Exploring the Information Landscape: Algorithmic Awareness

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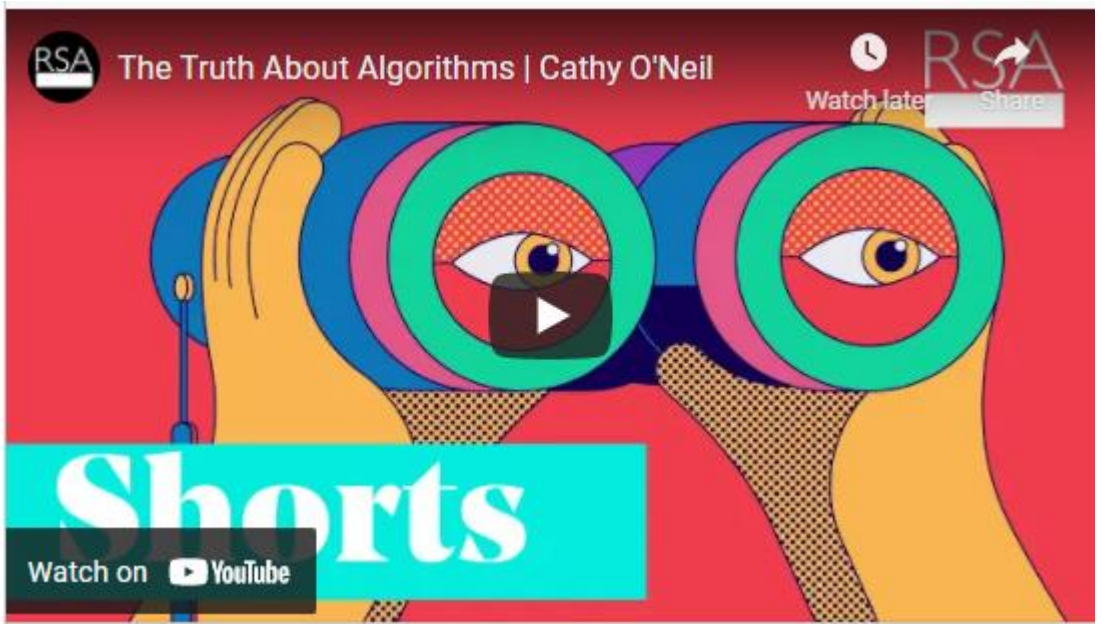
Introduction

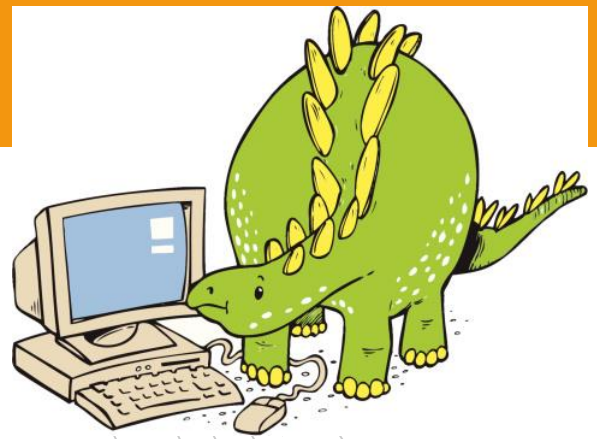
https://study.com/cimages/videopreview/what-is-an-algorithm-in-programming-definition-examples-analysis_117062.jpg

- Workshop focus is more on search engines rather than social media.
- What are algorithms? How do they affect our lives?

Video: The Truth About Algorithms https://youtu.be/heQzqX35c9A



Database searching before Google



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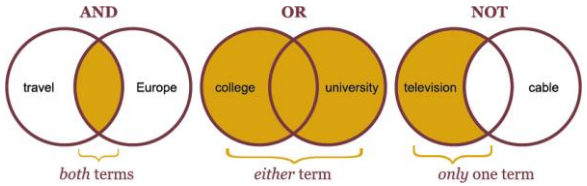
- Searchers created the algorithm in a search query.
- Boolean logic



https://library.albion.edu/sites/default/files/boolean-operators.pngxt

("climate change" OR "global warming") AND ("sea level rise" OR flooding)

- Results shown were due more to occurrence of search terms
- As the Internet grew, you didn't always see relevant results near the top.
- Search engines developed ranking search where results were based more on frequency distribution and if a page was linked to by others (giving it more importance)
- Search engines became big business, which made profits drive the search results

Google

Ad driven search engines make money by getting your data (tracking and selling) and your engagement

Google doesn't just give you the sites that contain your search terms, but results are influenced by

