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Auditing Algorithms: How Platform Technologies Shape our Digital Environment

Meet the Experts! – GESIS online talks

Dr. Roberto Ulloa · *October 7, 2021*

Leibniz Gemeinschaft

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Meet the Experts

Speaker

Dr. Roberto Ulloa

- Researcher in the team Social Analytics and Services, Department Computational Social Science
- Interested in Digital Institutions, Computer Simulations, Algorithm Auditing
- Contact: roberto.ulloa@gesis.org

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Auditing Algorithms: How Platform Technologies Shape our Digital Environment

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Agenda

- How do platform technologies shape our digital environment?
- Why do these problems occur?
- Algorithm auditing
- General considerations
- Takeaways and final remarks

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Meet the Experts

How do platform technologies shape our digital environment?

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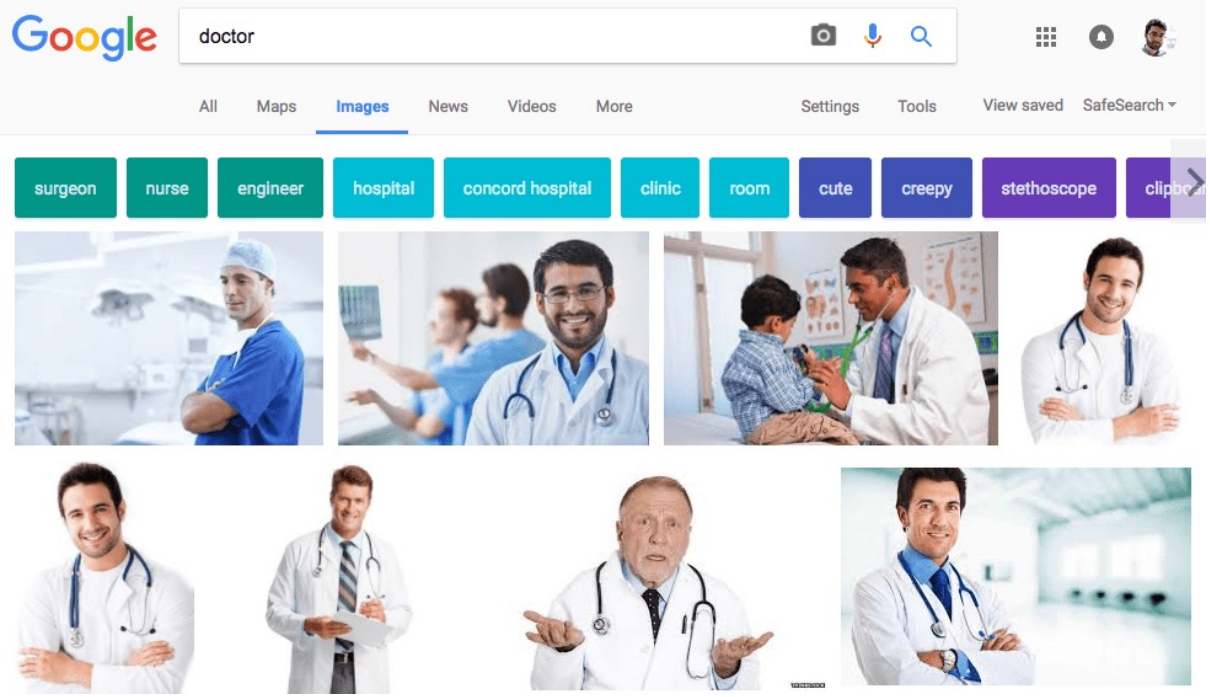
Google Results for “Black girls” in Google (Noble, 2013; Noble, 2018)

- all Ads and 5 results link to pornography
- and 2 to a UK rock band
- 3 are relevant (ranked lower)

Noble, S. (2013). Google Search: Hyper-visibility as a Means of Rendering Black Women and Girls Invisible. *InVisible Culture*.

Noble, S. U. (2018). *Algorithms of Oppression: How Search Engines Reinforce Racism*. NYU Press.

Google Under-representation of women in image search results (Kay, 2015)



Source: https://qz.com/958666/the-reason-why-most-of-the-images-are-men-when-you-search-for-doctor/

- gender stereotypes exaggeration (compared to the U.S. Bureau of Labor and Statistics)
- effect on perceptions (shifting estimations ~7%)

Kay, M., Matuszek, C., & Munson, S. A. (2015). Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 3819–3828. https://doi.org/10.1145/2702123.2702520

Microsoft Bing Under-representation of women in image search results

- **1983** (Archer et. al): 1/3 women in 4 magazines

- **2017** (Otterbacher et al): 1/3 women

- **2021** (Ulloa et al):

  Microsoft Bing 1/3 women for “person”
  1/3 women for “intelligent person”

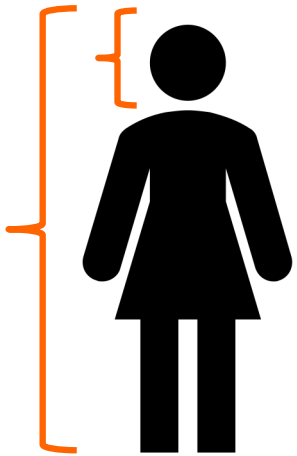
  Google **half pictures** were of women for “person”
  1/3 women for “intelligent person”

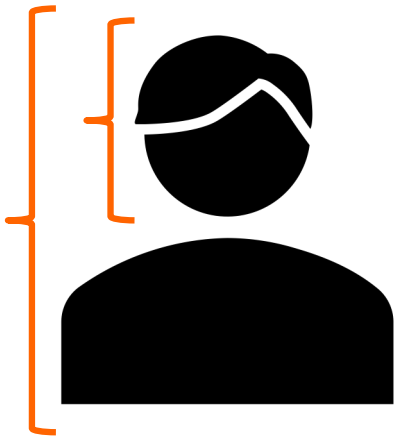
Archer, D., Iritani, B., Kimes, D. D., & Barrios, M. (1983). Face-ism: Five studies of sex differences in facial prominence. *Journal of Personality and Social Psychology*, *45*(4), 725–735.

Otterbacher, J., Checco, A., Demartini, G., & Clough, P. (2018). Investigating User Perception of Gender Bias in Image Search: The Role of Sexism. In *The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval* (pp. 933–936). Association for Computing Machinery.

Ulloa, R., Richter, A. C., Makhortykh, M., Urman, A., & Kacperski, C. (n.d.). Representativeness and Face-ism: Gender Bias in Image Search. *Unpublished Manuscript*.

