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Fake News and Social Media: an unbreakable bond?

Overview on current research trends



*Age of misinformation:
an interdisciplinary outlook on fake news*

17 December 2020

2018 Manifesto

POLICY FORUM | SOCIAL SCIENCE

The science of fake news

David M. J. Lazer, Matthew A. Baum, Yochai Benkler, Adam J. Berinsky, Kelly M. Greenhill, Filippo Menczer, Miriam J. Metzger, Brendan Nyhan, Gordon Pennycook, David Rothschild, Michael Schudson, Steven A. Sloman, Cass R. Sunstein, Emily A. Thorson, Duncan J. Watts, Jonathan L. Zittrain

The list of author affiliations is provided in the supplementary materials.

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- Hide authors and affiliations

Science 09 Mar 2018:
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DOI: 10.1126/science.aao2998

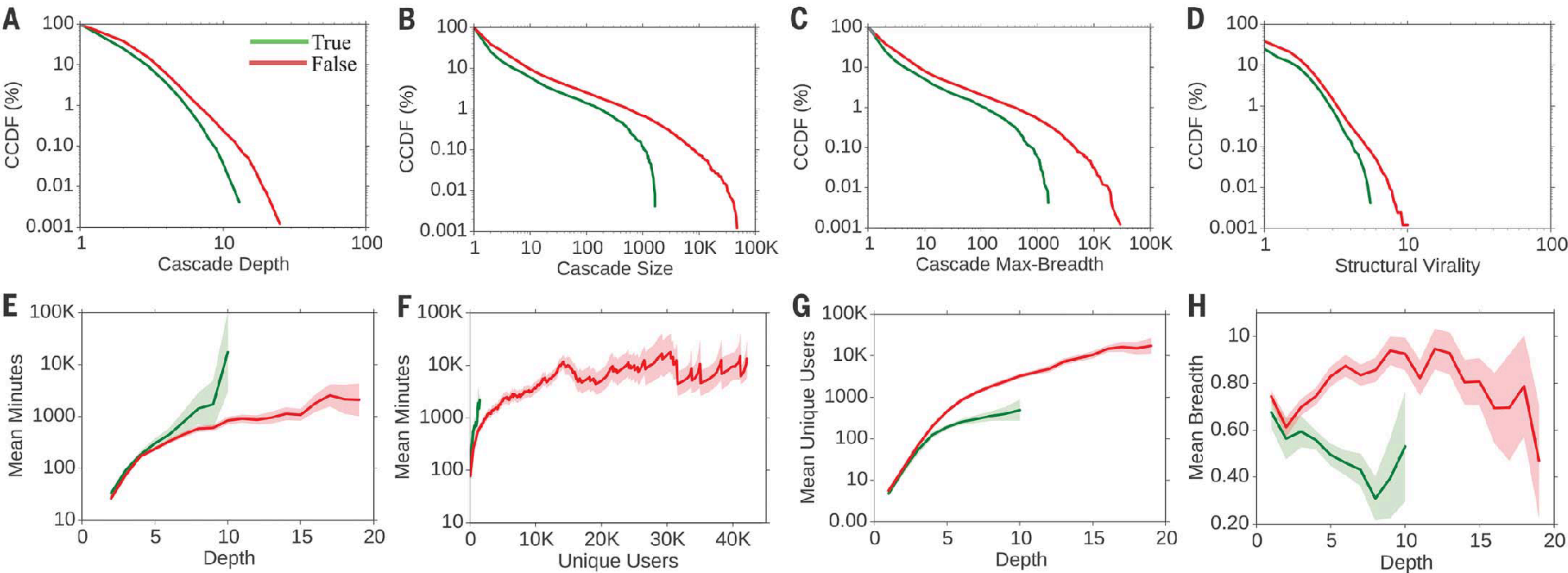
"... much remains unknown regarding the vulnerabilities of individuals, institutions, and society to manipulations by malicious actors."