- What you have clicked on before (provides relevance feedback)
- What others have clicked on before (Entertaining? Sensational? Timely? Eye-catching but maybe false? Infuriating?)
- PageRank (how many relevant sites link to it)
- Sites on the first page are clicked on more (positive feedback loop)

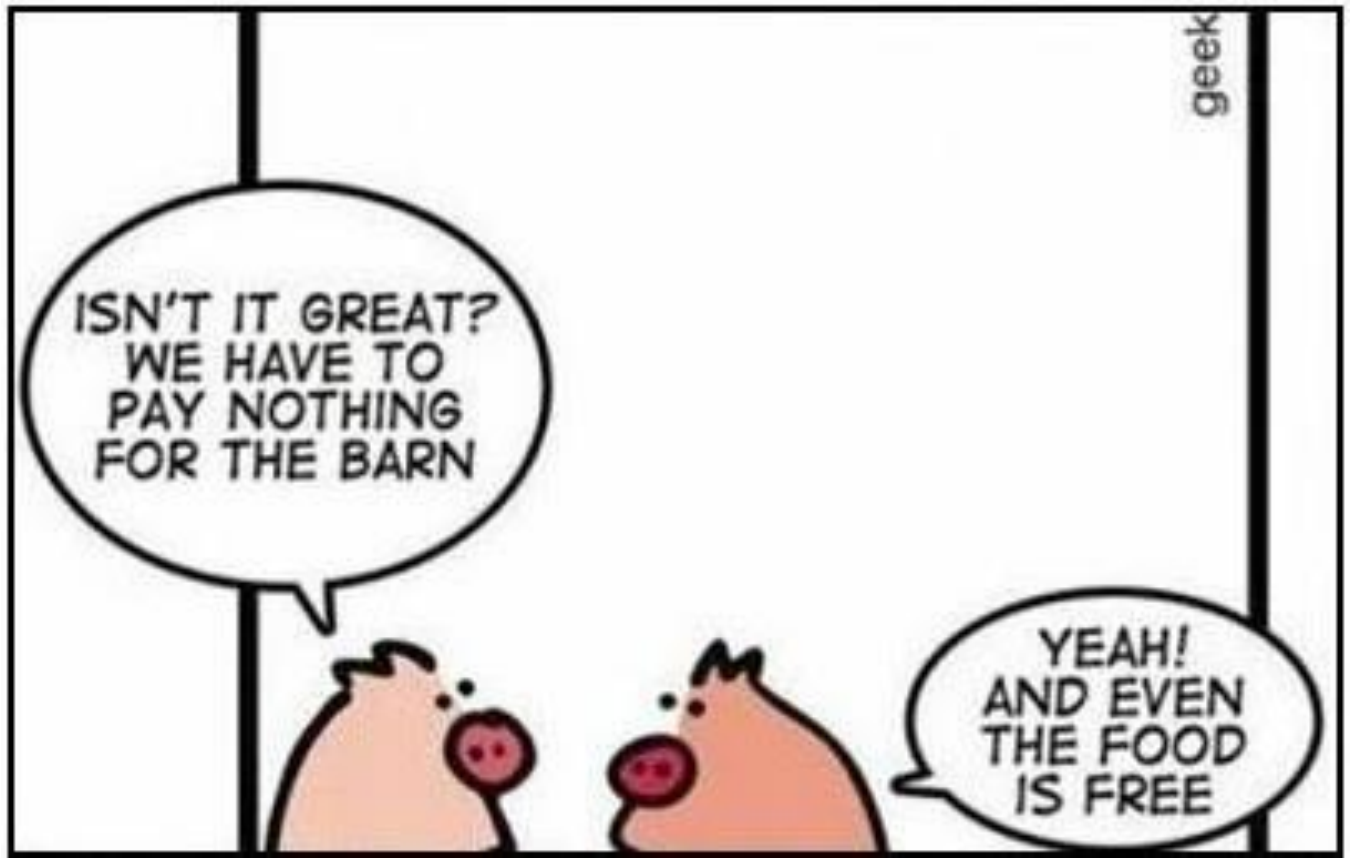
From: https://theconversation.com/its-not-just-a-social-media-problem-how-search-engines-spread-misinformation-152155

Free sites/apps

Not FREE

YOU are the product

(BTW, you probably do unpaid work for Google)



https://beta.techcrunch.com/wp-content/uploads/2013/10/download2.jpg

Filter bubbles

- https://youtu.be/pu_Ox3HcfKc

Google (continued)

