores are more bot-like.

Use of this service requires Twitter authentication and permissions. ([Why?](#))

If something's not working or you have questions, please contact us only after reading

@ScreenName

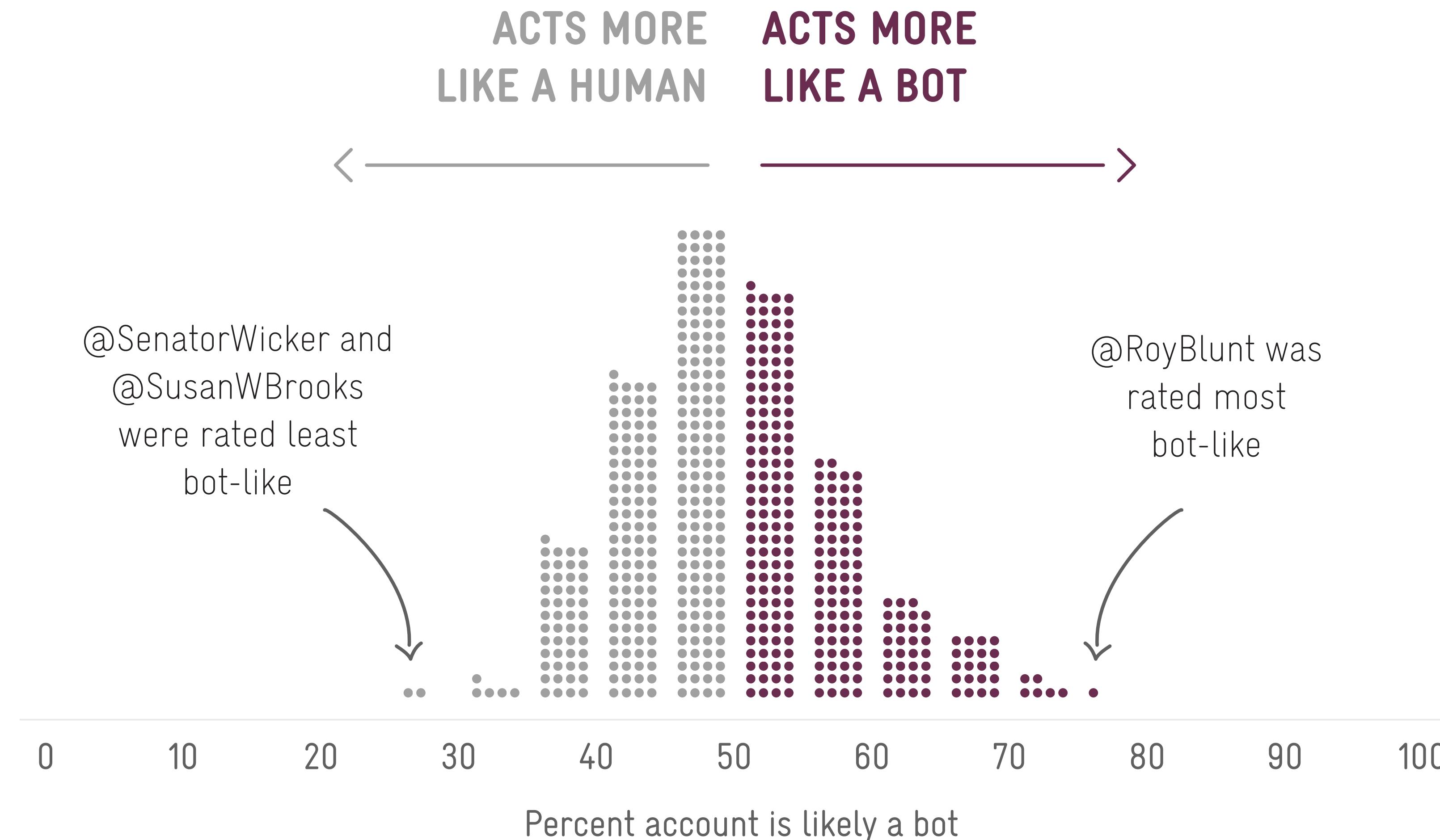
Check user

Check followers

Check friends

US Congress on Twitter: Bots or not?

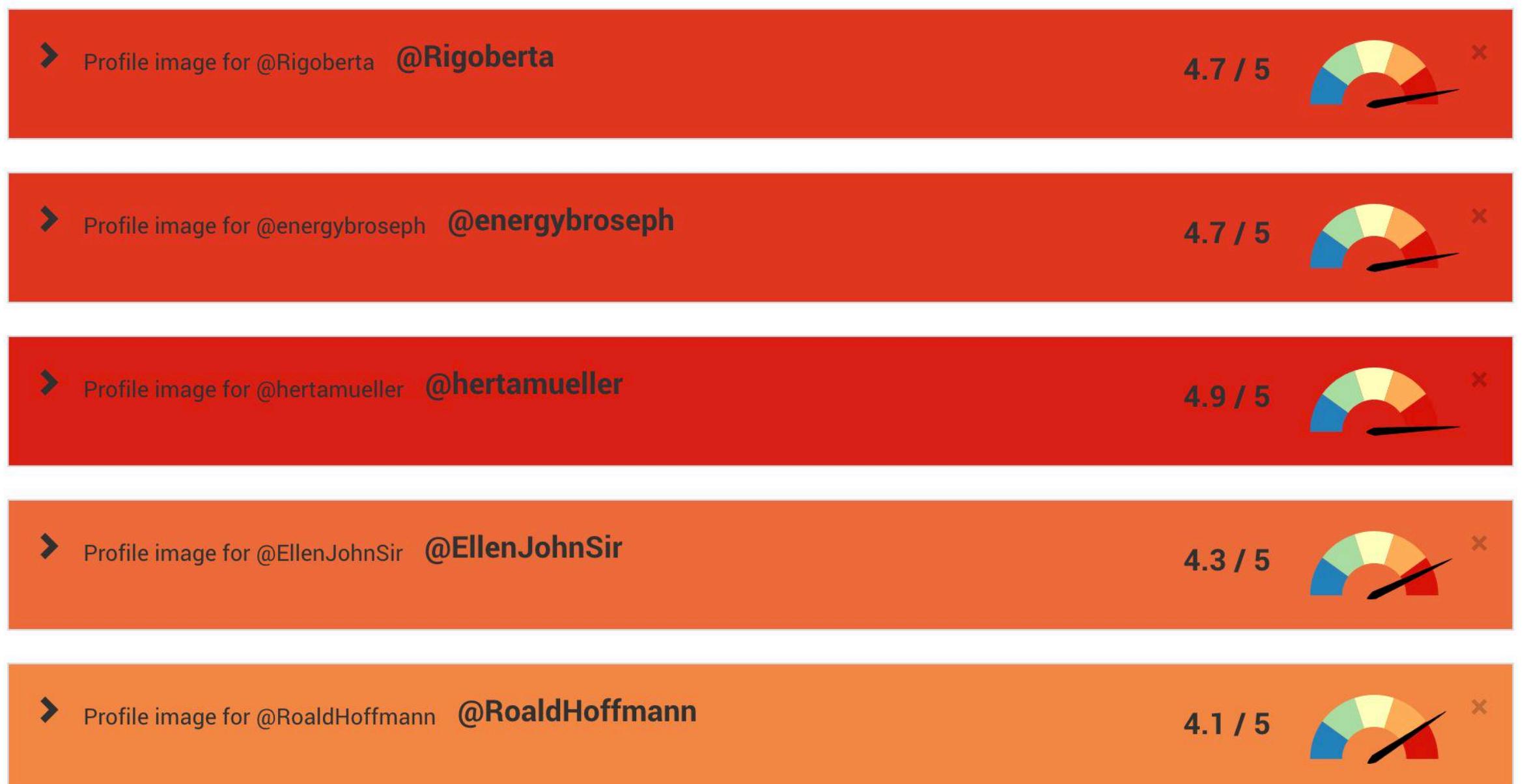
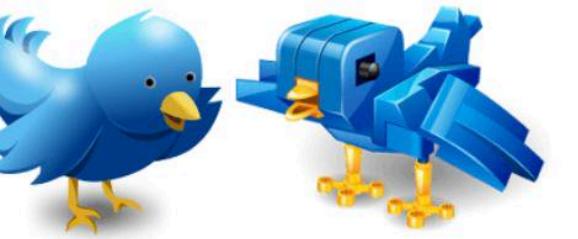
Botometer classified about half of US Congress members on Twitter as Bots.