Prevalence

- ❖ Many observed that false stories in social media are more successful (in numbers and speed) than true stories
- ❖ *Which are the key factors?*
- ❖ *Who is to blame: bots or humans?*

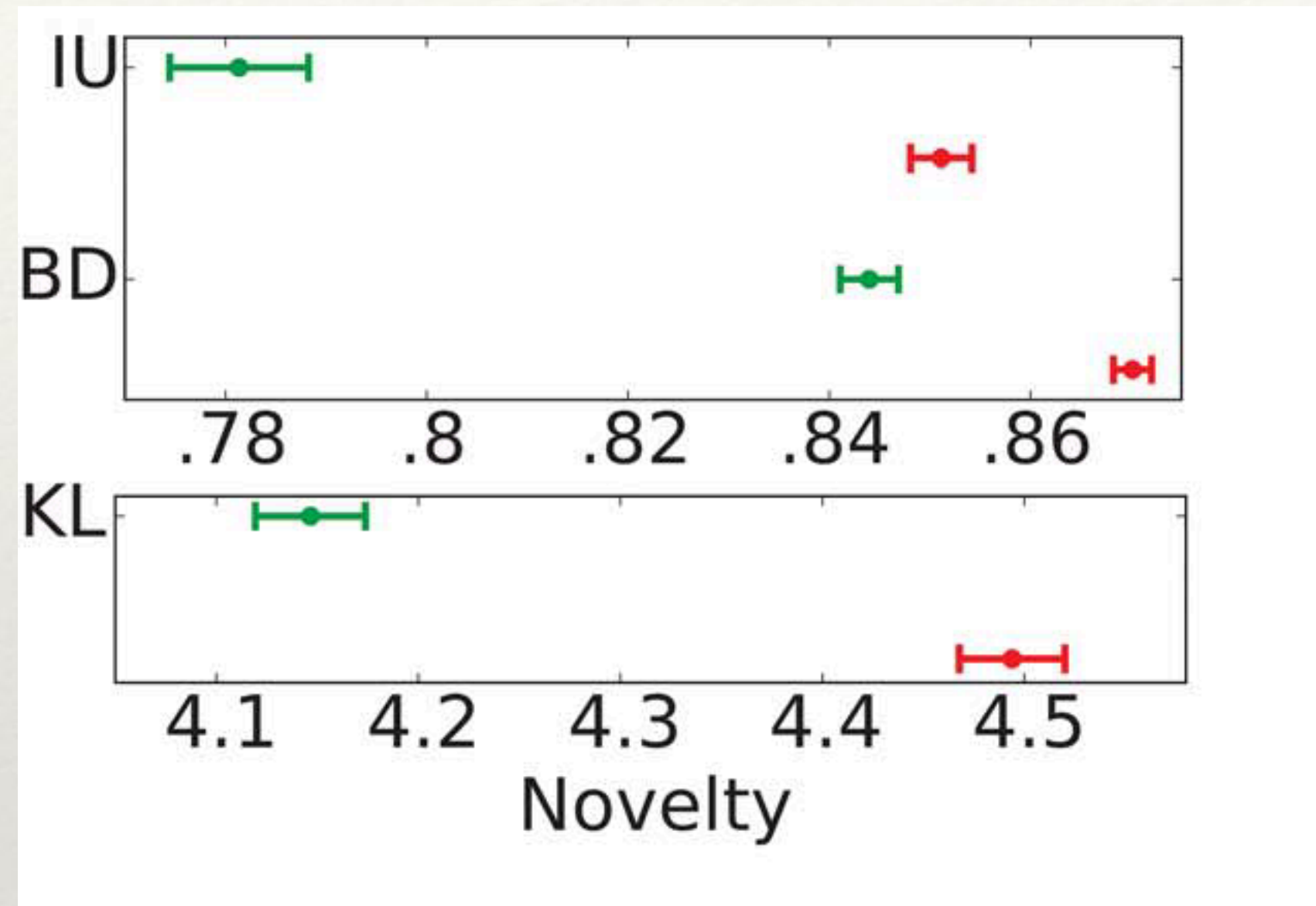
Lies are faster than truth

- ❖ Dataset: ~126,000 stories tweeted by ~3 million people more than 4.5 million times.
- ❖ News classified as true or false using six independent fact-checking organizations that exhibited 95 to 98% agreement on the classifications.



