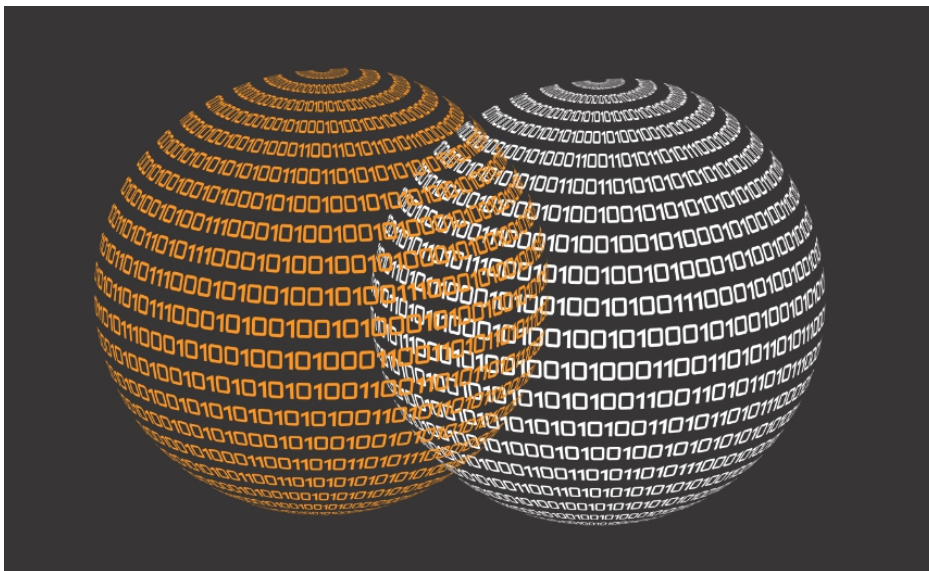


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A few years ago, University of Southern California professor Safiya Umoja Noble was shocked to find that Googling “black girls” resulted in countless pages of pornography. The discovery prompted her to start researching how algorithms reflect and entrench bias, resulting in her book [Algorithms of Oppression: How Search Engines Reinforce Racism](#) .

“The platform is made by human beings, and the people who make it are biased,” she said in a [recent interview](#) for Vox, elaborating how a lack of diversity in STEM fields means that the majority of algorithm creators are white and male--and, in the case of Google’s programmers--often knowingly or unknowingly build their own biases into the code.

“They [the creators] code their biases into the search,” she continued. “They have to take responsibility for their creations.”

Algorithms are meant to make life easier by processing large amounts of data to draw conclusions and make predictions, from the shows you’re [recommended by Netflix](#) to the [directions provided by your map app](#)

. While it is easy to think of them as objective, unthinking tools that operate outside of society, the fact of the matter is that the opposite is true; algorithms cannot exist without the humans who create them. As such, any programmer can either consciously or unconsciously code their own biases into the system, wielding enormous power over the systems that decide everything from who gets a job or a loan to who is granted parole.

It is not just the coders who are to blame. Internet users’ online interactions form the basis of data that trains algorithms, meaning that our own prejudices and assumptions are woven into the fabric of our digital lives. In 2014, a [Google user searched for](#) “english major who taught herself calculus.” The results suggested the correct wording was “english major who taught himself english.” Following a backlash on Twitter, Google explained the reasoning behind its seemingly sexist suggestion: The phrase “taught himself calculus” is searched for about 70 times more than “taught herself calculus,” so the algorithms assumed the former was correct.

In this way, algorithms solidify biases, compounding their negative effects and rendering inequality more difficult to deconstruct.

Google has since tweaked its search algorithms, and continues to do so as issues are brought to light. However, such amendments serve to patch the problem rather than solve it, due to inherent bias in the data itself. In 2015, the search engine came under fire when its Photo app algorithms [mistakenly auto-tagged](#) Black people as gorillas. Three years later, a [Wired investigation](#) revealed that the word gorilla, along with some other primate terms, are now censored, returning no results. As the dataset itself was inherently biased, adjusting the algorithm did not fully solve the problem.

Facial recognition is a growing concern for both privacy and social justice advocates. When we upload personal photos to the Internet, it’s not always possible to predict how they will be used. In April 2018, [Forbes revealed](#) that a private surveillance company was compiling a vast database of facial recognition data from popular social media sites, and using that information to

make judgements and predictions about individuals. Due to a lack of diversity in datasets that train facial recognition algorithms, the technology has been shown to perform [particularly poorly with people of color](#), especially women. As a consequence, “there is a high chance this technology would regularly misidentify people as terrorists or criminals,” Jennifer Lynch of the Electronic Frontier Foundation told Forbes.

When it comes to tackling biases and making digital media more inclusive, [increased diversity in coding](#) is key piece of the puzzle — even Google’s top executives [have acknowledged that](#) the field of AI “doesn’t have the diversity it needs.” Yet it’s only by [creating an inclusive culture](#) that companies can move towards building fairer systems. Or, as [Joy Buolamwini of the Algorithmic Justice League](#) puts it, “whoever codes the system embeds her views. Limited views create limited systems.”

Meanwhile, there remains a huge knowledge gap. Only now, in 2019, are journalists and other professionals [waking up to the necessity](#) of understanding the workings and influence of algorithms. Many educators argue that algorithm literacy is essential among the wider population, too. [According to](#) Professor David Lankes of the University of South Carolina, “unless there is an increased effort to make true information literacy a part of basic education, there will be a class of people who can use algorithms and a class used by algorithms.”

That’s why it’s crucial for both the media and its consumers to gain a critical understanding of how algorithms are built, and how they interact with personal data. For children and adults alike, digital literacy creates a positive feedback loop, making the programmers, journalists and Internet users of today and tomorrow more [aware of algorithmic bias](#) — and of the real-world power structures from which it emerges.