Source: Botometer®, April 2018

According to Botometer ...

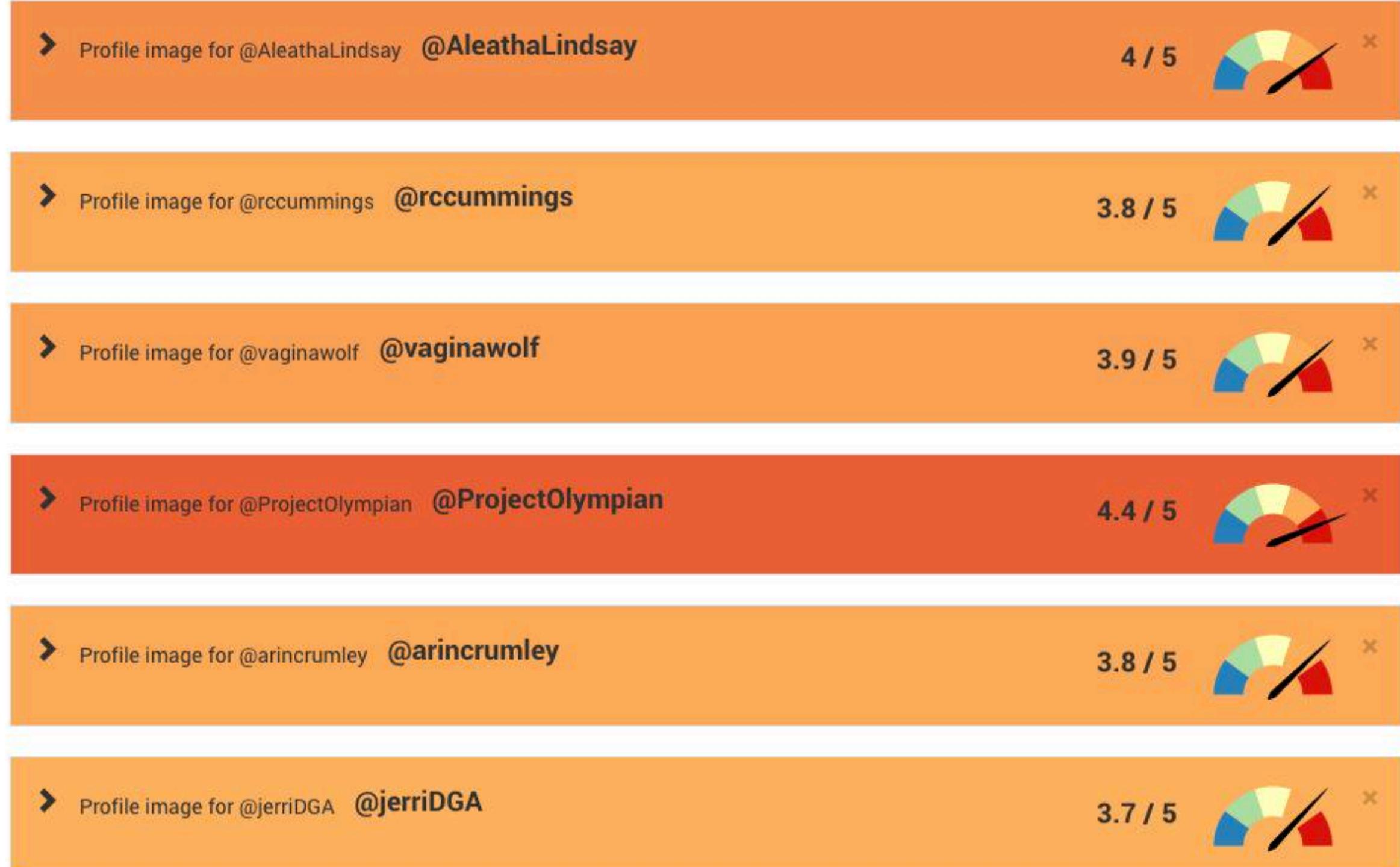
Botometer®
An OSoMe project (bot•o•meter)



**65 nobel prize laureates:
12% are bots**

According to Botometer ...

Botometer[®]
An OSoMe project (bot•o•meter)



**3137 female directors:
14% are bots**

According to Botometer ...