Face-ism: women are represented with a lower face-to-body ratio (Archer et. al, 1983)



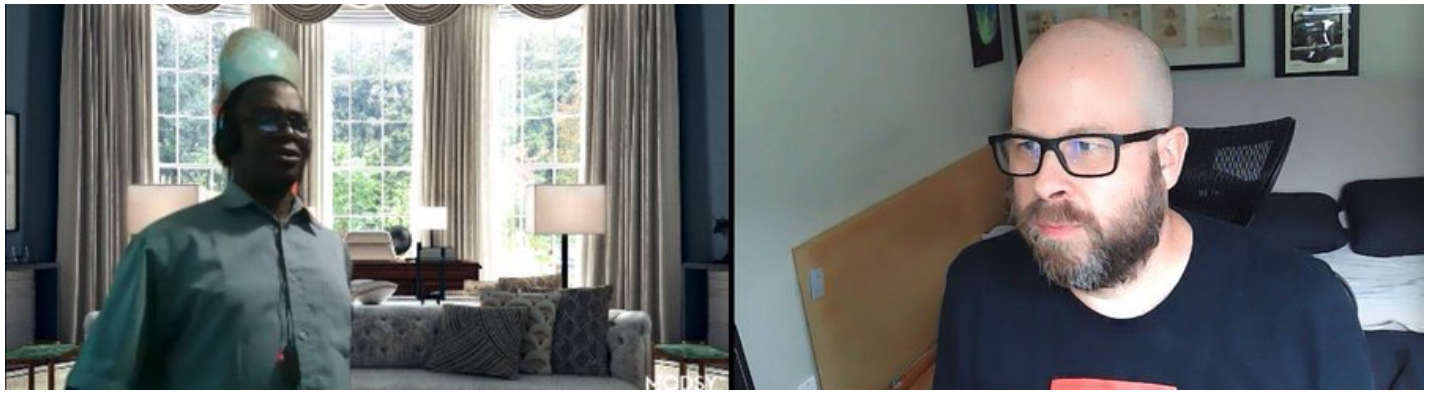


Bing Yandex Google Baidu 百度

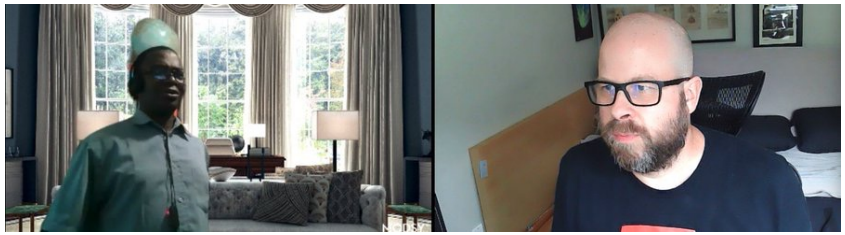
Gender Shades: gender recognition performed poorly for women with darker skin (Buolamwini & Gebru, 2018)

Buolamwini, J., & Gebru, T. (2018). Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification. *Proceedings of the 1st Conference on Fairness, Accountability and Transparency*, 77–91.

Zoom Virtual Background (September 2020)



Twitter Automatic Cropping (September 2020)



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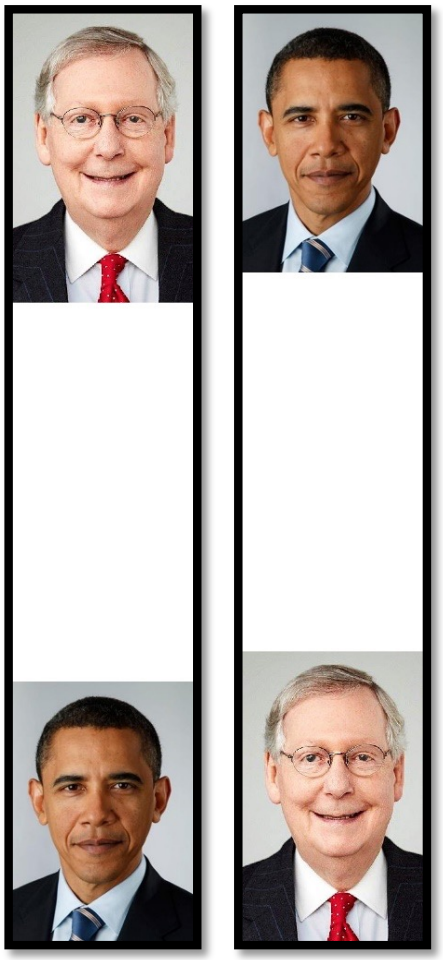


Gender and race issues on online labor market search websites

- TaskRabbit and Fiverr (Hannak et al, 2017)
- Indeed, Monster, CareerBuider (Chen et al., 2018)

Hannák, A., Wagner, C., Garcia, D., Mislove, A., Strohmaier, M., & Wilson, C. (2017). Bias in Online Freelance Marketplaces: Evidence from TaskRabbit and Fiverr. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, 1914–1933.
Chen, L., Ma, R., Hannák, A., & Wilson, C. (2018). Investigating the Impact of Gender on Rank in Resume Search Engines. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–14.

Automatic labelling (Cabañas et al., 2018)

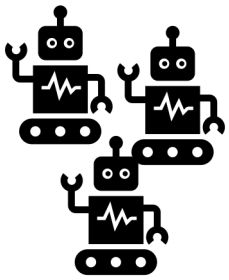
Cabañas, J. G., Cuevas, Á., & Cuevas, R. (2018). *Unveiling and Quantifying Facebook Exploitation of Sensitive Personal Data for Advertising Purposes*. 479–495.

Facebook automatic labelling (Cabañas et al., 2018)

- 2092 sensitive attributes
  - For example: communism, islam, quran, suicide prevention, socialism, judaism, homosexuality, alternative medicine, christianity, illegal immigration, oncology, lgbt community, gender identity, bible, pregnancy, nationalism, veganism, buddhism, feminism
- only 0.03% were added by users (users 4577 users, >100K sensitive label instances)
- these interests are used to sell ads
- but also put people at risk:
  - hate campaigns, e.g., countries in which homosexuality is illegal
  - identification attacks (Hong, 2012)
- only 27% of labels were accurate (Bashir et al., 2019)

Cabañas, J. G., Cuevas, Á., & Cuevas, R. (2018). *Unveiling and Quantifying Facebook Exploitation of Sensitive Personal Data for Advertising Purposes*. 479–495.
Hong, J. (2012). The state of phishing attacks. *Communications of the ACM*, *55*(1), 74–81.
Bashir, M., Farooq, U., Shahid, M., Zaffar, M. F., & Wilson, C. (2019). Quantity vs. Quality: Evaluating User Interest Profiles Using Ad Preference Managers. *NDSS*

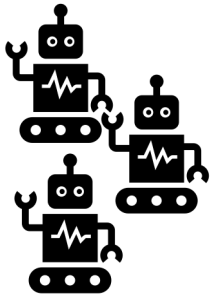
Google Intransparent labelling (Datta et al., 2018)