Algorithms are changed frequently but not made public

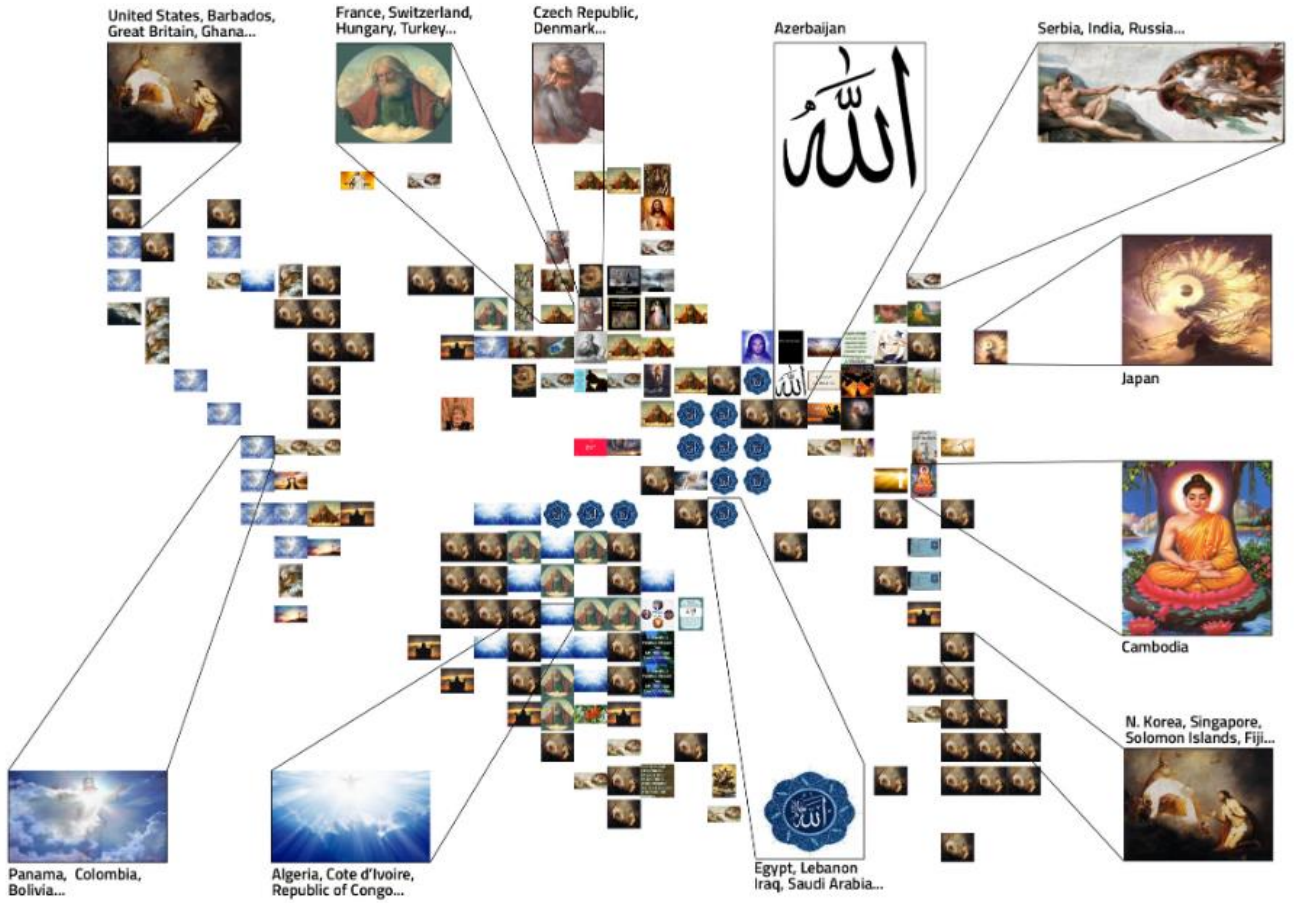
Web developers try to crack the algorithms to move their site up in the results (search engine optimation: SEO)

The autocomplete phrases in searching can influence results, making them less objective.

"Content mills" (which hire writers to produce low quality articles and use SEO to appear near the top) may provide some of your search results