Botometer®

An OSoMe project (bot·o·meter)



Tweets 25 Following 4 Followers 11.9K

Gregory E. Chamitoff
@Astro_Taz
NASA Astronaut
📍 Houston, TX
🔗 nasa.gov/astronauts
📅 Joined August 2010

Tweets **Tweets & replies**

3.4 / 5

Tweets 99 Following 11 Followers 18.3K Likes 1

Sergey Volkov
@Volkov_ISS
Космонавт Роскосмоса. Участник космических экспедиций: МКС-17, 28/29 и 45/46. // Roscosmos cosmonaut. A member of 3 missions to the ISS: Exp17, 28/29 and 45/46

Tweets **Tweets & replies** **Media**

3.4 / 5

Tweets 33 Following 8 Followers 7,111 Likes 1

Dr. Robert L. Satcher
@ZeroG_MD
Former NASA Astronaut. Comments and views expressed here are my own.
📍 Houston, TX
📅 Joined October 2009

Tweets **Tweets & replies** **Media**

3.1 / 5

Tweets 45 Following 35 Followers 4,342 Likes 10

Gregory C Johnson
@AstroRayJ
Nasa Astronaut / Nasa Research Pilot, former USN Test Pilot.
📅 Joined August 2012

Tweets **Tweets & replies** **Media**

2.5 / 5

96 NASA accounts:
14% are bots

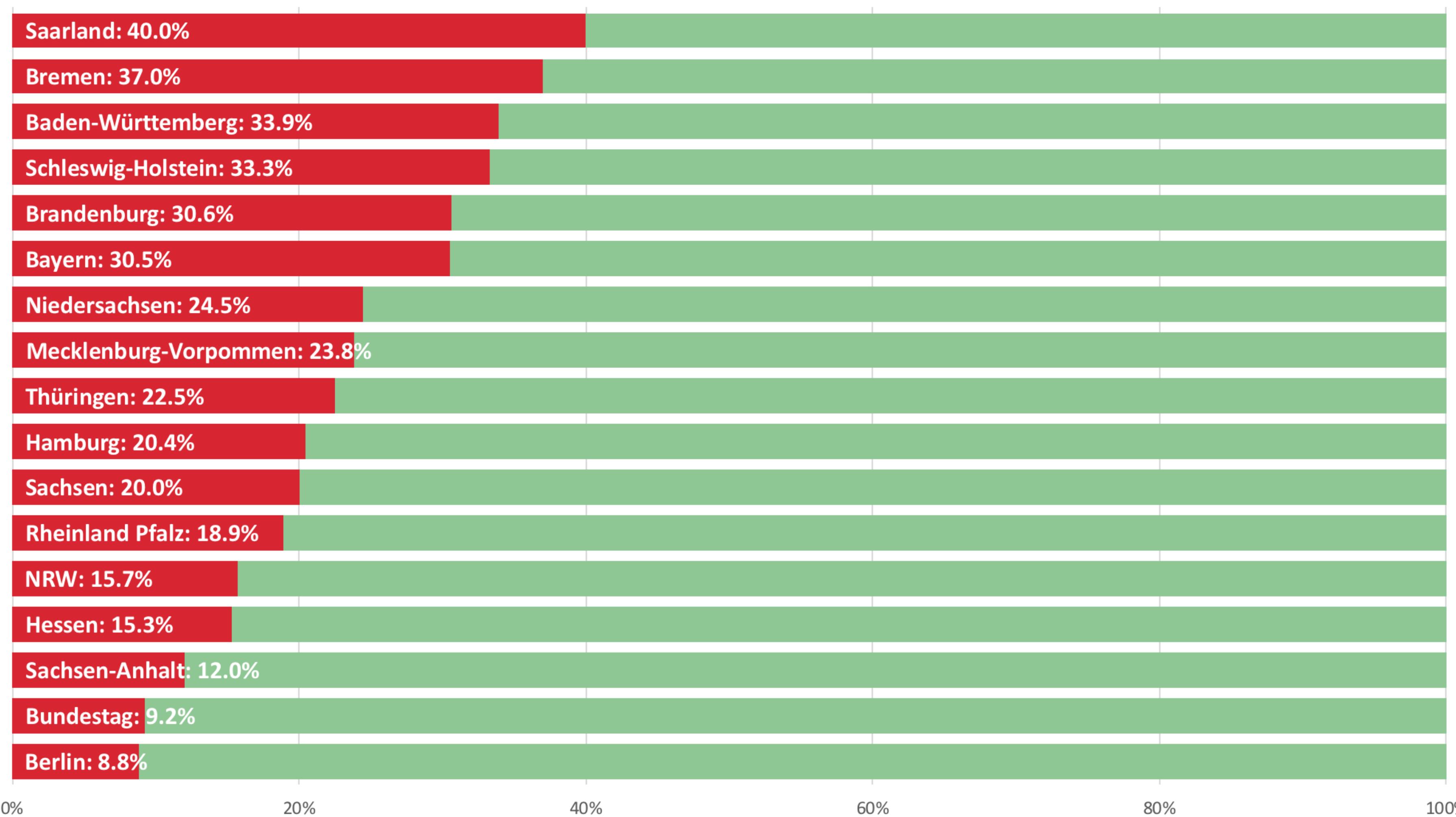
According to Botometer ...

- 17.7% of @Reuters journalists are bots
- 21.9% of @UN_Women staff are bots
- 35.9% of the staff of german news agency @dpa are bots
- 30.5% of the federal parliament of Bavaria are bots

According to Botometer ...

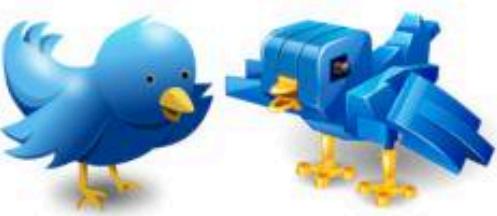
Bot-Anteil in unterschiedlichen Parlamenten

■ Bots ■ Menschen



According to Botometer ...

