

# Can Algorithms Reduce Bias in the IT Hiring Process?

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## ABSTRACT

Algorithms are described as mirrors that reflect the unconscious biases that inform our research questions and our data [1]. Consequently, human biases can become embedded unwittingly into artificial intelligence (AI) tools in both feature selection and training data. For example, biased algorithms have been reported in convictions for crimes and parole decisions [2], hiring decisions [3], and financial lending [4]. As opaque mathematical models and algorithms are applied increasingly to important aspects of our lives, there is a fear of these tools reinforcing discrimination and widening inequality [1]. But what happens when the design intention is to create algorithms that detect and mitigate unconscious bias?

Our nascent research project seeks to explore this guiding research question by categorizing machine learning applications that support diversity and inclusion in the hiring practices of firms in the information technology (IT) industry. Many IT businesses have pledged to initiate incentives and targeted internal recruiting strategies designed to bring in female, black and Latinx software engineers, but progress has been limited. For example, at Facebook, the number of women in IT roles grew from 16 percent to 17 percent, and its proportion of black and Latinx workers stayed flat at 1 and 3 percent, respectively [5]. At Apple, 54 percent of tech employees are white, 21 percent are Asian, 9 percent are black, and 13 percent are Latinx. Women only make up 23% of workers in tech roles at Apple [6].

Implicit bias training is typically used as a means of diversifying the pool of job applicants, identifying candidates for interviews, and fostering an inclusive workplace culture. However, Mundy [7] and Rayome [8] report several studies that found that implicit bias training may not increase workplace diversity. To the contrary, diversity advocates contend that implicit bias training is being misused to create a “weaponized human resources” environment. An example of this struggle occurred with the release of the “Google Memo” authored by Google engineer James Damore. In an internal memo distributed in July 2017, Damore contends that Google’s implicit bias training “shamed” conservative white males and cultivates an “ideological echo chamber”. The underrepresentation of women in IT, he argued, can be explained by biological

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differences, and these disparities could be addressed without resorting to “reverse discrimination” [9]. Damore was subsequently fired for breaching the company’s code of conduct. In retaliation, Damore filed a lawsuit in January 2018 that alleges that Google discriminates against conservative white male viewpoints. Tiku reports that, by goading the company to make statements that support diversity, a chilling polarization has emerged in the internal culture of Google [9]. Employees who advocate for diversity report being targeted by harassers from the alt-right and coworkers in a wave of online hate speech that seeks to silence discussions about race, gender identity, and sexual orientation [9]. Targeted employees now check these websites for troublesome statements and physical threats, and report their complaints to Google security. At the same time, Google faces a Department of Labor investigation and lawsuits from former employees claiming that the company discriminates against women in pay and promotion [6].

To avoid the unintended polarization that can occur with implicit bias training, a growing number of Human Resources (HR) vendors are offering AI solutions to help HR professionals identify diverse talent and make unbiased recommendations for hiring. These AI solutions help recruiters in a variety of HR tasks such as “sorting through resumes, making predictive matches between job seekers and positions using data, correcting biases in the language used in job descriptions, and using bots to schedule candidate interviews” [5]. These tools also aid in the retention of IT employees by using predictive analytics that measure sentiment and engagement to determine which employees are most likely to leave the company or perform poorly [6]. Armed with this information, companies can intervene to address the workplace policies and practices that may impede performance, stall career advancement, and inhibit job satisfaction of underrepresented IT workers.

The purpose of this paper is to categorize and discuss the emerging class of AI solutions that seek to reduce bias in the hiring process. We present the results of our preliminary research by providing a summary of the features and functionality of the software offered by HR vendors as well as predictive analytics used to evaluate diversity and inclusion performance of leading technology companies. We conclude with a discussion of these results and avenues for future research.

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