Group A
visited **substance abuse** websites

RQ1: substance abuse Ads?

yes



Group B
did not visit any website

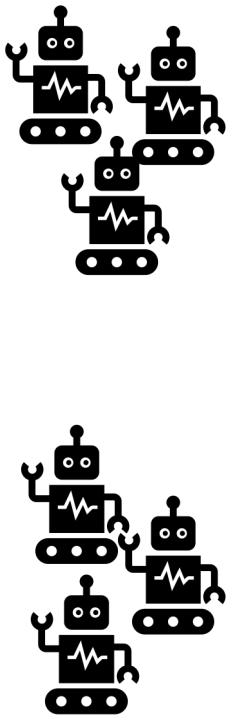
no

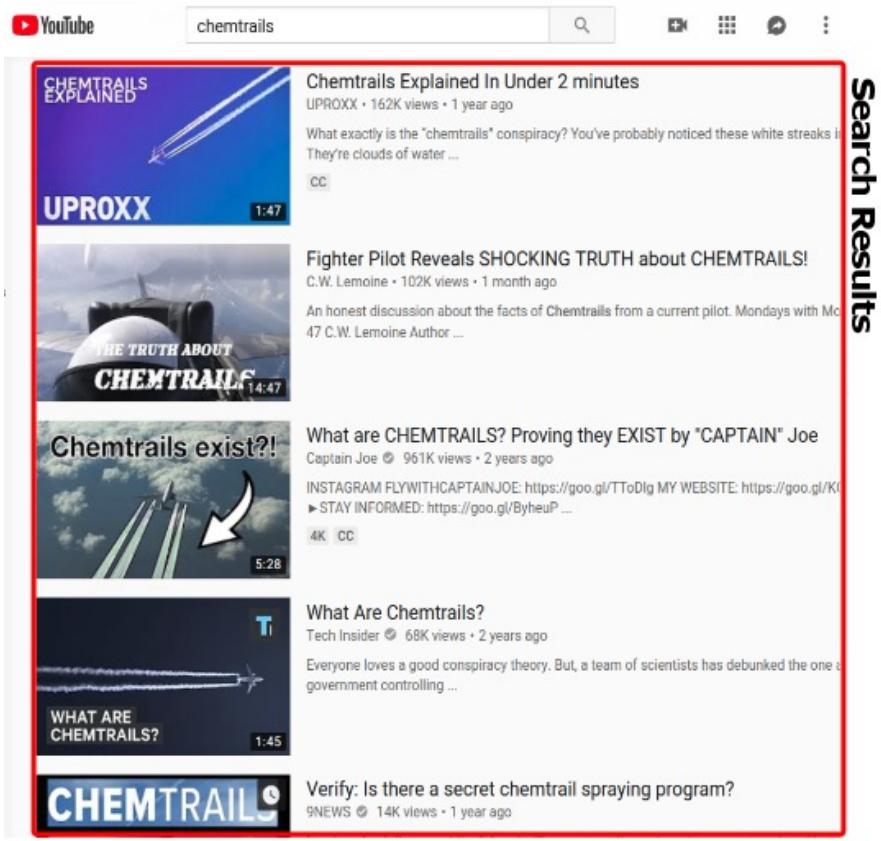
RQ2: differences in the Google Ads preferences?

no

Datta, A., Tschantz, M. C., & Datta, A. (2015). Automated Experiments on Ad Privacy Settings. *Proceedings on Privacy Enhancing Technologies*, *2015*(1), 92–112.

“Filter Bubble” effect (Hussein et al., 2020)





Hussein, E., Juneja, P., & Mitra, T. (2020). Measuring Misinformation in Video Search Platforms: An Audit Study on YouTube. *Proceedings of the ACM on Human-Computer Interaction*, *4*(CSCW1), 048:1-048:27.

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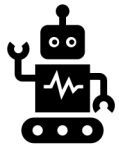
Google Personalization



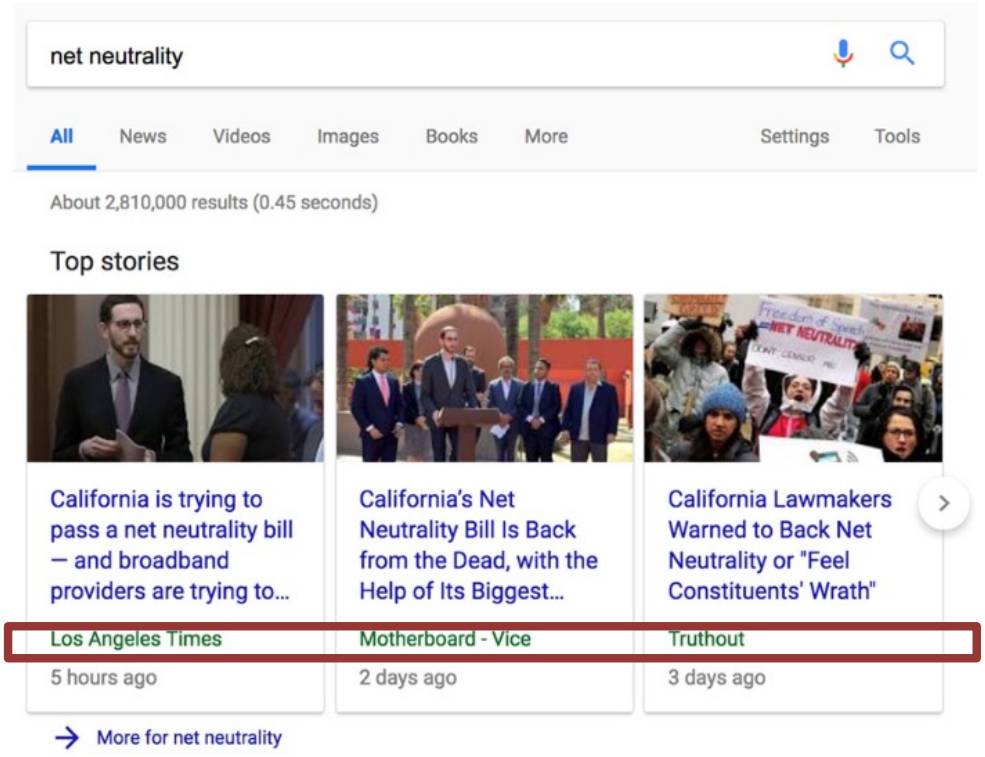
- pricing (Mikians et al, 2012):
  - browsing history
  - geo-location

- accounted for ~12% of result differences (Hannak et al, 2013):
  - being logged in Google
  - geo-location (Kliman-Silver et al, 2015)

Mikians, J., Gyarmati, L., Erramilli, V., & Laoutaris, N. (2012). Detecting price and search discrimination on the internet. *Proceedings of the 11th ACM Workshop on Hot Topics in Networks*, 79–84.
Hannak, A., Sapiezynski, P., Molavi Kakhki, A., Krishnamurthy, B., Lazer, D., Mislove, A., & Wilson, C. (2013). Measuring personalization of web search. *Proceedings of the 22nd International Conference on World Wide Web*, 527–538.
Kliman-Silver, C., Hannak, A., Lazer, D., Wilson, C., & Mislove, A. (2015). Location, Location, Location: The Impact of Geolocation on Web Search Personalization. *Proceedings of the 2015 Internet Measurement Conference*, 121–127.