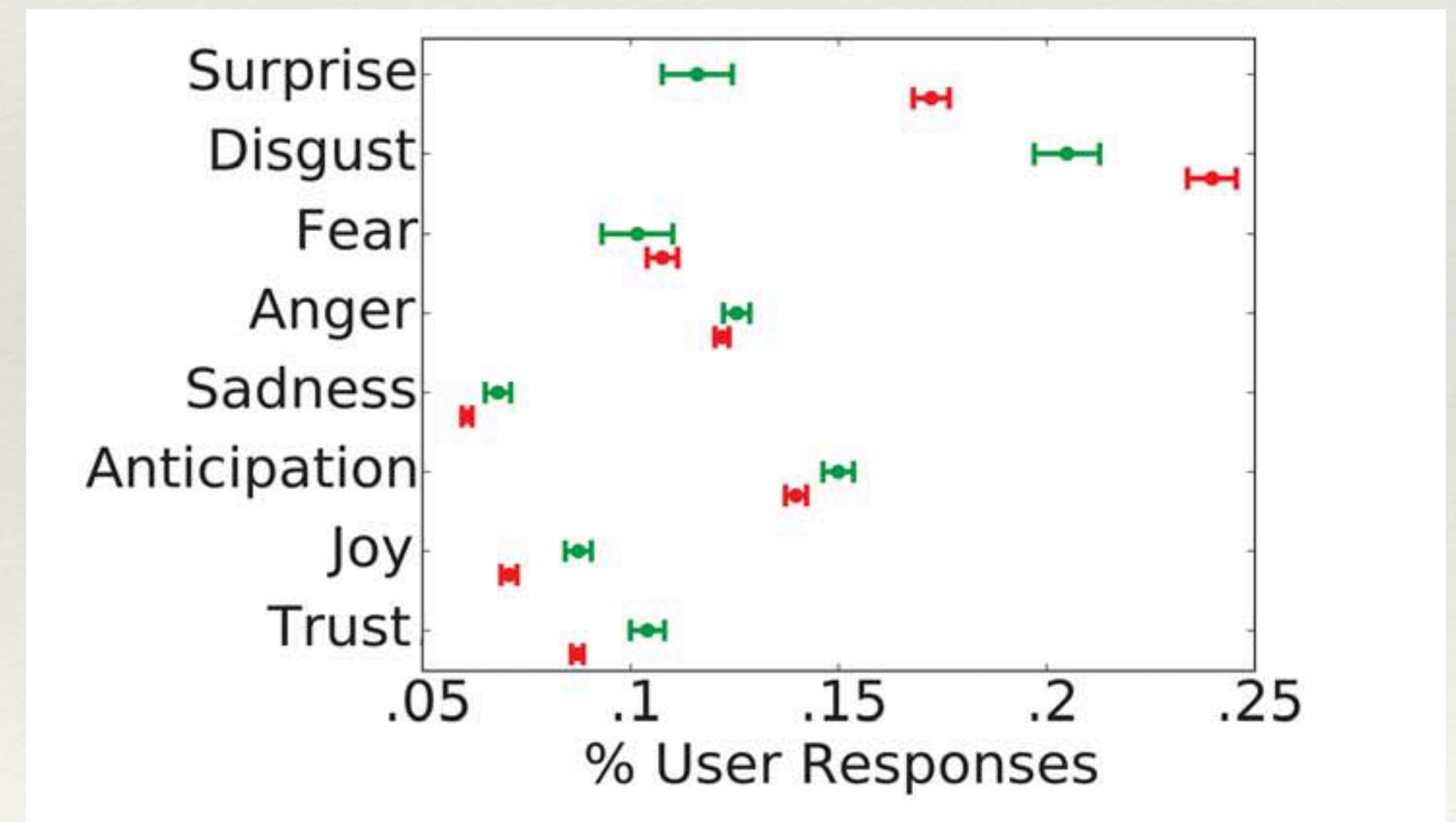
❖ Falsehood diffused significantly **farther, faster, deeper, and more broadly** than the truth in all categories of information