Different results in different countries

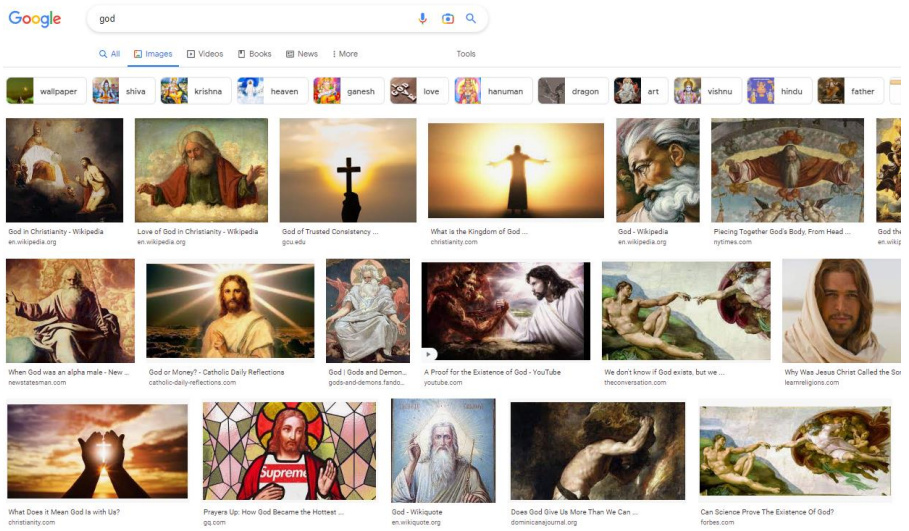
Fig. 5. Image results for a search for "god." In Bulgaria, the results depict a traditional Christian god. In Azerbaijan, they are calligraphic images of the word "Allah" in Arabic. In Mongolia, they are Buddhist paintings.



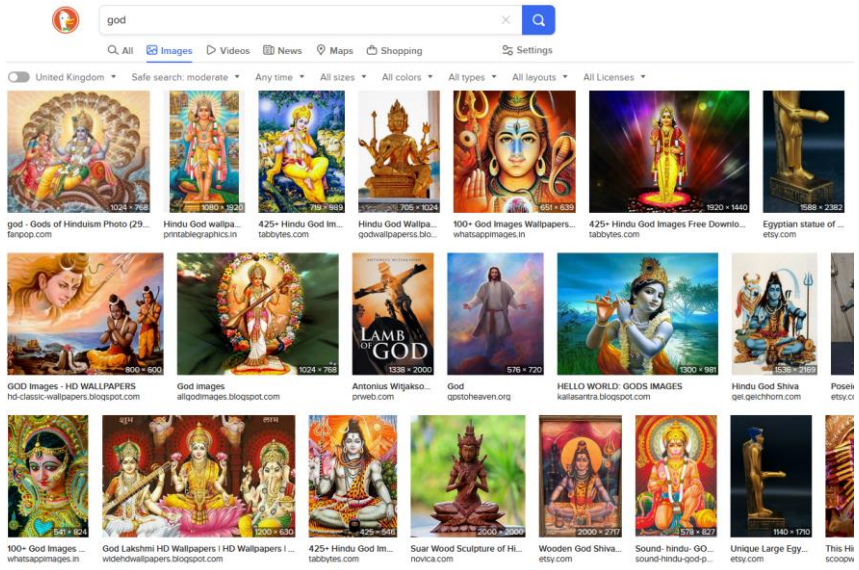
https://searchatlas.org/

Different search engines

SEARCH "GOD" IN GOOGLE CHROME (IMAGES)



SEARCH "GOD" IN DUCK DUCK GO (IMAGES)