Google Source concentration

- top 20% of new sources account for 86% of all top stories (Trielli & Diakopoulos, 2019)



Trielli, D., & Diakopoulos, N. (2019). Search as News Curator: The Role of Google in Shaping Attention to News Information. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–15.
Fischer, S., Jaidka, K., & Lelkes, Y. (2020). Auditing local news presence on Google News. *Nature Human Behaviour*, *4*(12), 1236–1244.
Urman, A., Makhortykh, M., & Ulloa, R. (2021). Auditing Source Diversity Bias in Video Search Results Using Virtual Agents. *Companion Proceedings of the Web Conference 2021*, 232–236.

Google Source concentration

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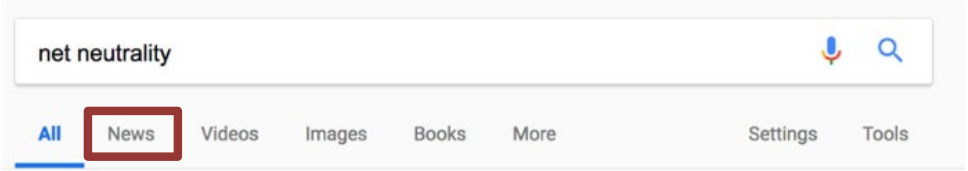
- national outlets dominate news search results (Fischer et al, 2020)



The New York Times

CNN

The Washington Post

Trielli, D., & Diakopoulos, N. (2019). Search as News Curator: The Role of Google in Shaping Attention to News Information. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–15.
Fischer, S., Jaidka, K., & Lelkes, Y. (2020). Auditing local news presence on Google News. *Nature Human Behaviour*, *4*(12), 1236–1244.
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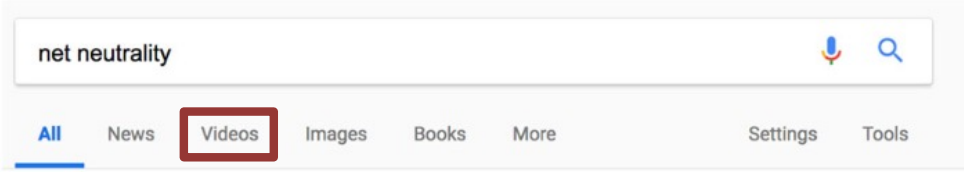
Google Source concentration

- top 20% of new sources account for 86% of all top stories (Trielli & Diakopoulos, 2019)
- national outlets dominate news search results (Fischer et al, 2020)
- YouTube dominates video search results. In Google, it is followed by big media outlets (Urman, 2021)



YouTube

CNN

The Washington Post

The New York Times

Trielli, D., & Diakopoulos, N. (2019). Search as News Curator: The Role of Google in Shaping Attention to News Information. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–15.
Fischer, S., Jaidka, K., & Lelkes, Y. (2020). Auditing local news presence on Google News. *Nature Human Behaviour*, *4*(12), 1236–1244.
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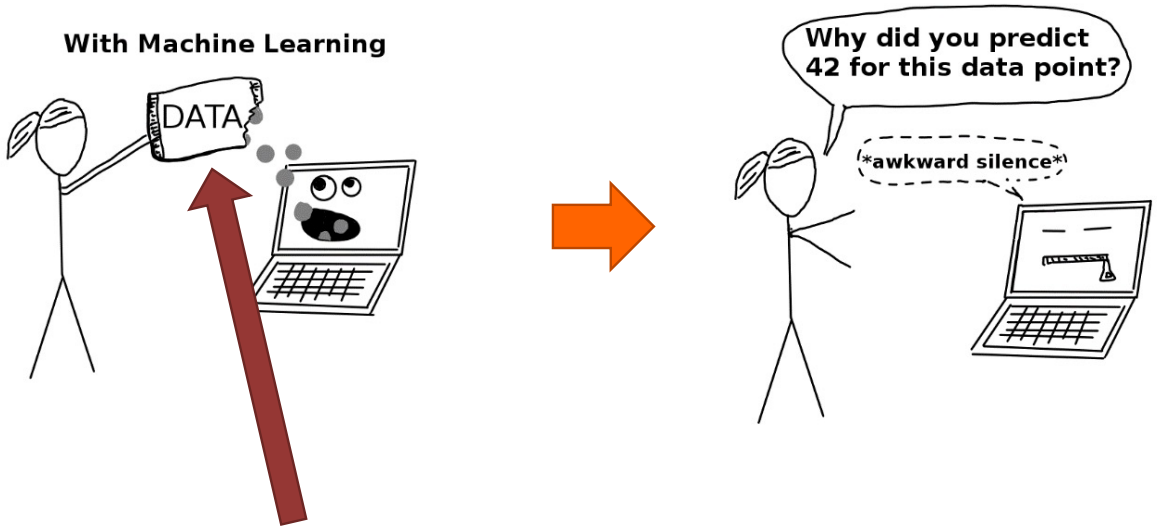
Why does all of this occur?