Novelty and emotions



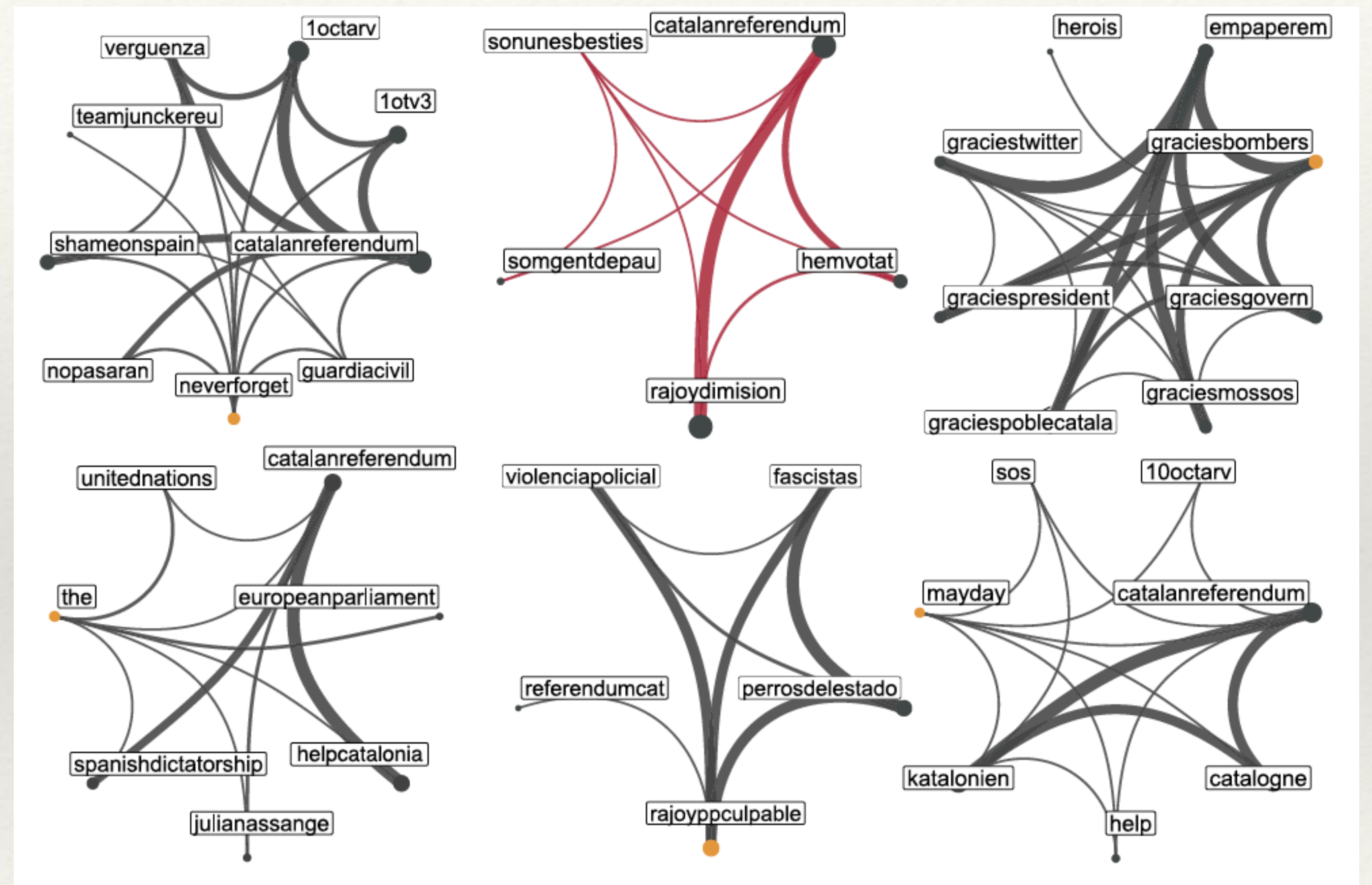
- ❖ False news **more novel** than true news, which suggests that people were more likely to share novel information

- ❖ False stories inspired **fear, disgust, and surprise** in replies, true stories inspired anticipation, sadness, joy, and trust.