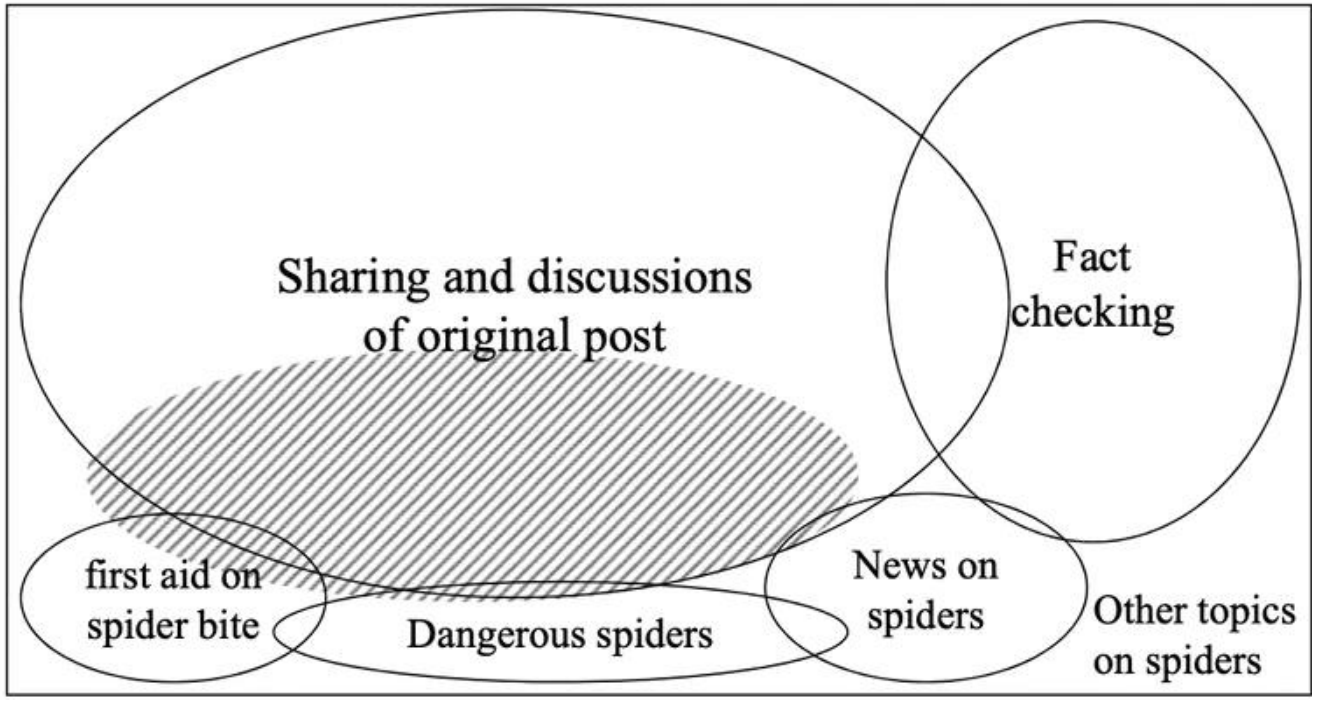


Try searching for images using different search engines

- Try
  - "poverty"
  - "immigrants"
  - "American Dream"

  - Consider what the majority of images convey?
  - Consider the types of images that might be missing?

Misinformation can rise to the top of results because many people click on it



The first two pages of Google search results for 'new deadly spider' in August 2018 (shaded area) were related to the original fake news post about that subject, not debunking or otherwise factual information.

https://theconversation.com/its-not-just-a-social-media-problem-how-search-engines-spread-misinformation-152155

How to get out of your search bubble

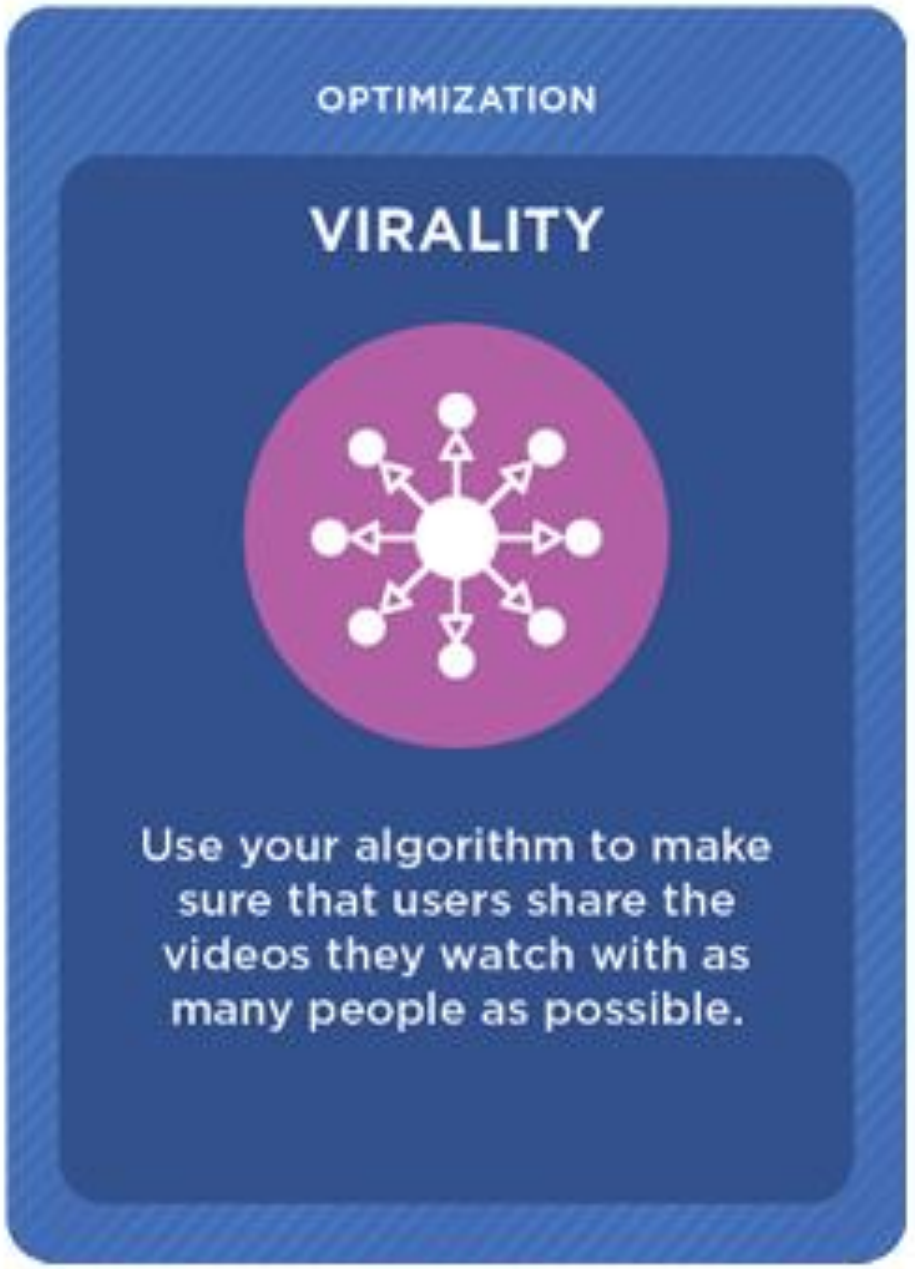
- Use different search engines and terms
- Search Google in incognito mode, turn off private search results or use a VPN
- Clear your browser cookies; delete and disable your search history
- See your Google ad profile and control it: https://support.google.com/ads/answer/2662856?hl=en
- EVALUATE: Use lateral reading (search outside the source to learn about the source) to check information
- Search for and click on sites representing different viewpoints
- Search library databases (paid for by the library and not reliant on ads and page clicks for revenue)