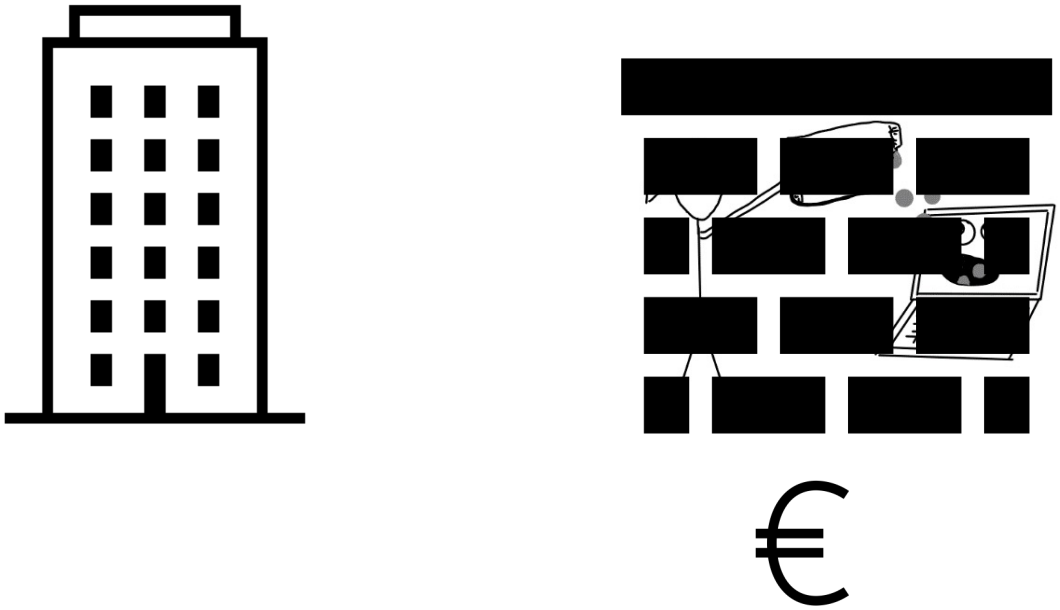
Machine learning algorithms are opaque



Data is biased

Source: https://christophm.github.io/interpretable-ml-book/terminology.html

Details are owned by a company



Twitter automatic cropping (September 2020)

- apologized (Hern, 2020)
- reported on the issue, and change the cropping mechanism (Chowdhury, 2021)
- open a competition to investigate their algorithm (Dang, 2021; Hern, 2021)

Hern, A. (2020, September 21). Twitter apologises for 'racist' image-cropping algorithm. *The Guardian*. https://www.theguardian.com/technology/2020/sep/21/twitter-apologises-for-racist-image-cropping-algorithm
Chowdhury, Rumman (2021). Sharing learnings about our image cropping algorithm. https://blog.twitter.com/engineering/en_us/topics/insights/2021/sharing-learnings-about-our-image-cropping-algorithm
Dang, S. (2021, July 30). Twitter launches competition to find biases in its image-cropping algorithm. *Reuters*. https://www.reuters.com/technology/twitter-launches-competition-find-biases-its-image-cropping-algorithm-2021-07-30/
Hern, A. (2021, August 10). Student proves Twitter algorithm 'bias' toward lighter, slimmer, younger faces. *The Guardian*. https://www.theguardian.com/technology/2021/aug/10/twitters-image-cropping-algorithm-prefers-younger-slimmer-faces-with-lighter-skin-analysis

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Meet the Experts

Facebook hinders research projects

ALGORITHM WATCH

NYU Ad Observatory
By NYU Cybersecurity for Democracy

AlgorithmWatch forced to shut down Instagram monitoring project after threats from Facebook. (2021.). *AlgorithmWatch*. Retrieved 3 October 2021, from https://algorithmwatch.org/en/instagram-research-shut-down-by-facebook/

Ad Observatory by NYU Tandon School of Engineering. (2021). Retrieved 4 October 2021, from https://adobservatory.org/

Facebook Rolls Out News Feed Change That Blocks Watchdogs from Gathering Data – The Markup. (2021). Retrieved 3 October 2021, from https://themarkup.org/citizen-browser/2021/09/21/facebook-rolls-out-news-feed-change-that-blocks-watchdogs-from-gathering-data

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Meet the Experts

Hinders research projects

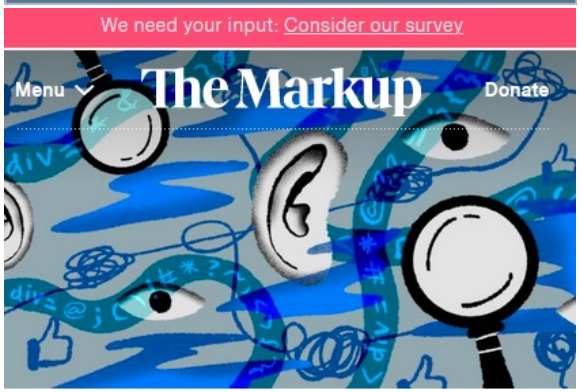
July 13, 2021

August 6, 2021

Facebook has effectively stalled our Ad Observatory project by suspending Facebook accounts of Cybersecurity for Democracy team members. Lawmakers, regulators, and civil society groups are stepping up to support this project.

Please check Cybersecurity for Democracy for updates.

September 21, 2021



Citizen Browser

Facebook Rolls Out News Feed Change That Blocks Watchdogs from Gathering Data

The tweak, which targets the code in accessibility features for visually impaired users, drew ire from researchers and those who monitor the platform

By Corin Faife

September 21, 2021 08:00 ET

Updated September 21, 2021 13:42 ET

AlgorithmWatch forced to shut down Instagram monitoring project after threats from Facebook. (2021.). *AlgorithmWatch*. Retrieved 3 October 2021, from https://algorithmwatch.org/en/instagram-research-shut-down-by-facebook/

Ad Observatory by NYU Tandon School of Engineering. (2021). Retrieved 4 October 2021, from https://adobservatory.org/

