



Fake Science

Anita Nikolich Dept. of Computer Science, Illinois Institute of Technology
Fellow, Cyber Policy Initiative, Harris School of Public Policy, University of Chicago

My friend and I went to the #BlackPanther premier and he was brutally beaten for “not belonging there” by an angry group who did not have tickets. Very sad, night ruined
pic.twitter.com/Con2bmU2Ag — . (@WHIT3IV3RS0N_)
February 16, 2018



Zeren

@ZionistGangster

Follow

Went to a #BlackPanther 🐾 screening with my girlfriend. 2 white men in MAGA hats jumped me and said the movie was bad and that “blacks are subhumans who deserve to be beaten”... can’t believe this happened on such a special night.

4:05 AM - 8 Feb 2018

1 Retweet 3 Likes



Agenda

- Deep Fakes, Cheap Fakes, Disinformation, Misinformation
- Why the Science Community Should Care
- What Can We in R&E Do?

~~Weaponization of Information~~/Cognitive Hacking/Influence Operations

- Any individual or group can communicate and influence large numbers of others online now
- New landscape of influence operations, persuasion, and, more generally, mass manipulation
- Comparisons to a Public Health Crisis



Deep Fakes and Cheap Fakes

- Deep Fake – computation heavy, AI techniques
- Cheap Fake - speeding, slowing, cutting, re-contextualizing footage
- Both can influence the politics of evidence



Deep Fake Example



Disinformation & Misinformation

- Misinformation: false information shared with no intention of harm
- Disinformation: false information shared with intention of deceiving consumer

- What's new?
 - Democratization of content creation
 - Rapid news cycle
 - Filter bubbles
 - Opaque algorithms for news feeds

Primer on Russian Trolls



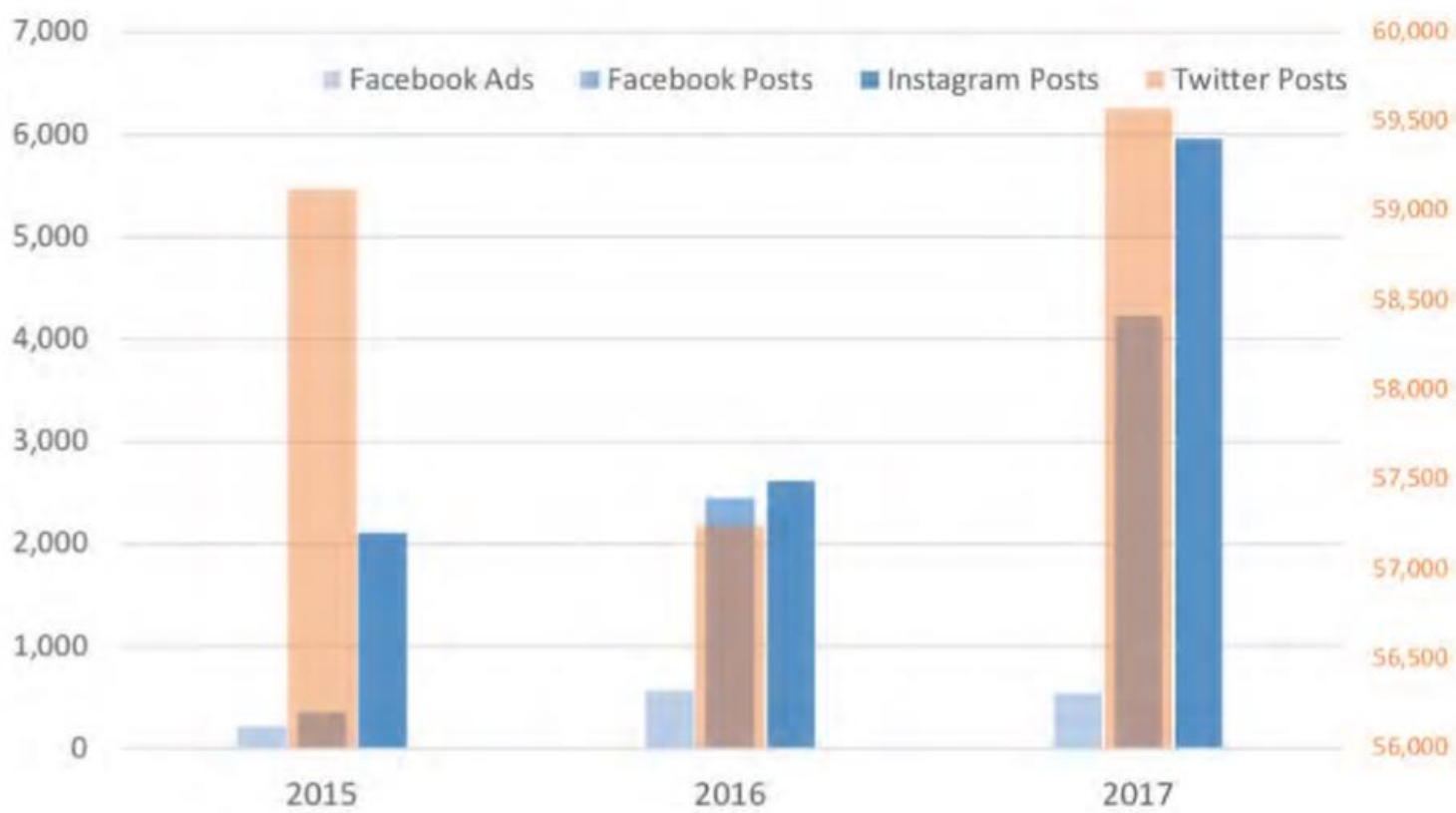
- 30M+ users (2015-17) shared IRA's Facebook and Instagram posts
- Started targeting US in 2012; Russia in 2009
- Most IRA tweets were *not* fake news. 64% of time were used as sources of opinion
- Goal: polarize the US public and interfere in elections by:
 - campaigning for African American voters to boycott elections or follow the wrong voting procedures
 - encourage extreme right-wing voters to be more confrontational
 - spreading sensationalist, conspiratorial, and other forms of junk political news across the political spectrum.

