Algorithmic Bias: Where It Comes From and What to Do About It (Introduction)

26 March 2017 Andy Oram, Editor, O'Reilly Media



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The Discoveries

Sweeney L.

Discrimination in Online Ad Delivery

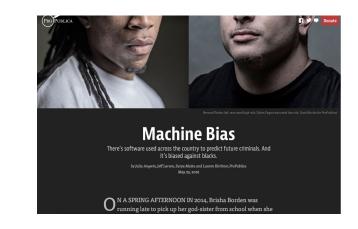
Discrimination in Online Ad Delivery

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January 28, 20131

Abstract

A Google search for a person's name, such as "Trevon Jones", may yield a personalized ad for public records about Trevon that may be neutral, such as "Looking for Trevon Jones?...", or may be suggestive of an arrest record, such as "Trevon Jones, Arrested"...". This writing investigates the delivery of these kinds of



https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2208240 https://www.propublica.org/article/machine-bias-risk-assessments-in-crimin al-sentencing

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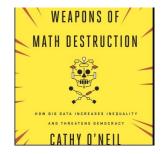
The Hype

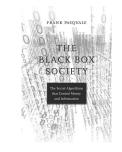
Algorithms and Bias: O. and A. With Cynthia Dwork Harvard Business Review The Hidden Biases in Claire Cale Miller guarante M.G. 10, 2015 0 0 **Big Data** How Big Data Harms Poor by Kate Crawford Communities Surveillance and public-benefits programs gather large amounts of information on low-income people, feeding opaque algorithms that can trap them in poverty. ------Shire V Tuest This looks to be the year that we reach peak big data hype. From wildly business and science worlds are focused on how large datasets can give Like The Atlantic? Subscribe to The Atlantic Data our free weaking ornal measurements 51015 117 insight on previously intractable challenges. The hype becomes problematic when it leads to what I call "data fundamentalism," the Big data can help solve problems that are too big for one person to wrap their head notion that correlation always indicates causation, and that massiv around. It's helped businesses cut costs, cities plan new developments data sets and predictive analytics always reflect objective truth. Former intelligence agencies discover connections between terrorists, health officials Wired editor-in-chief Chris Anderson embraced this idea in his predict outbreaks, and police forces get alread of crime. Decision-makers are tuman Cas Peter Technology BROOKINGS PewResearchCenter Average, Science & To CRESSINGING BORN INCOMENT INTERATORIA WITHIN U.S. EDOROWY U.S. I DEVELOP SCALABLE IOT SOLUTIONS ry, something went wrong Code-Dependent: Pros and Cons of the A View InvestMicholas Diskonsulas and Scealls Educile Algorithm Age Algorithms are aimed at og How to Hold Algorithms Accountabl nave lives, make things easier and conquer chaos. Still, of corporations and programmits, perpetuate his Addressing racial bias in th bles, cut choices, creativity and serendity leading to undesired consequences. Here are five online economy principles to help technologists deal with that. 0000 0 A tors, informing devisions on exceptions from targeting. Last month, in response to public outrry over a new feature endoline scherthers to deliverative architecture of its

https://www.nytimes.com/2015/08/11/upshot/algorithms-and-bias-q-and-a-with-cynthia-dwork.html https://hbr.org/2013/04/the-hidden-biases-in-big-data https://www.theatlantic.com/technology/archive/2016/04/how-big-data-harms-poor-communities/477423/ https://www.technologyreview.com/s/602933/how-to-hold-algorithms-accountable/ https://www.brookings.edu/blog/techtank/2016/12/01/addressing-racial-bias-in-the-online-economy/ http://www.pewinternet.org/2017/02/08/code-dependent-pros-and-cons-of-the-algorithm-age/

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The Books





https://weaponsofmathdestructionbook.com/ http://www.hup.harvard.edu/catalog.php?isbn=9780674368279

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The Feds

Big Data: A Report on Algorithmic Systems, Opportunity, and Civil Rights

Executive Office of the President May 2016

https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/2016_0504_data_discrimina tion.pdf

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Association for Computing Machinery principles



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January 12, 2017

Statement on Algorithmic Transparency and Accountability

Computer algorithms are widely employed throughout our economy and society to make decisions that have far-reaching impacts, including their applications for education, access to credit, healthcare, and employment.¹ The ubiquity of algorithms in our reverday lives is an important reason to focus on addressing challenges associated with the design and technical aspects of algorithms and preventing bias from the onset.