The role of emotions

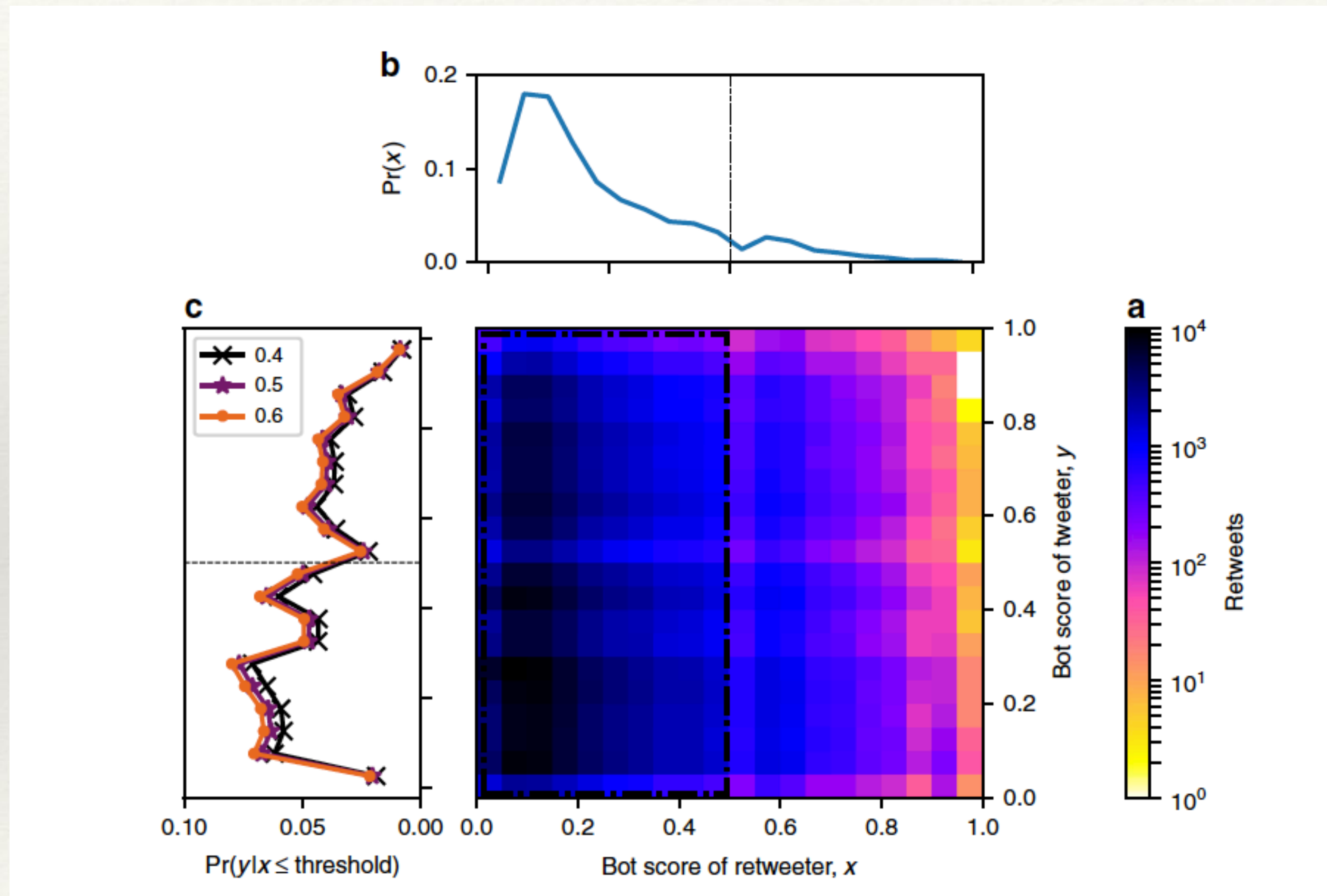
- ❖ Large-scale social data collected during the **Catalan referendum for independence** on October 1, 2017, consisting of nearly 4 millions Twitter posts generated by almost 1 million users;
- ❖ Two polarized groups: **Independentists vs Constitutionalists**
- ❖ Structural and emotional roles played by **social bots**
 - ❖ Bots act from **peripheral areas** to target **influential humans** of both groups;
 - ❖ Bots bombard Independentists with **violent contents, increasing their exposure to negative and inflammatory narratives**, and exacerbating social conflict online.



The role of social bots

- ❖ 14 million messages spreading 400 thousand articles on Twitter during ten months in 2016 and 2017
- ❖ Social bots played a disproportionate role in spreading articles from low-credibility sources.
- ❖ Bots amplify such content in the early spreading moments, before an article goes viral.
- ❖ They also target users with many followers through replies and mentions. Humans are vulnerable to this manipulation, resharing content posted by bots.

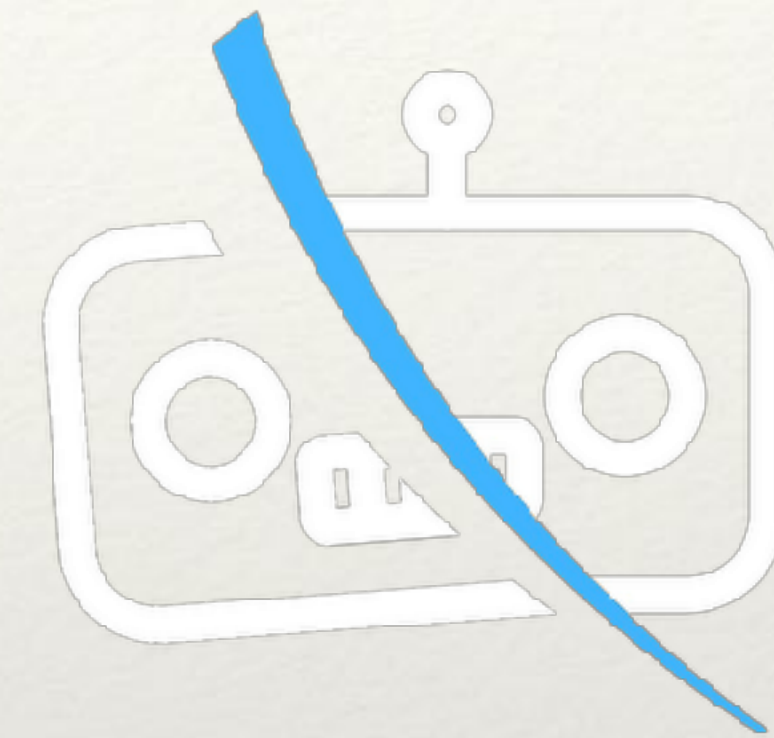
...but humans should be blamed the most



BotSlayer and Botometer (IU)