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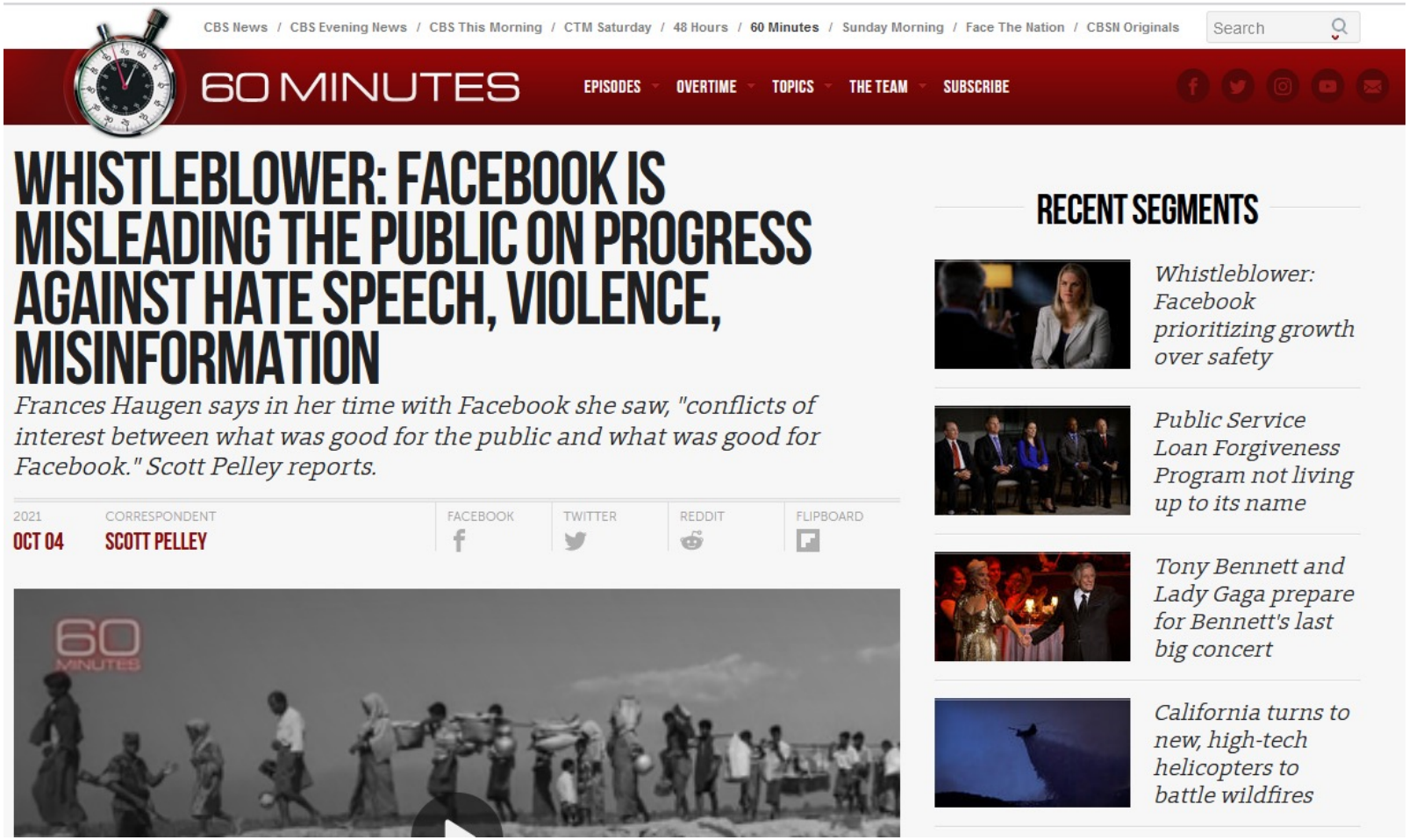
Conflicts of interest (Pelley, October 4th 2021)



Pelley, S. (October 4th, 2021). *Whistleblower: Facebook is misleading the public on progress against hate speech, violence, misinformation*. Retrieved 4 October 2021, from https://www.cbsnews.com/news/facebook-whistleblower-frances-haugen-misinformation-public-60-minutes-2021-10-03/

Algorithmic auditing

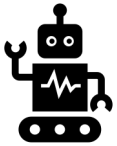
"process of investigating the **functionality and impact** of decision-making algorithms"(Mittelstadt, 2016)

Mittelstadt, B. (2016). Automation, Algorithms, and Politics| Auditing for Transparency in Content Personalization Systems. *International Journal of Communication*, *10*(0), 12.

How to perform algorithm auditing?

Bandy (2021)

- source code
- **direct scrape using APIs**
- **sock puppets**
- **carrier puppets**
- **crowdsourcing**



NYU Ad Observatory
By NYU Cybersecurity for Democracy

Menu The Markup Donate
Big Tech Is Watching You. We're Watching Big Tech.
Citizen Browser

ALGORITHM WATCH

Bandy, J. (2021). Problematic Machine Behavior: A Systematic Literature Review of Algorithm Audits. *ArXiv:2102.04256 [Cs]*.

What has been investigated? (Bandy, 2021)

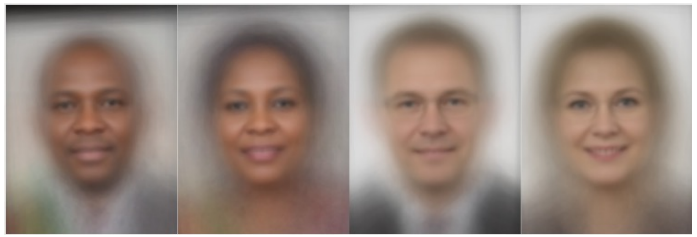
Discrimination	Distortion	Exploitation	Misjudgment

Buolamwini, J., & Gebru, T. (2018). Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification. *Proceedings of the 1st Conference on Fairness, Accountability and Transparency*, 77–91.

What has been investigated? (Bandy, 2021)

Discrimination | **Distortion** | **Exploitation** | **Misjudgment**

Gender Classifier	Darker Male	Darker Female	Lighter Male	Lighter Female
Microsoft	94.0%	79.2%	100%	98.3%
FACE++	99.3%	65.5%	99.2%	94.0%
IBM	88.0%	65.3%	99.7%	92.9%



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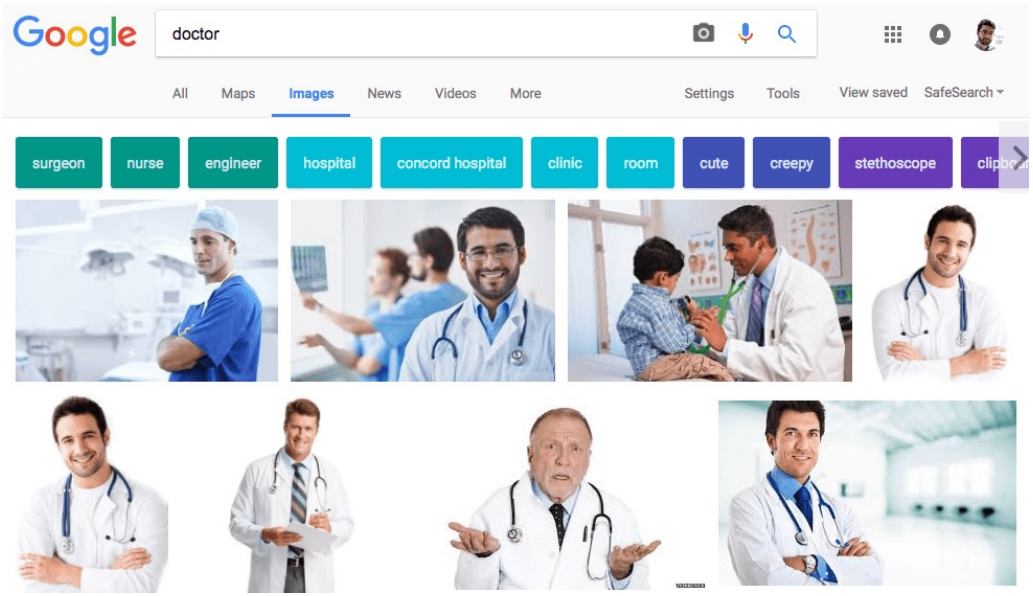

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What has been investigated? (Bandy, 2021)

Discrimination	Distortion	Exploitation	Misjudgment

Silva et al., (2020)

NYU Ad Observatory By NYU Cybersecurity for Democracy **(Wazman, 2021)**

Silva, M., Santos de Oliveira, L., Andreou, A., Vaz de Melo, P. O., Goga, O., & Benevenuto, F. (2020). Facebook Ads Monitor: An Independent Auditing System for Political Ads on Facebook. *Proceedings of The Web Conference 2020*, 224–234.
Watzman, N. (2021, May 12). The political ads Facebook won't show you. *Cybersecurity for Democracy*. https://medium.com/cybersecurity-for-democracy/the-political-ads-facebook-wont-show-you-e0d6181bca25

What has been investigated? (Bandy, 2021)

Discrimination	Distortion	Exploitation	Misjudgment

What has been investigated? (Bandy, 2021)

Platform	Discrimination	Distortion	Exploitation	Misjudgment
Search				
Advertising				
Recommendation				
Pricing				
Vision				

Bandy, J. (2021). Problematic Machine Behavior: A Systematic Literature Review of Algorithm Audits. *ArXiv:2102.04256 [Cs]*.