Botometer[®]
An OSoMe project (bot•o•meter)



➤ Profile image for @fallingleafbot @fallingleafbot

0.2 / 5



➤ Profile image for @birdbot4 @birdbot4

0.5 / 5



➤ Profile image for @latinonamebot @latinonamebot

0.2 / 5



➤ Profile image for @PixelMonsterBot @PixelMonsterBot

0.2 / 5



➤ Profile image for @boggle_bot @boggle_bot

0.3 / 5



➤ Profile image for @jakerunningbot @jakerunningbot

0.2 / 5



➤ Profile image for @cityatnightbot @cityatnightbot

0.2 / 5



➤ Profile image for @theasciartbot @theasciartbot

0.3 / 5



➤ Profile image for @BostonSnowbot @BostonSnowbot

0.3 / 5



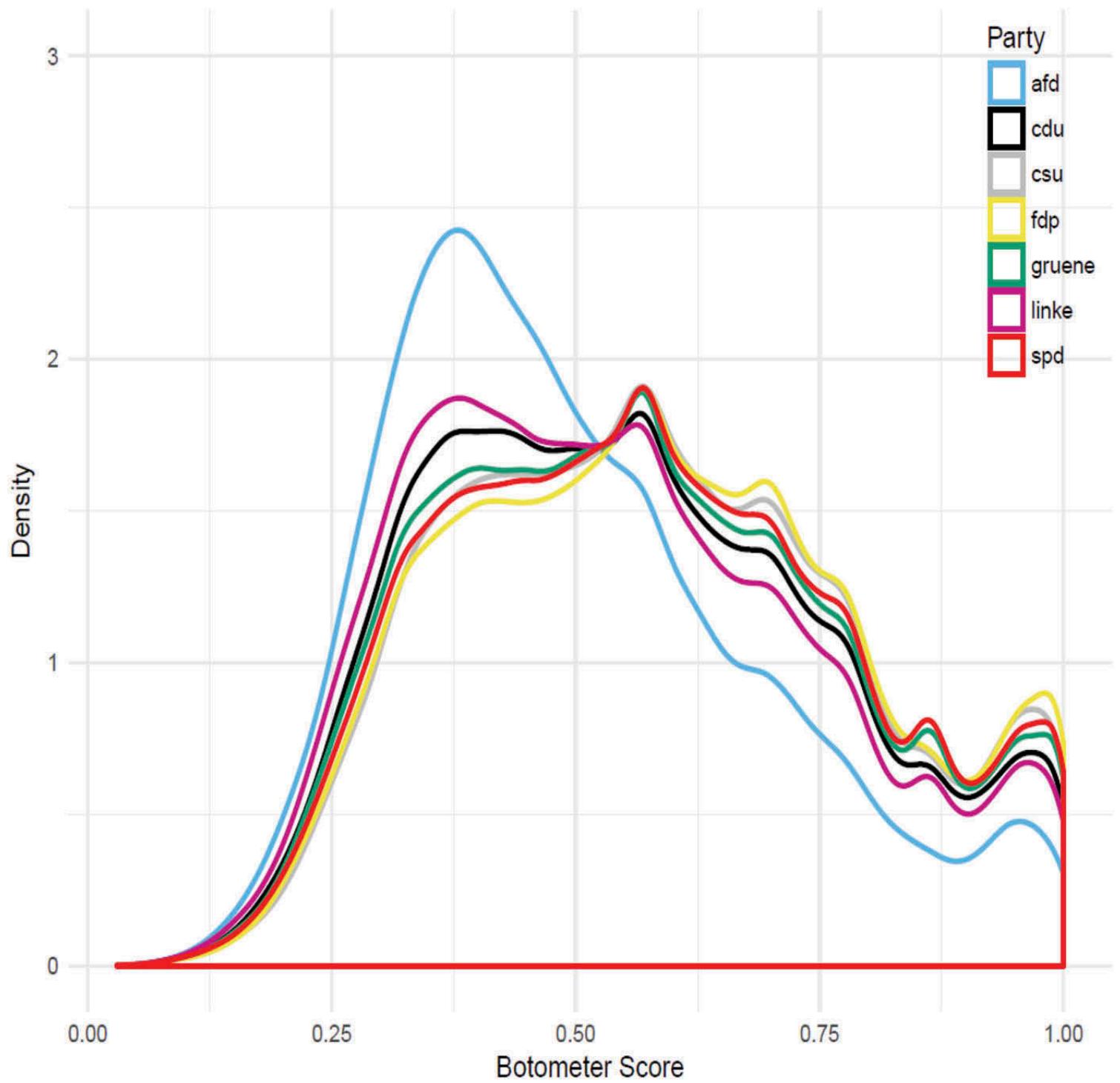
**937 bots from botwiki.org:
61% are humans**

**Botometer reaches
false-positive/-negative rates
up to 50% and more!
(worse than flipping a coin)**

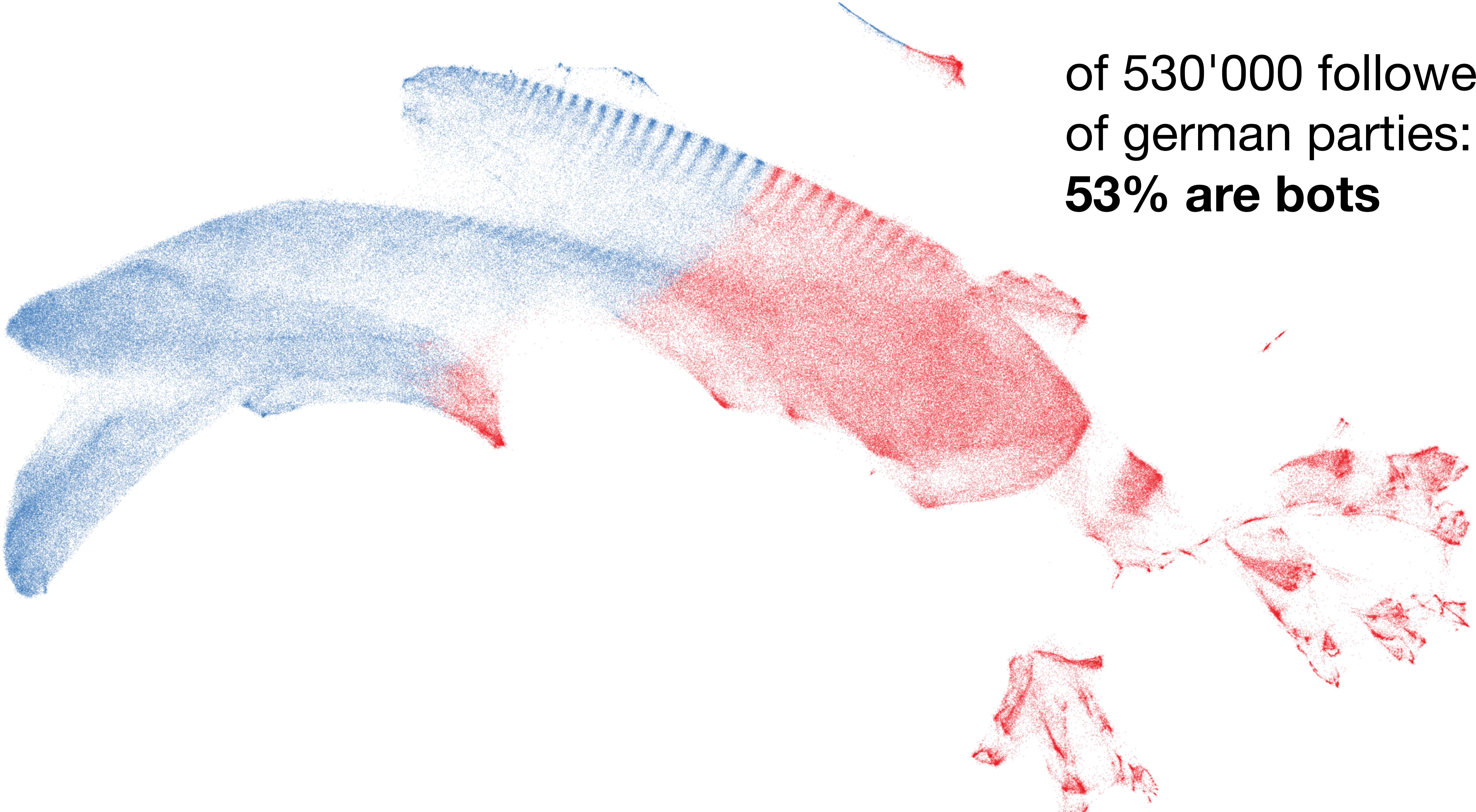
Botometer
is used by
many other scientists