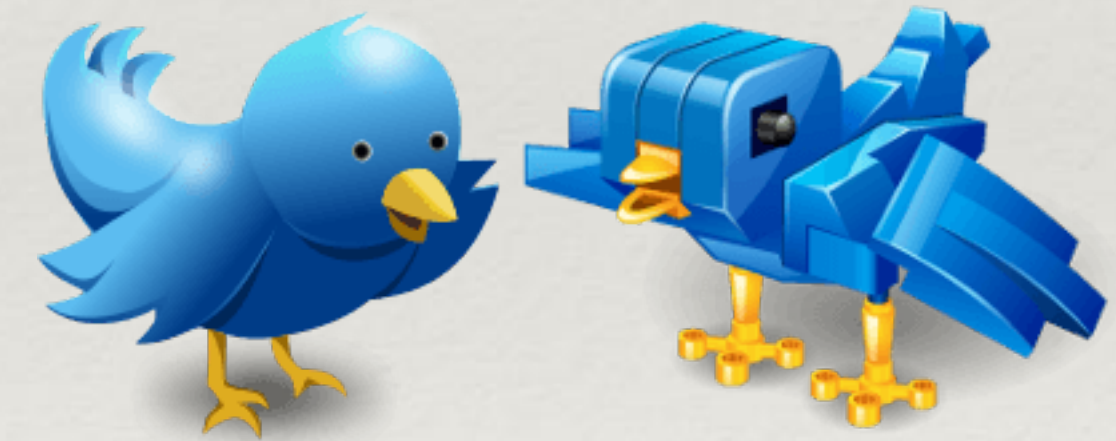
- ❖ **BotSlayer**: it tracks and detect potential manipulation of information spreading on Twitter

<https://osome.iuni.iu.edu/tools/botslayer/>



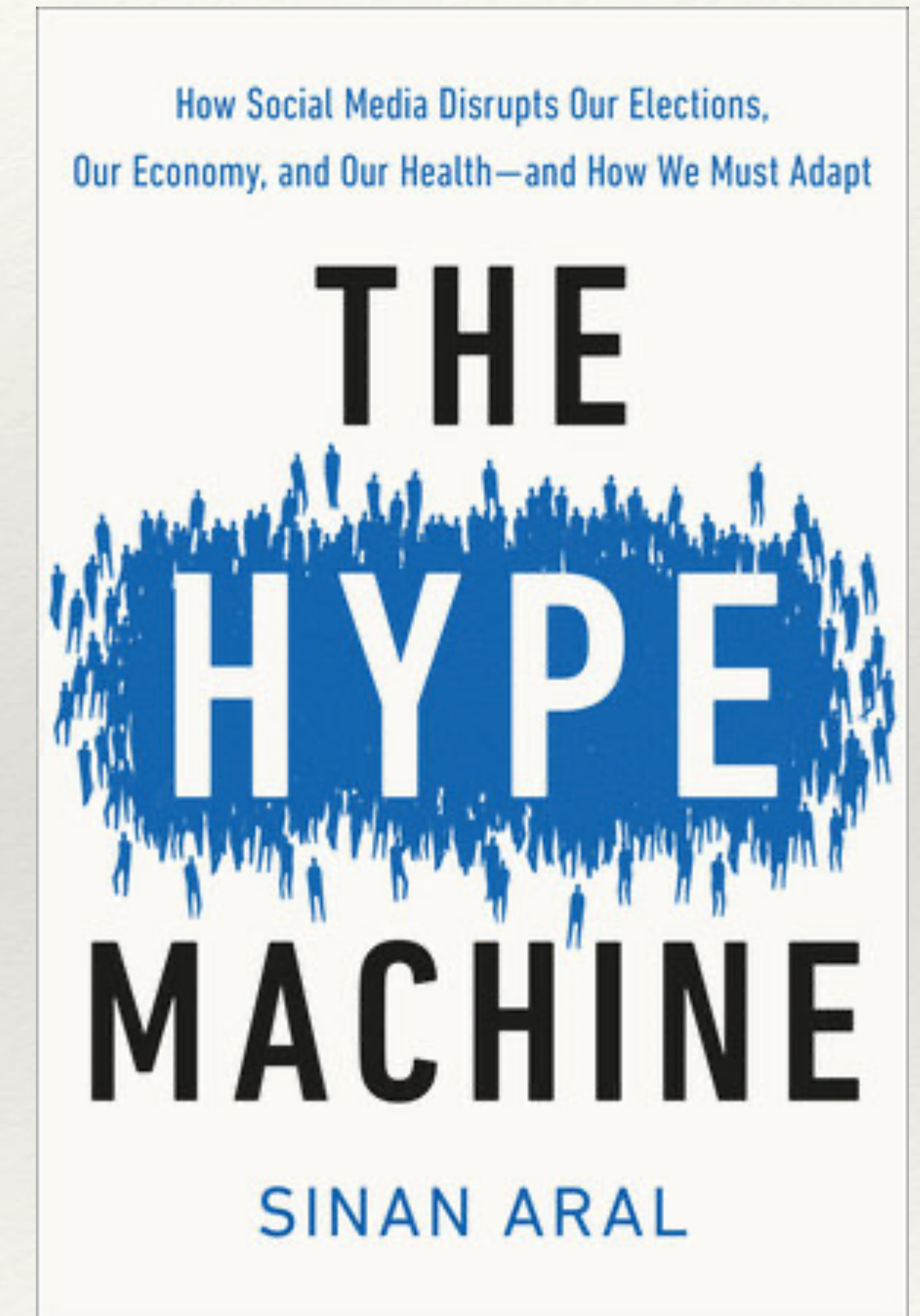
- ❖ **Botometer** (formerly known as BotOrNot) :checks the activity of a Twitter account and gives it a score. Higher scores mean more bot-like activity.