What has been investigated? (Bandy, 2021)

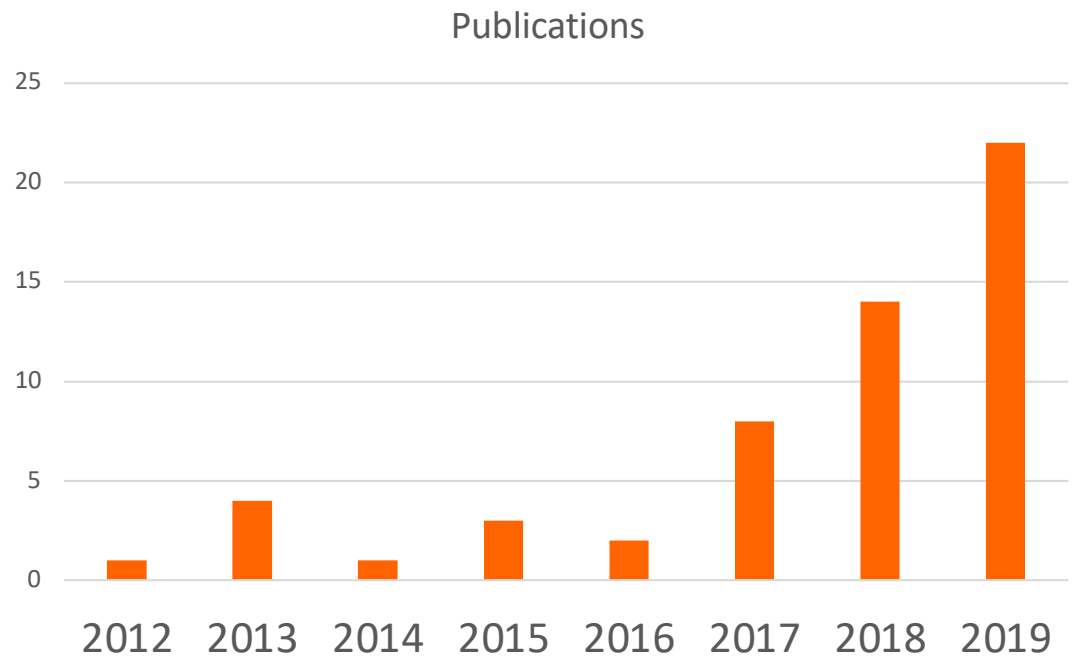
Platform	Discrimination	Distortion	Exploitation	Misjudgment
Search				
Advertising				
Recommendation				
Pricing				
Vision				
Criminal Justice				
Language Processing				
Mapping				

Bandy, J. (2021). Problematic Machine Behavior: A Systematic Literature Review of Algorithm Audits. *ArXiv:2102.04256 [Cs]*.

What has been investigated? (Bandy, 2021)

Platforms	Discrimination	Distortion	Exploitation	Misjudgment	Total
Search	5	18	2		**25**
Advertising	3	2	3	4	**12**
Recommendation	1	7			**8**
Pricing	5				**5**
Vision	5				**5**
Criminal Justice	1			3	**4**
Language Processing	1	1			**2**
Mapping		1			**1**
Total	**21**	**29**	**5**	**7**	**62**

Bandy, J. (2021). Problematic Machine Behavior: A Systematic Literature Review of Algorithm Audits. *ArXiv:2102.04256 [Cs]*.



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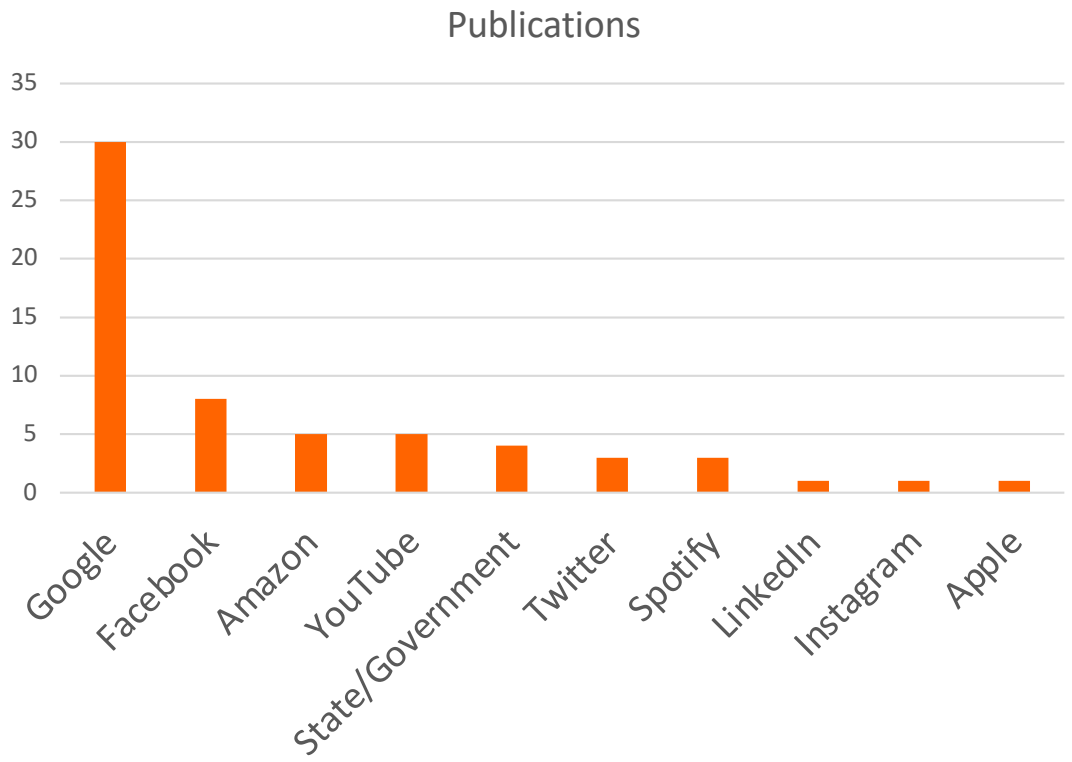