Social Bots in Election Campaigns: Theoretical, Empirical, and Methodological Implications

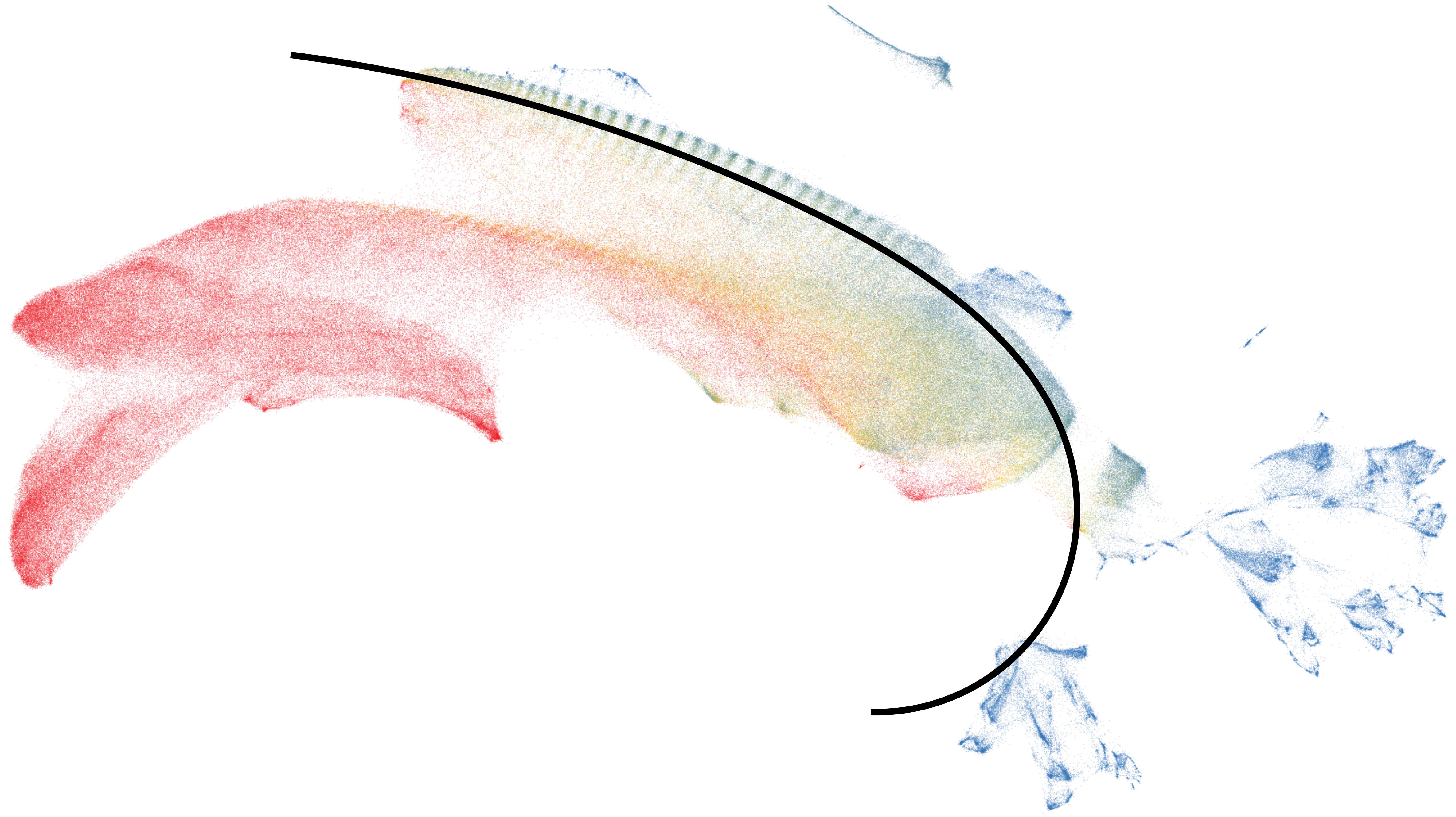
Tobias R. Keller & Ulrike Klinger

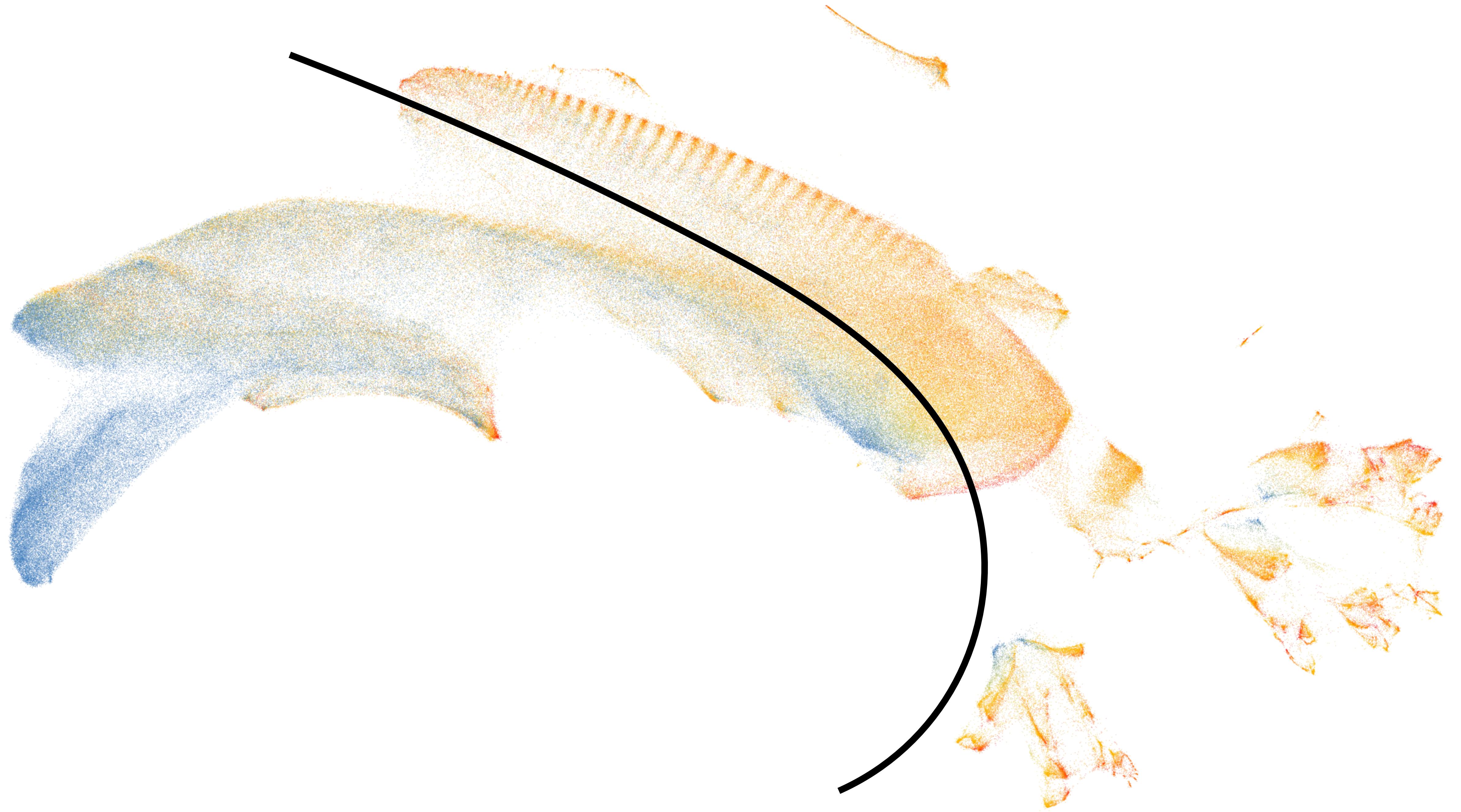


Twitter followers
of german parties:
10% are bots



of 530'000 followers
of german parties:
53% are bots