Goals of IRA Misinformation and Disinformation

- Divisiveness.
- Pit Americans against each other.
- Most content effort:
 - Black Lives Matter
 - Gun Control

Volumes of IRA Activity Increased Post 2016 Election

Figure 1: The Volume of IRA Activity, Monthly Average (Twitter on Right Axis)



Note: Facebook, Instagram and YouTube relative to the primary left axis, Twitter relative to the secondary right axis.

Why Are Humans Susceptible

- Cognitive bias
- People are poor judges of true versus false information
- Information overload leads people to take shortcuts in determining trustworthiness of messages
- Familiar themes or messages can be appealing even if they are false.
- Strongly entrenched beliefs are likely to survive non-supportive evidence

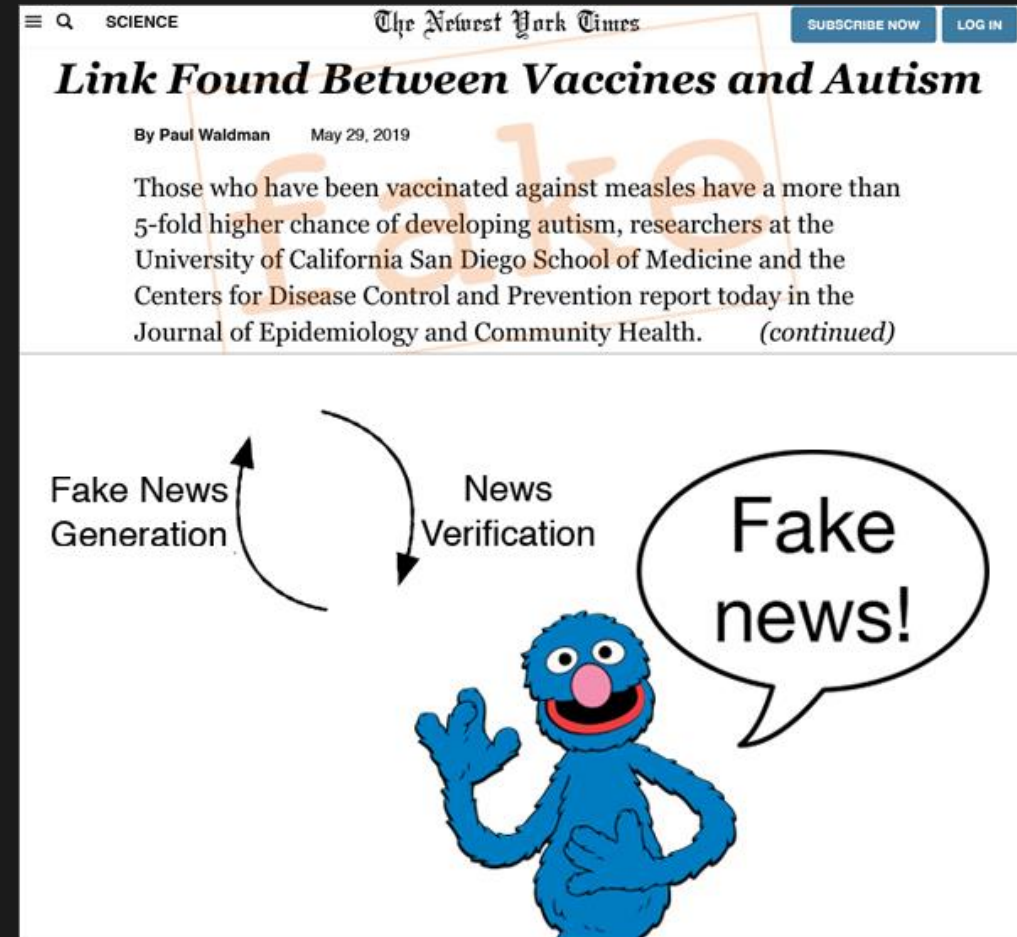
Why Should R&E Care?