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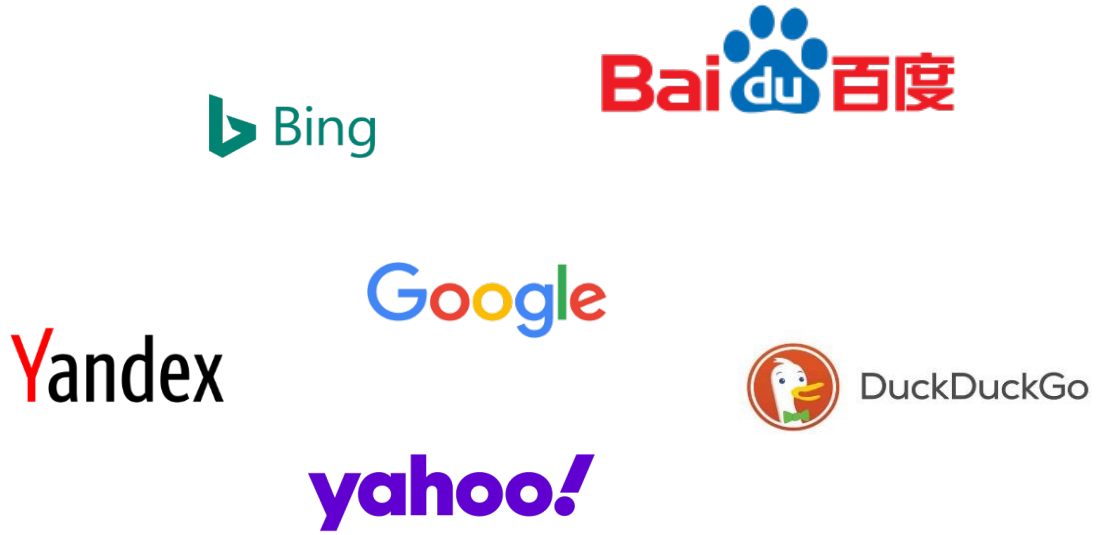
Fill the gap with more search engines



Makhortykh, M., Urman, A., & Ulloa, R. (2020). How search engines disseminate information about COVID-19 and why they should do better. *Harvard Kennedy School Misinformation Review*, *1*(COVID-19 and Misinformation).
Makhortykh, M., Urman, A., & Ulloa, R. (2021). Detecting Race and Gender Bias in Visual Representation of AI on Web Search Engines. In L. Boratto, S. Faralli, M. Marras, & G. Stilo (Eds.), *Advances in Bias and Fairness in Information Retrieval* (pp. 36–50). Springer International Publishing.
Urman, A., Makhortykh, M., & Ulloa, R. (2021). Auditing Source Diversity Bias in Video Search Results Using Virtual Agents. *Companion Proceedings of the Web Conference 2021*, 232–236.
Ulloa, R., Makhortykh, M., & Urman, A. (2021). Algorithm Auditing at a Large-Scale: Insights from Search Engine Audits. *ArXiv:2106.05831 [Cs]*.
Urman, A., Makhortykh, M., & Ulloa, R. (2021). The Matter of Chance: Auditing Web Search Results Related to the 2020 U.S. Presidential Primary Elections Across Six Search Engines. *Social Science Computer Review*, 08944393211006863.
Makhortykh, M., Urman, A., & Ulloa, R. (2021). Hey, Google, is this what the Holocaust looked like? Auditing algorithmic curation of visual historical content on Web search engines. *First Monday*.

Experimental design (case of the search engines)

- time of query (Hannak et al, 2013)
- browsing history (Mikians, 2012)
- location (Hannak et al, 2013; Kliman-Silver et al., 2015)
- ranking (Kulshrestha, 2017)
- browser type (Urman et al., 2021)
- language (Makhortykh et al, 2020)
- randomization (Makhortykh et al, 2020; Urman et al., 2021)
- cookie consent and captchas (Ulloa et al, 2021)

Hannak, A., Sapiezynski, P., Molavi Kakhki, A., Krishnamurthy, B., Lazer, D., Mislove, A., & Wilson, C. (2013). Measuring personalization of web search. Proceedings of the 22nd International Conference on World Wide Web, 527–538.
Kliman-Silver, C., Hannak, A., Lazer, D., Wilson, C., & Mislove, A. (2015). Location, Location, Location: The Impact of Geolocation on Web Search Personalization. Proceedings of the 2015 Internet Measurement Conference, 121–127.
Kulshrestha, J., Eslami, M., Messias, J., Zafar, M. B., Ghosh, S., Gummadi, K. P., & Karahalios, K. (2017). Quantifying Search Bias: Investigating Sources of Bias for Political Searches in Social Media. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, 417–432.
Makhortykh, M., Urman, A., & Ulloa, R. (2020). How search engines disseminate information about COVID-19 and why they should do better. Harvard Kennedy School Misinformation Review, 1(COVID-19 and Misinformation). Mikians, J., Gyarmati, L., Erramilli, V., & Laoutaris, N. (2012). Detecting price and search discrimination on the internet. Proceedings of the 11th ACM Workshop on Hot Topics in Networks, 79–84.
Ulloa, R., Makhortykh, M., & Urman, A. (2021). Algorithm Auditing at a Large-Scale: Insights from Search Engine Audits. *ArXiv:2106.05831 [Cs]*.
Urman, A., Makhortykh, M., & Ulloa, R. (2021). The Matter of Chance: Auditing Web Search Results Related to the 2020 U.S. Presidential Primary Elections Across Six Search Engines. Social Science Computer Review, 08944393211006863.

General considerations

- If you have participants data:
  - ethics approval
  - informed consent of the participant

- Auditing might break the Terms & Conditions of platforms:
  - false accounts
  - automated data collection

- Varies according to platform
  - search engines generally open
  - social media platforms not so

- Keep in mind data rights specially in the case of images, not everything that is posted is legal

Takeaways & final remarks

- Algorithm auditing is a set of methods to expose problems in platform technologies
- Opportunity to steer the future by avoiding the perpetuation of existent inequalities
- Conflict of interest between companies and researchers
- Ethical considerations, but not many alternatives
- Some regulations are being put into place:
  - General Data Protection Regulation (GDPR)
  - European Artificial Intelligence Act (proposal Apr 2021)
  - Algorithmic Accountability Act (US, rejected 2019, resubmitted 2021)
  - Algorithmic Justice and Online Platform Transparency Act of 2021 (US, submitted)

Thank you !

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