Botometer is a blackbox algorithm
that classifies people as bots
and **delegitimises** movements.

Oxford

27 times

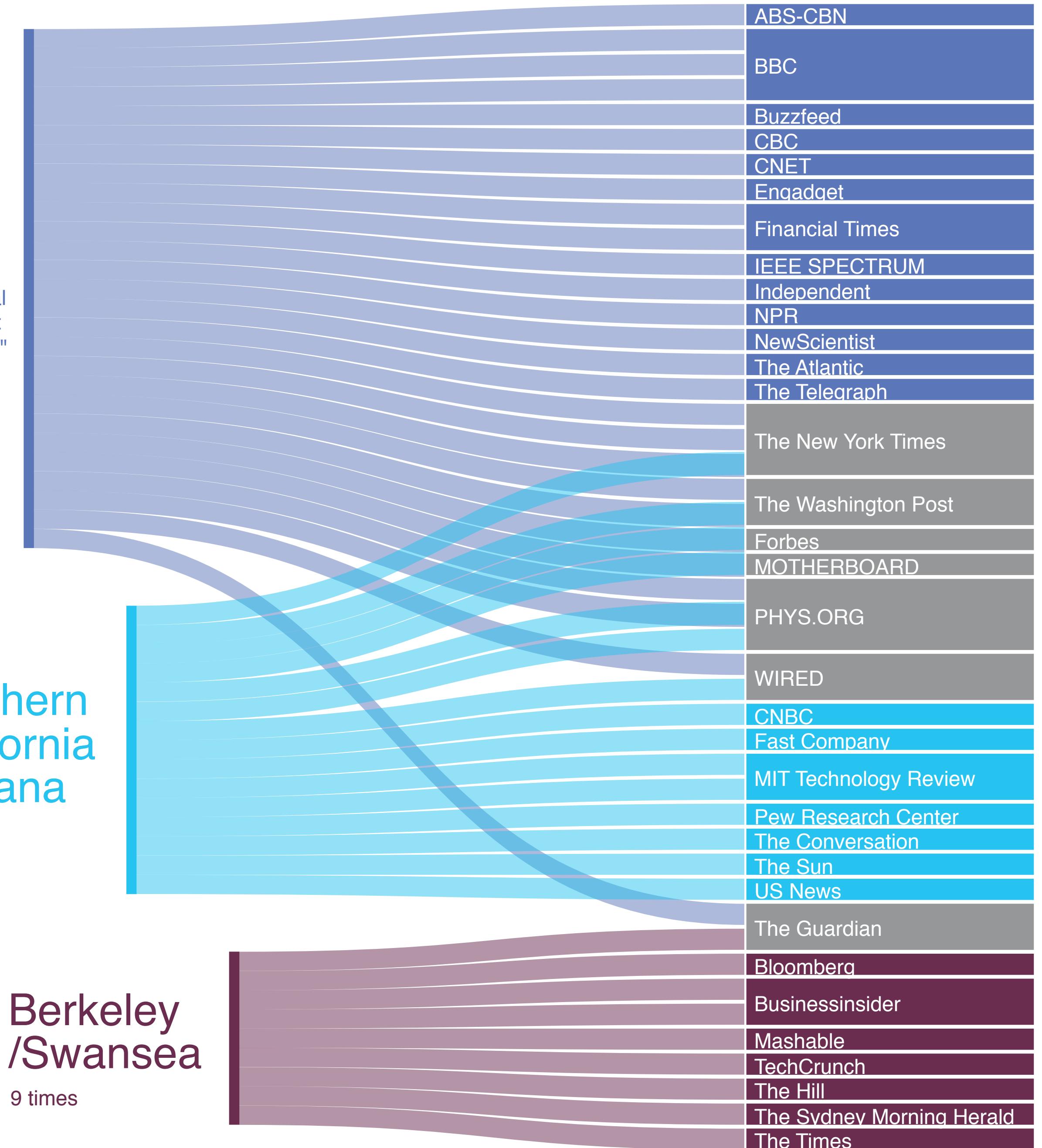
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Propaganda Project
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Southern California /Indiana