https://www.makeuseof.com/google-unfiltered-search-results/, https://libguides.pima.edu/c.php?g=726959&p=5189833 ; https://medium.com/@paminthelab/how-to-pop-your-filter-bubble-4b8808ffdf0f#.aatncxnxd

Card game

- You have developed a video and want it to go viral!
- Your video has certain features that lend itself to particular user actions and responses

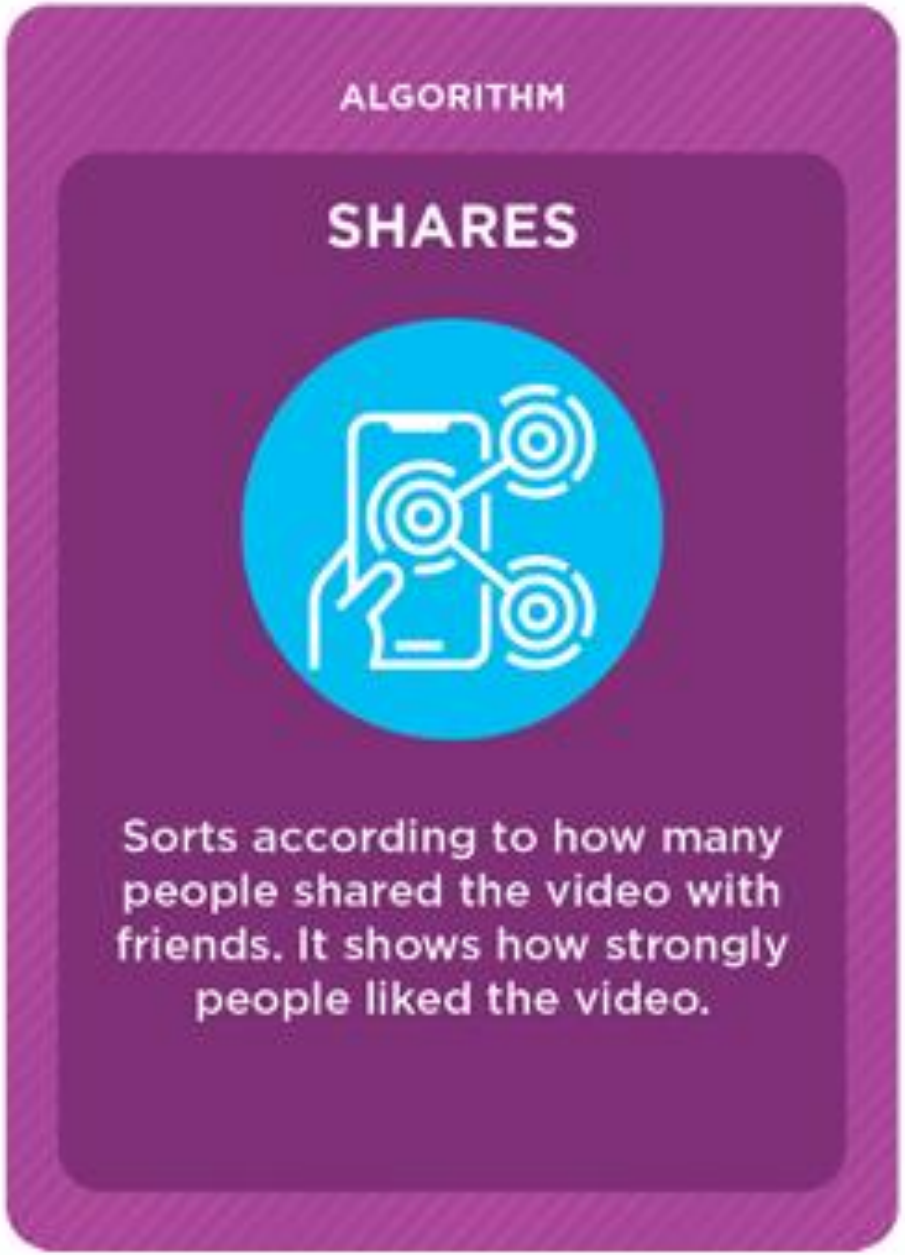
You don’t know the algorithm in use on the platform you load it onto