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



The Hype Machine

- ❖ Prevalence of fake-news and role of social bots in spreading misinformation
- ❖ Bots share **novel** fake news and retweet it broadly
- ❖ Bots **mention influential humans** incessantly
- ❖ The strategy works when influential people are fooled into sharing the content.
- ❖ **Misleading humans is the ultimate goal of any misinformation campaign**



Potential interventions

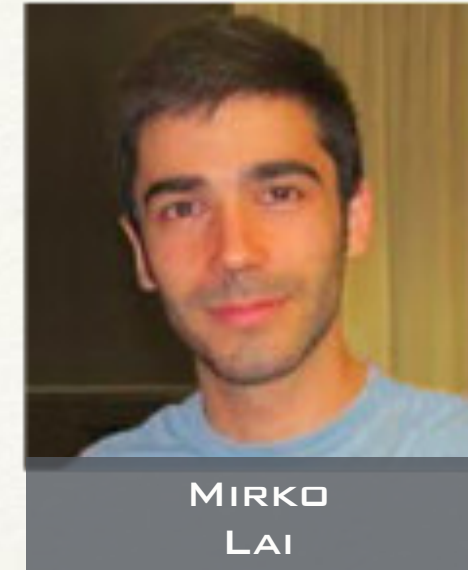
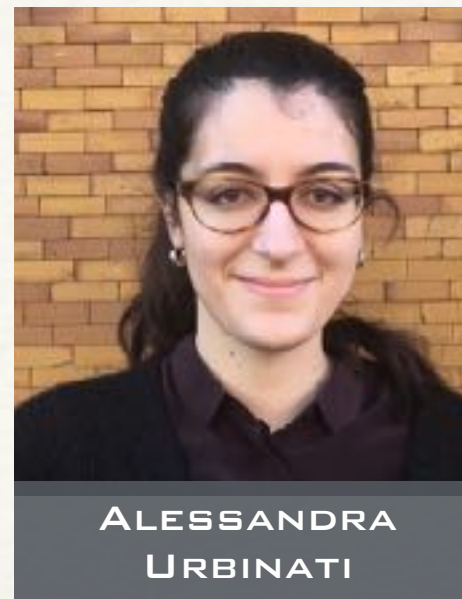
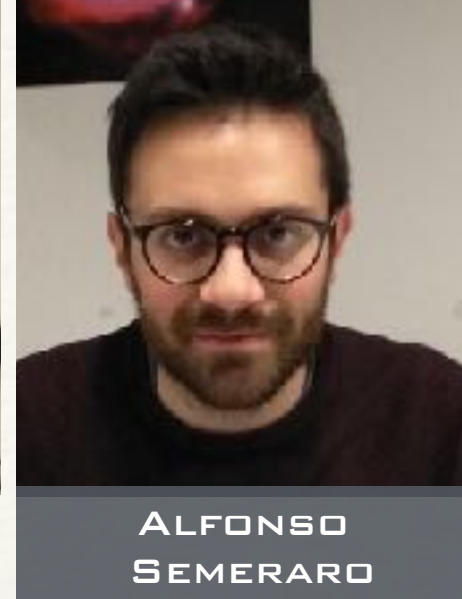
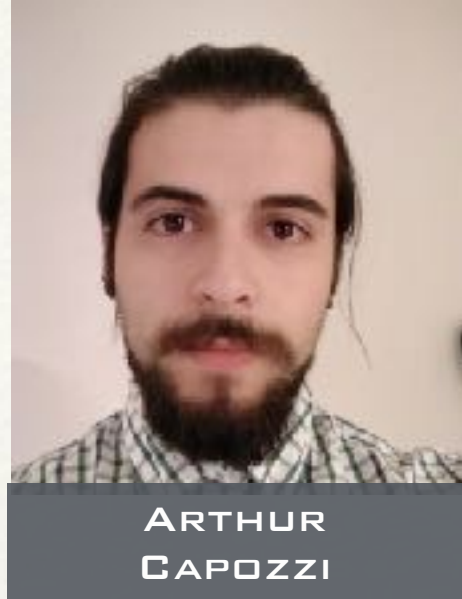
- ❖ *How can we empower individuals?*
 - ❖ **fact-checking**, whose efficacy is disputed
 - ❖ **education**, to improve individual evaluation of the quality of information
- ❖ *How can we prevent individuals' exposure to fake news?*
 - ❖ **adjusting social media business models** to increase emphasis on quality information
 - ❖ reducing **personalization** and '**echo-chambers**' effects
 - ❖ removing accounts associated to **bots**, when they are found
 - ❖ Identification of bots is a **moving target** and will therefore remain major ongoing research challenge
 - ❖ Content curation decisions are subject to many **ethical considerations**

