

A university professor wants to expose the hidden bias in AI, and then use it for good

September 14 2022, by Maya Lora



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Lauren Rhue researches the fast-paced world of artificial intelligence and machine learning technology. But she wants everyone in it to slow down.

Rhue, an assistant professor of information systems at the University of Maryland Robert H. Smith School of Business, recently audited emotion recognition technology within three facial recognition services: Amazon Rekognition, Face++ and Microsoft. Her research revealed what Rhue called "really stark" [racial disparities](#).

Amazon Rekognition is offered for use to other companies. Face++ is used in identity verification. Microsoft plans to stop using its [facial recognition technology](#) this year, including the emotion recognition tools.

Rhue collected photos of Black and white NBA players from the 2016 season, controlling for the degree to which they were smiling. She then ran those photos through the facial recognition software.

In general, the models assigned more [negative emotions](#) to Black players, Rhue found. Additionally, if the players had ambiguous facial expressions, the Black players were more likely to be assumed to have a negative facial expression, while white players were more likely to be "given the benefit of the doubt."

"I think that we should all take a step back, and think, do we need to analyze faces in this way?" Rhue said.

Rhue, 39, is not the first to explore racial disparity in AI systems. For example, MIT grad student Joy Buolamwini has given TED Talks on her experience with a facial analysis software that couldn't detect her face because the algorithm hadn't been coded to identify a broad enough range of skin tones and facial structures.

"With the current enthusiasm for AI, there seems to be a need to create a model for everything you can create a model for," Rhue said. "But I would really like to see a bit more of a pause and reflection on, 'Do we need this? What is it bringing to the table?'"

Use of facial recognition technology is spreading. The Port of Baltimore uses facial recognition technology to verify disembarking passengers' identities. HireVue, based in Utah, conducts video interviews for prospective employees and scores candidates' faces and emotions as part of its candidacy analysis. AI has been deployed to scan emotions and body language to find potential threats in crowds.

Some states are limiting the use of AI. California, for example, is considering restricting the use of AI to screen job candidates to avoid "discriminatory impact." In Illinois, employers must disclose when using AI tools during video interviews. Maryland has a similar law.

And last summer, the Baltimore City Council created a moratorium on the use of facial recognition technology, exempting the police department, until this December.

And as AI seeps into all areas of society, Rhue just wants people — and companies — to pause and think of the long-term effects.

"These types of systems are becoming increasingly embedded in our, in our technology. We're not always aware of them. We're not always aware of how they're being used," Rhue said. "And I think it's important to understand the potential for bias. And then the offset of my research is looking at human intervention to see if that makes it better, if people are able to offset that bias."

Rhue noted that in every situation, there needs to be a combination of AI tools and [human intervention](#) used to mitigate bias. She wants to get ahead of the "negative, unintended consequences."

And she thinks the rest of her field is starting to prioritize that kind of work, too. She said the death of George Floyd at the hands of police and subsequent calls for racial justice in 2020 led to an interest in

understanding the struggles of marginalized communities and how technology can promote inclusion.

Jui Ramaprasad, an associate professor of information systems at Maryland's business school, works with Rhue and has known her since she was a doctoral student at New York University. She said the work Rhue is doing on bias in machine learning is some of "the most impactful work" in their field.

"I think she's doing work that she cares about because it affects her, it affects people in the community," Ramaprasad said. "I think it's really hard to be the person doing the work when you are also a person facing those, that bias or discrimination in the environment we live and work in."

Despite the disparities she's uncovered, Rhue does believe technology can be utilized for good. For example, Rhue has researched crowdfunding on [digital platforms](#) with a focus on Kickstarter, which curates campaigns based on staff interest. In an effort to highlight projects put forward by Black creators, she found that using predictive models rather than relying on subjective human analysis increased recommendation rates for Black projects without lowering the rate of success.

"I think there's so much potential for technology to really have a positive impact on inclusion, and particularly financial inclusion," Rhue said.

Outside of her research, Rhue teaches data visualization to undergraduate and masters degree students. She previously taught at Wake Forest University.

Rhue said she can see the impact she makes in the classroom. She's had students tell her, including some in [graduate school](#), that she's the only

Black professor they've ever had. And she's had others tell her they want to pursue their own Ph.D. because she made it seem possible.

Will Hawks is an assistant professor of management at Nova Southeastern University Florida. Before that, he was a student of Rhue's at Wake Forest.

While Rhue wasn't his first Black professor—Hawks previously attended Florida A&M University, a historically Black institution—seeing her on campus still made an impression.

"To see someone who looks like you accomplish things that you don't think can be accomplished — it's the impossible made real," Hawks said. "Being a Black, male professor in this same industry now ... our presence means so much more to them. And I know it because I've been in their shoes."

Hawks called Rhue a "game changer" for him. He's stayed in contact with her since graduating; he reached out when he was applying for academic jobs and even recently invited her to join him in researching hate crimes known as "Zoom bombings" and how those incidents affect organizations and people. Hawks believes Rhue changed the course of his life.

"You wouldn't be talking to Dr. Will Hawks right now had I not crossed paths with Dr. Rhue," Hawks said.

2022 Baltimore Sun.

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Citation: A university professor wants to expose the hidden bias in AI, and then use it for good (2022, September 14) retrieved 16 April 2024 from

<https://techxplore.com/news/2022-09-university-professor-expose-hidden-bias.html>

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