15 times

Berkeley /Swansea

9 times



Berkeley/Swansea

<https://blog.plan99.net/did-russian-bots-impact-brexit-ad66f08c014a>

Mike Hearn:

"I am one of the very, very few people in the world who has actually fought bots on social media platforms. As a member of the Google abuse team from 2010–2013 I spent a large amount of time working on anti-spam and anti-automation platforms."

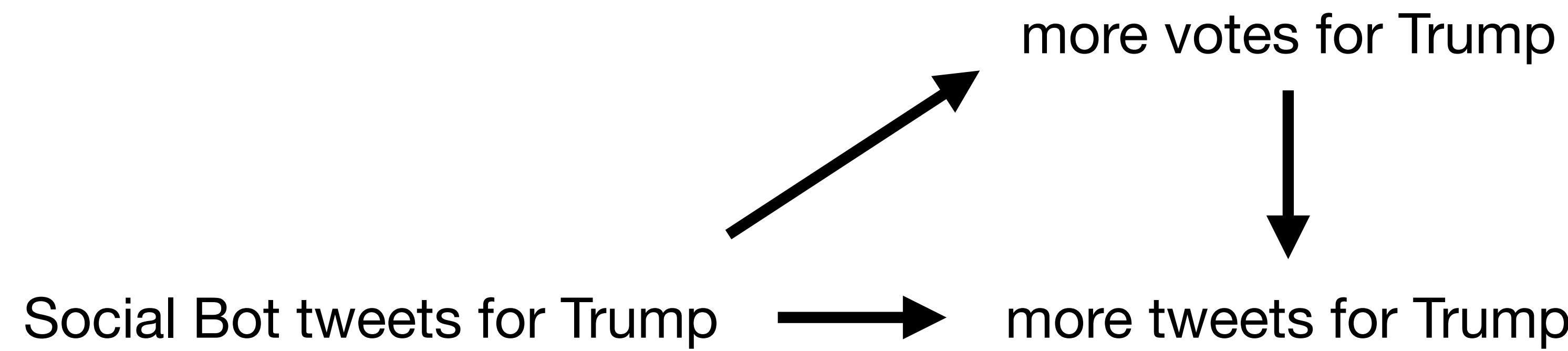
"It is the most irresponsible abuse of maths I've seen for a long time."

Social media, sentiment and public opinions: Evidence from #Brexit and #USElection

Yuriy Gorodnichenko
University of California, Berkeley

Tho Pham
Swansea University

Oleksandr Talavera*
Swansea University



important role in the outcome of these close-call elections. Specifically, our analysis in Section 2.5 suggests that a percentage point increase in the share of pro-Trump tweets in total tweets is associated with a 0.59 percentage point increase in the share of actual pro-Trump votes. Therefore, the observed difference between actual and counterfactual pro-Trump tweet shares **suggests that 3.23 percentage points of the actual vote could be rationalized with the influence of bots.**

TIME [SUBSCRIBE](#)

2016 ELECTION

Twitter Bots May Have Boosted Donald Trump's Votes by 3.23%, Researchers Say

BY JEANNA SMIALEK / BLOOMBERG
MAY 21, 2018

Twitter bots may have altered the outcome of two of the world's most consequential elections in recent years, according to an economic study.

Automated tweeting played a small but potentially decisive role in the 2016 Brexit vote and Donald Trump's presidential victory, the National Bureau of Economic Research working paper showed this month. Their rough calculations suggest bots added 1.76 percentage point to the pro-“leave” vote share as Britain weighed whether to remain in the European Union, and may explain 3.23 percentage points of the actual vote for Trump in the U.S. presidential

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POLITICS 05/25/2018 09:12 am ET

Twitter Bots May Have Delivered Donald Trump's Victory, Research Paper Says

“Our results suggest that, given narrow margins of victories in each vote, bots' effect was likely marginal but possibly large enough to affect the outcomes.”



By Mary Papenfuss

Twitter bots could have swayed the presidential election enough to account for Donald Trump's margin of victory, according to new research.

Automated tweeting played a small but potentially decisive role in Trump's win, according to a working paper released by the nonprofit National Bureau of Economic Research. The research suggests that bots touting Trump or attacking rival Hillary Clinton could have accounted for 3.23 percentage points of the vote for president, putting Trump over the top. Clinton won the popular vote, and a small added margin in critical districts could have put her over the top in some states and affected the Electoral College total.