An algorithm is a self-contained step-by-step set of operations that computers and other 'smart' devices carry out to perform calculation, data processing, and automated reasoning tasks. Increasingly, algorithms implement institutional decision-making based on analytics, which involves the discovery, interpretation, and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming, and operations research to quantify performance.

There is also growing evidence that some algorithms and analytics can be opaque, making it impossible to determine when their outputs may be biased or erroneous.

Computational models can be distorted as a result of biases contained in their input data and/or their algorithms. Decisions made by predictive algorithms can be opaque because of many factors, including technical (the algorithm may not lend itself to easy explanation), economic (the cost of providing transparency may be excessive, including the compromise of trads escrets), and social (revealing input may violate privacy expectations). Even well-engineered computer systems can result in unexplained outcomes or errors, either because they contain bugs or because the conditions of their use changes,

https://www.acm.org/binaries/content/assets/public-policy/2017_usacm_statement_algorithms.pdf

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Questions addressed in this talk

- Why do algorithms discriminate?
- What is unfair bias?
- How can outsiders validate algorithms?
- Who is in control of the data?
- Where does free software play a role?
- How should we use algorithms, given these risks?

The role of free software

MINORITY REPORTS

Software used to predict crime can now be scoured for bias



htttps://qz.com/938635/a-predictive-policing-startup-released-all-its-code-so-it-can-be-scoured-fo r-bias/

https://github.com/CivicScapAlgorithmic Bias — Andy Oram Correction

Barriers to opening the source code

- Selfish actors might game the system
- Machine learning doesn't produce human-readable decision processes
- The devil often lies in the data
- Can't keep up with constant tweaks to the algorithms
 Trade secrets and other legal controls

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Barriers to using the source code if it's open

- How do you know at all if an algorithm is judging you?
- Who can understand the algorithms?
- The devil often lies in the data
- Power imbalances--do you dare to challenge the owner of the algorithm?

Two-line Title and content with smaller text

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Replace box with photo then send to back

One-line title with side photo

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Two-line title with side photo and content

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One-line title with bottom photos

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Replace box with photo or photos

Two-line title with content and bottom photos

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 - Third line

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Section Header

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One-line Title with Side-by-Side Comparison

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Two-line Title with Side-by-Side Comparison

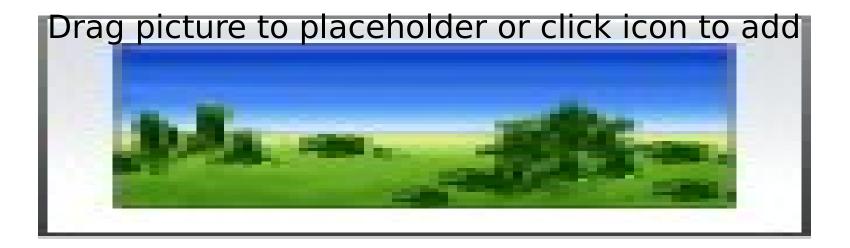


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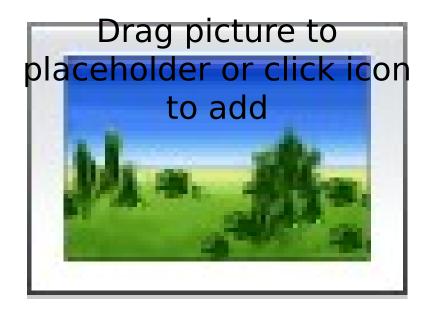


Photo with text

Title and content



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1. Photo with text box