“Free communication is not free. By decreasing the cost of information, we have decreased its value and invited its adulteration.

To restore the health of our information ecosystem, we must understand the vulnerabilities of our overwhelmed minds and how the economics of information can be leveraged to protect us from being misled.”

-Filippo Menczer,

<https://www.scientificamerican.com/article/information-overload-helps-fake-news-spread-and-social-media-knows-it/>

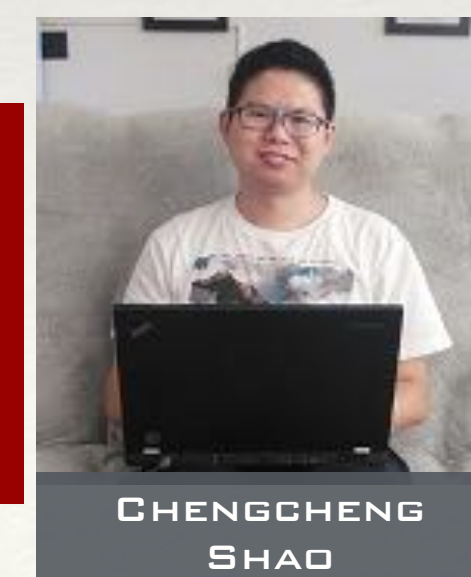
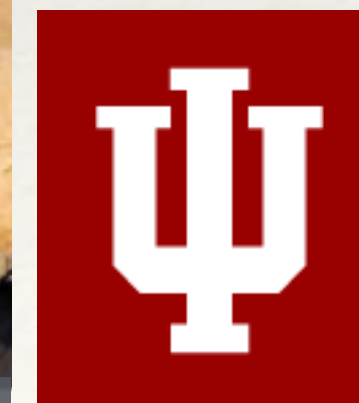
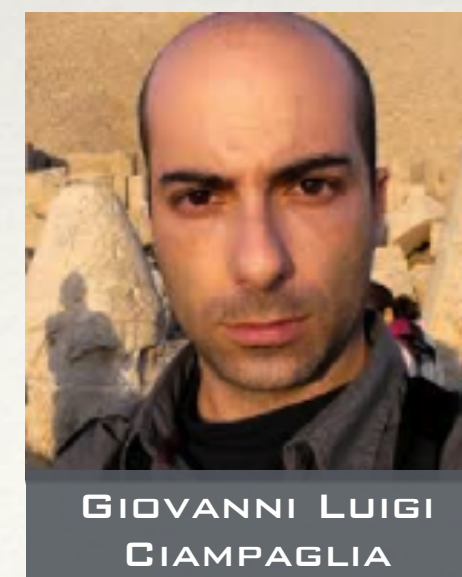


ARC²S: Applied Research on Computational Complex Systems

Thanks!

slides here:

http://www.di.unito.it/~ruffo/talks/2020_Dec_CEST.pdf



Q&A