Risk to Science

- Public attitude toward science can be manipulated. Media influences what public perceives as most pressing and important science questions.
- Members of Congress are susceptible
- Nature of evidence has changed
- Misinformation can make it difficult for authoritative voices from science to be heard.
- Distrust - individuals feel their values, identity, or interests are threatened

Grover: AI Writes Better than Humans

- Given a sample headline, Grover generates entire news article written in the style of legitimate news outlet
- Generate propaganda stories readers rated as more trustworthy than the original, human-generated versions
- Using NLP it emulates a style of news outlet and writer



Technology Only Part of a Solution

- DARPA programs (MediaFor & SemaFor) to automatically identify fakes
- Facebook working to identify false content
- Facebook 2019 Deepfake Detection Challenge (DFDC) – create a data set
- Proposals to label misinformation on websites
- Need holistic approaches

Inoculation

- Familiarize people with strategies used in the production of fake news. And the common tactics used in production of misinformation
- Inducing skepticism about a communication helps combat effects of misinformation
- Exposing misleading arguments
- 'False balance' news articles pit factual evidence against contrarian voice
- Risk making people cynical on media



Start with Kids

POLITICS

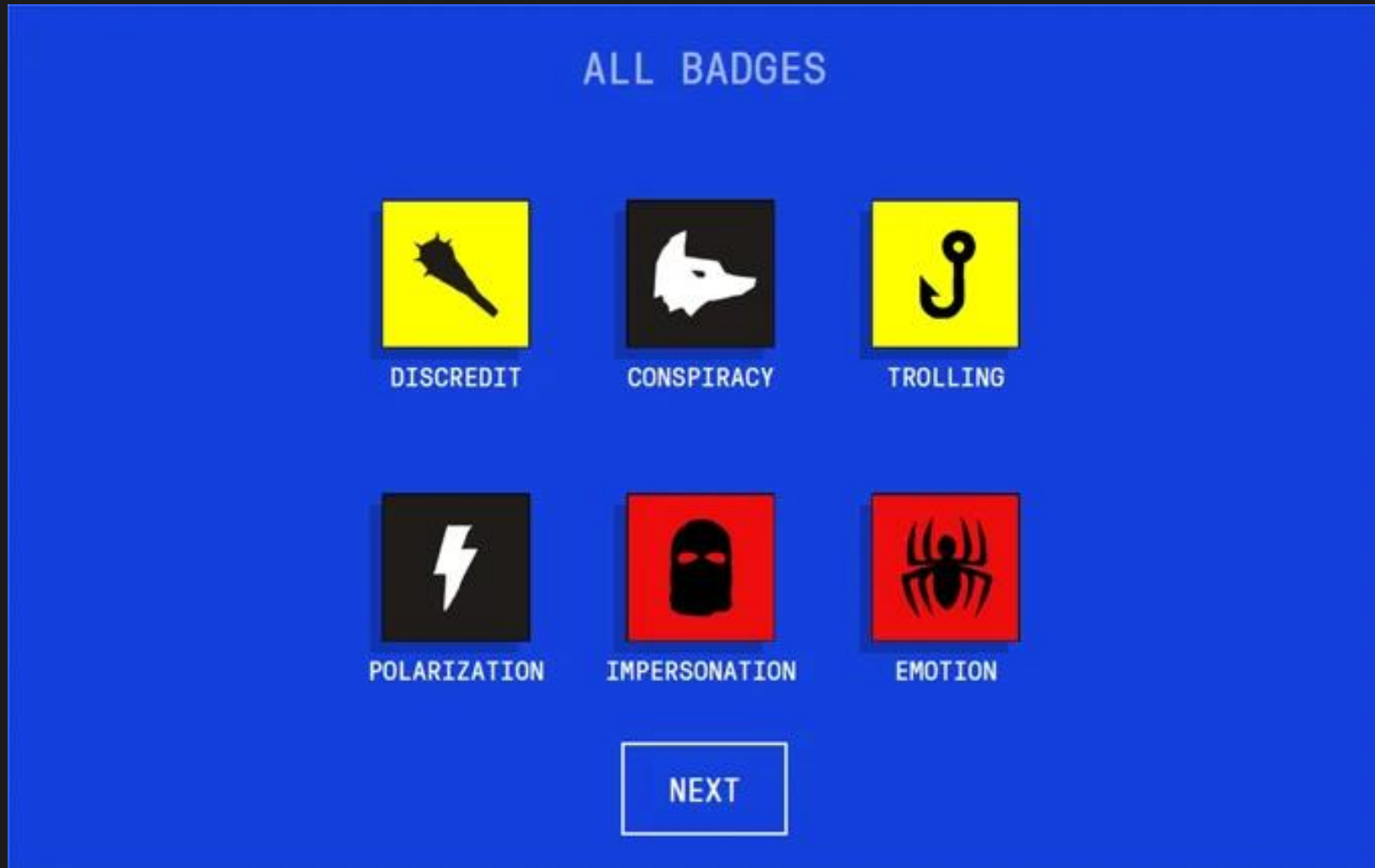
At Defcon, teaching disinformation is child's play