Oxford

27 times

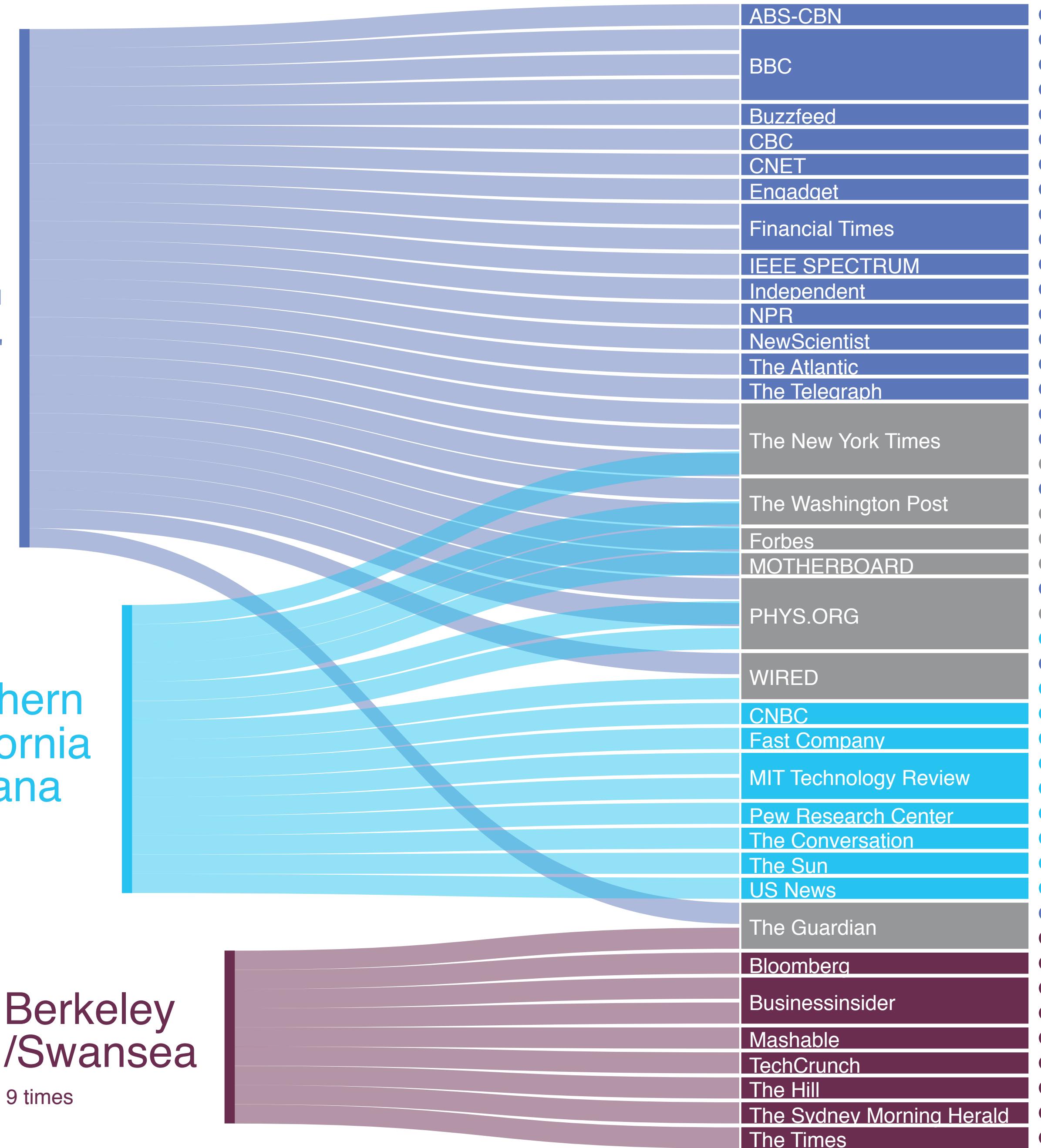
"The Computational
Propaganda Project
of Oxford University"

Southern California /Indiana

15 times

Berkeley /Swansea

9 times



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SCIENTIFIC AMERICAN JULY 2019

Social Media Bots Deceive E-cigarette Users

Social media bots promote unproved benefits of e-cigarettes

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The Science and Art of Communication for Change

PGP is able to identify which posts have a high likelihood of originating from bots and which have a high likelihood of originating from humans. This analysis occurs on Twitter, given that

SCIENCE

A Fight Over Vaping “Bots” Is Blazing While E-Cigarette Bans Loom

“Dehumanizing opposition by calling people ‘bots’ is just a way to attack vaping,” said one vaping advocate.



Dan Vergano
BuzzFeed News Reporter



Reporting From
Washington, D.C.

Posted on October 29, 2019, at 5:03 p.m. ET

No explanation of the method!
No source code!
No data!
Only bold and unproven allegations!

**Social Bot research
is a total disaster!**

The whole theory of
"Social Bots influenced elections"
can be fully explained
by the failure of these research groups.

Research groups of
Oxford, South California/Indiana, Berkeley/Swansea
invented methods,
that are **unscientific**,
have **never been proven**,
have **terrible false-positive rates**
and are **easy to falsify**.

All their papers have to be **reviewed again**
and have to be **revoked** if necessary.

This includes all other research
from all other groups,
using their methods.

How we got in to that mess?

Many media outlets were shocked
by Brexit and the election of Donald Trump.

They were desperately looking for an explanation.

Unknown scientist gave them one.

How we got in to that mess?

Some scientist are in the center of media attention.

This is good for their ego and their funding.

But this is bad for the unbiasedness of science.

How we fix that mess?

We need the scientific community
to conduct an **unbiased review**
of these social bot papers!

THE FALSE POSITIVE PROBLEM OF AUTOMATIC BOT DETECTION

The issue of identifying bots

Identifying bots¹ (here understood as automated accounts) on social media platforms like Twitter is a task that is as important as it is challenging. Indeed, being able to estimate how authentic any given discourse on social media is or how many “real” (i.e. human) followers a politician has, is an important baseline for the analysis of online debates. Consequently, several methods have been introduced to deal with this problem, including a generic activity filter (Howard & Kollanyi, 2016), an analysis of posting patterns (Bastos & Mercea, 2017), as well as a trained classifier (Davis et al, 2016). Especially the trained classifier *Botometer* is a popular tool in the social sciences to estimate the amount of bots within a given dataset.

How we fix that mess?

I demand that the research groups of Oxford, South California/Indiana, Berkeley/Swansea **publish their source code** in all versions and share their **data with third parties**.

Why is it urgent?

Dangerous and stupid laws are being prepared.



Wir brauchen eine
faktenbasierte Digital- und
Medienpolitik. Regulierung
von "Social Bots" im neuen
Medienstaatsvertrag

⌚ Oktober 30, 2019

📝 Blog

❖ Digitalpolitik, Medienstaatsvertrag, Social Bots

👤 Ann Cathrin Riedel

*"We need a fact-based digital and media policy.
Regulation of "social bots" in the new State Media Treaty."*

**Dear scientist: Please learn from
Open Source and Open Data
communities.**

Thanks

Twitter: **@MichaelKreil**
email: **contact@michael-kreil.de**

slides, notes, papers, sources, codes, tools, data, graphics:
<https://github.com/MichaelKreil/openbots/wiki>