Decide what video you want to post

- You get 100 views if your video's performance characteristic matches the algorithm.
- You double your views if you have a Boost card that matches performance words of your video and the algorithm
- Keep track of your team's total points

First algorithm

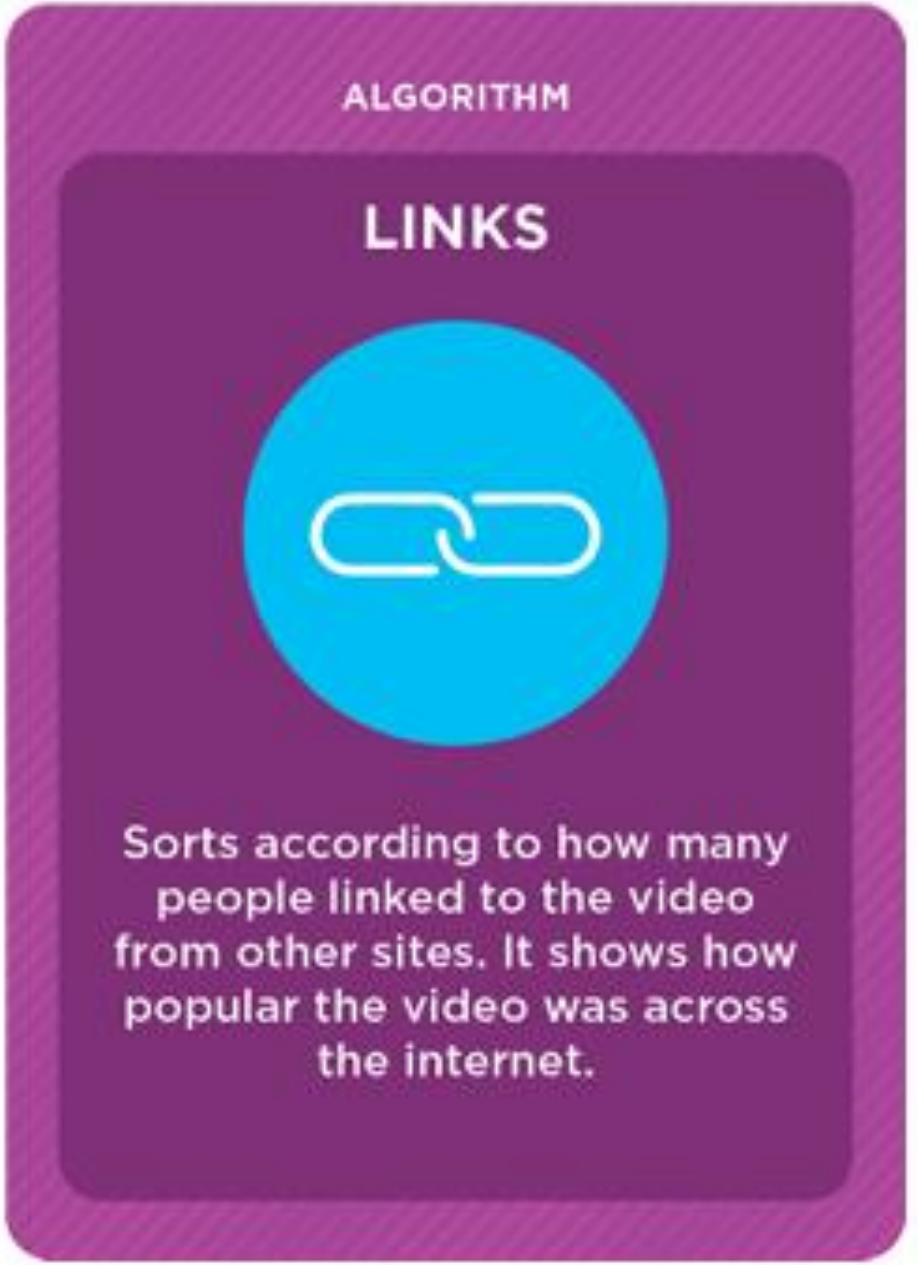


Did your video rise to the top of search results?