The r00tz Asylum, Defcon's kid-friendly event, is hosting a workshop on how disinformation is spread on social media.

BY ALFRED NG | AUGUST 9, 2019 5:00 AM PDT

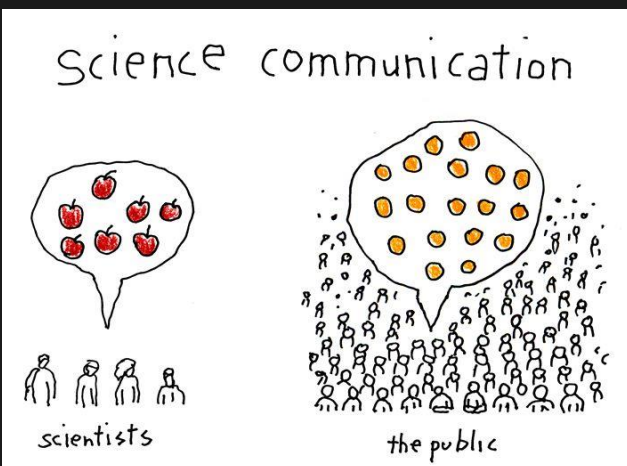


Gamification for Adults: “Bad News”



Science Communication Needs to Improve

- Pew report: 73% of Americans think the biggest problem with scientific research is the way news reporters cover it.
- In addition to factual science news, take into account ways in which content can be distorted, and include pre-emptive inoculation messages
- Quality scientific information is more likely to reach more educated and higher income audiences. Need to reach all segments!



How Can Cyberinfrastructure Help?

- Think critically about the technologies we develop and how they might be misused. “Abusability” testing.
- Teaching our community to be aware of what technology is capable of (e.g., screenshots can be easily fabricated, fake videos made, accounts hacked).
- Help conduct measurement studies to understand the ecosystem, including weighing in on data collection.
- Work with Opinion Leaders to Inform and Persuade

Share Indicators of Misinformation

- AMITT (Adversarial Misinformation and Influence Tactics and Techniques) framework
 - Adapts information security practices to help track and counter misinformation
 - Modeled on the Mitre ATT&CK framework, a globally-accessible knowledge base of adversary tactics and techniques based on real-world observations
- Cognitive Security ISAO – Aug 2019
- REN-ISAC or OmniSOC?

The logo for ATT&CK™, featuring the text "ATT&CK" in a bold, orange, sans-serif font with a trademark symbol (TM) to the right, all set against a black background.The logo for AM!TT misinfosec, featuring the text "AM!TT" in a bold, orange, sans-serif font above the text "misinfosec" in a bold, blue, sans-serif font, all set against a black background.

Center for Cognitive Security?

- Cognitive security (COGSEC) - focuses on the exploitation of cognitive biases in large public groups and the social influence as an end unto itself.
- Create and apply tools needed to discover and maintain fundamental models of our ever-changing Information Environment
- Experts in cognitive science, computer science, engineering, social science, security, marketing, political campaigning, public policy, and psychology

Conclusion

“Objectivity is a myth that is proposed and imposed on us.”

- Dimitry Kiselev, Director General of Russia's state-controlled Rossiya Segodnya media conglomerate and Kremlin's media czar

Interesting Reading

“Communicating Science Effectively: A Research Agenda”, National Academies Press

“The IRA, Social Media and Political Polarization in the United States, 2012-2018” Oxford University

“The Twitter Exploit: How Russian Propaganda Infiltrated US News”, University of Wisconsin

“Examining Trolls and Polarization with a Retweet Network”, Kate Starbird
University of Washington