If you figure out the algorithm, you may try to game the system to make your video perform better.

But they may change the algorithm…

Second algorithm



Third algorithm

Ads

- Your video is finally doing well, but you want to make money. You need to get ads to run with your video that target the right audience.
- Look at one of your AD cards.
- What audience attribute does it sort for?

Does your ad fit the audience algorithm? $100 if you have a match

Second ad card: $100 if your ad matches the audience

Whose videos and ads were most watched and made money?

SORTING IT OUT

- You will want to attach your ads to videos that are shown in the top of the search results, but also target an audience that will be interested in your ad
- Algorithms for videos and ads combine to sort results as you might not expect

Artificial Intelligence

What is the Difference Between AI and Algorithms?

"An algorithm is a set of instructions — a preset, rigid, coded recipe that gets executed when it encounters a trigger. AI on the other hand — which is an extremely broad term covering a myriad of AI specializations and subsets — is a group of algorithms that can modify its algorithms and create new algorithms in response to learned inputs and data as opposed to relying solely on the inputs it was designed to recognize as triggers. This ability to change, adapt and grow based on new data, is described as "intelligence."

(https://www.cmswire.com/information-management/ai-vs-algorithms-whats-the-difference/)

Training AI

Data is provided for the machine to learn to identify and classify.

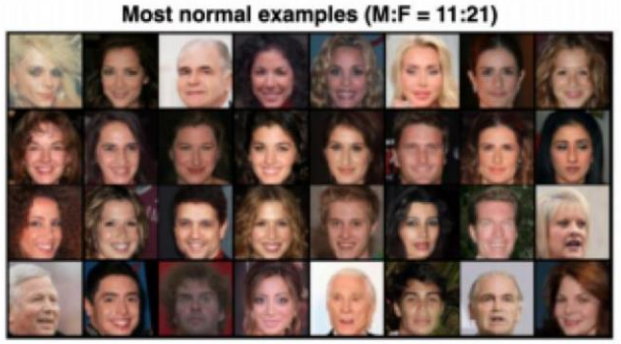
https://atozofai.withgoogle.com/intl/en-US/bias/

Training AI

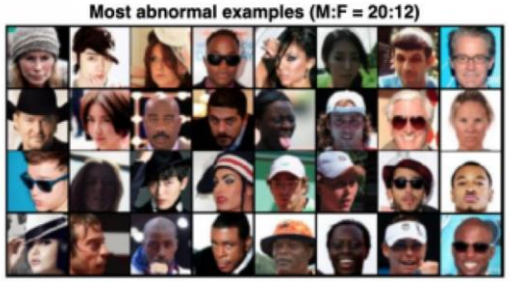
It looks for patterns to learn to identify. It uses the data to identify "normal."

If the training data set doesn't contain diversity, it assumes diversity should be flagged

THE ALGORITHM CATEGORIZED MORE WHITE FACES AS "NORMAL" BECAUSE OF THE "TRAINING DATA"



(a) Normal Group



(b) Abnormal Group

HTTPS://WWW.UCDAVIS.EDU/CURIOSITY/NEWS/AIS-RACE-AND-GENDER-PROBLEM

Social justice concerns

- Hiring
- Criminal justice
- Facial recognition
- Relationships
- Healthcare
- YouTube recommendations
- Loans

Video: Algorithms of Oppression

https://youtu.be/6KLTpoTpkXo

Coded Bias
(documentary)

- https://youtu.be/jZl55PsfZJQ (trailer)
- https://youtu.be/xu6rwo_Y1vQ (full documentary, also on Netflix)
- Joy Buolamwini studied facial recognition software and other applications and found bias that has implications in many of the AI-run applications in our lives.

Questions & comments?

Contact me anytime!

prorak@uidaho.edu

Further information

Artificial Intelligence: Can we trust machines to make fair decisions? https://www.ucdavis.edu/curiosity/news/ais-race-and-gender-problem

How Ads Follow You Around the Internet: https://youtu.be/HFyaW50GFOs

Your New Favorite Song Has Been Chosen By An Algorithm https://youtu.be/p7nn_jVQvWc

The Terrifying Cost of "Free" Websites https://youtu.be/5pFX2P7JLwA

Tutorial on Lateral Reading for evaluating information: https://www.lib.uidaho.edu/instruction/lateral/story.html

Socially Aware Algorithms Are Ready to Help https://blogs.scientificamerican.com/observations/socially-aware-algorithms-are-ready-to-help/

Want to Work for Google? You Already Do. | Joe Toscano: https://youtu.be/zDboy_RMaXk