



Reducing Bias through Contextualization: *Diversity-aware Technology* from a Black Feminist Perspective

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A photograph showing a person in a wheelchair being pushed by another person on a paved path. The person in the wheelchair is wearing a blue hooded jacket and a blue beanie. The person pushing the wheelchair is wearing a blue puffer jacket, a tan beanie, and white socks. They are walking away from the camera on a paved path with grass on either side. In the background, there are some structures and other people, but they are out of focus. The sky is overcast with grey clouds.

Ethics | Tech Development | Social Science
Humanities | Black Feminism | Critical Race Theory



Contribution of this paper

- I. Critical analysis of **current frameworks** for diversity-aware technology
- II. (Re)**Definition of diversity-aware technology** along social justice lines
- III. Method for designers: **contextualizing diversity** to reduce bias (in recommender systems)

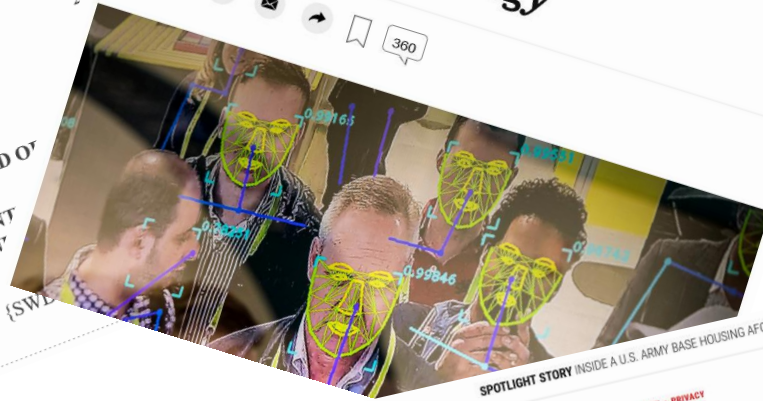


Diversity-aware Technology

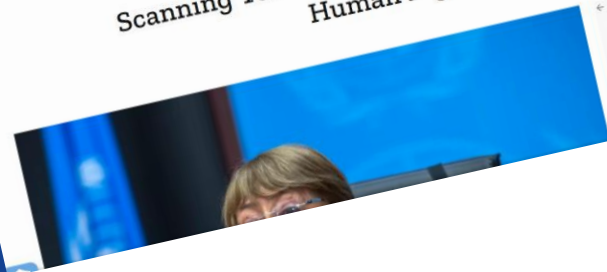
Motivation



San Francisco Bans Facial Recognition Technology



U.N. Urges Moratorium on Use of Face-Scanning Technology and AI That Threatens Human Rights



The General Data Protection Regulation (GDPR) is the toughest privacy law in the world. Though it was drafted and passed by the European Union (EU), it applies everywhere, so long as they target or collect data related to people in the EU. It came into effect on May 25, 2018. The GDPR will levy harsh fines against those who violate its privacy and security standards, with penalties reaching into the tens of millions of euros.



Diversity-aware Datasets

- Inclusion of data from under-represented groups
- Example: Facial recognition (Buolamwini and Gebru 2018)

Critique:

- Legitimizes *more* data collection, recruits minorities into harmful data collection practices in the name of inclusion (Hoffmann 2020)
- Companies expand their power built on availability of big data (Crawford et al. 2014)
- Facial recognition used for surveillance of Black people → should this technology be more efficient? (Browne 2015)

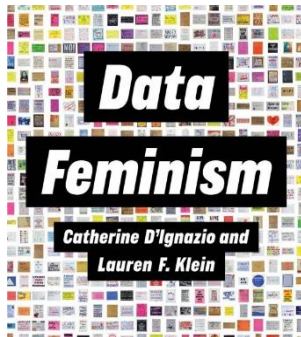
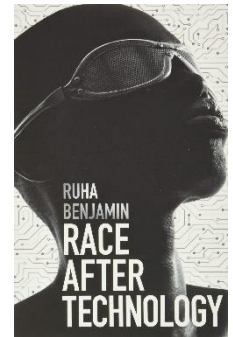
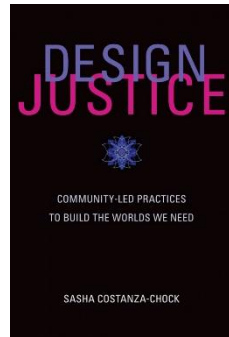
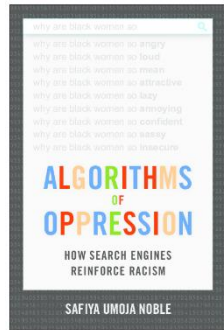


Machine Learning Fairness methods

- Diversity as a strategy to increase fairness in recommender systems
- Increase diversity in item base to include underrepresented items/authors of items (Bauer 2019)

Critique:

- Overemphasis on item diversity → what about users?
- User diversity often represented in binary demographic categories
- Concepts of user difference blindly adopted from other fields
- Compounds injustice (Schelenz 2021)



Design Frameworks for Social Justice

- Center marginalized groups of users
- Sensitive to systems of oppression: patriarchy, White supremacy, heteronormativity, classism, ableism



CRITICAL

RACE

THEORY

THE KEY WRITINGS THAT
FORMED THE MOVEMENT

"SERVING TWO MASTERS" BY DERRICK BELL "RACE CONSCIOUSNESS"
BY **GARY PELLER** "AFFIRMATIVE ACTION IN LEGAL ACADEMIA"
BY DUNCAN KENNEDY "LEGITIMIZING RACIAL DISCRIMINATION" BY

ALAN FREEMAN
"THE
CLOUDED
PRISM" BY
HARLON
DALTON

"LOOKING TO THE BOTTOM" BY MARI MATSUDA "RACE, REFORM,
AND RETRENCHMENT" BY **KIMBERLÉ CRENSHAW** "BEYOND CRITICAL
LEGAL STUDIES" BY ANTHONY E. COOK "THE WORD AND THE RIVER"
BY CHARLES R. LAWRENCE III

"TRANSLATING YONNONDIO BY PRECEDENT
AND EVIDENCE" BY GERALD TORRES
AND KATHY MILUN "METRO
BROADCASTING, INC. V. FCC" BY PATRICIA J.
WILLIAMS "CRITICAL RACE THEORY, ARCHIE

SHEPP, AND FIRE MUSIC" BY JOHN O. CALMORE "A CRITIQUE OF 'OUR CONSTITUTION
IS COLOR-BLIND'" BY **NEIL GOTANDA** "ROUGE ET NOIR REREAD" BY **KENDALL THOMAS**
"WHITENESS AS PROPERTY" BY CHERYL I. HARRIS "THE BOUNDARIES OF RACE" BY

RICHARD THOMPSON FORD
"GROUPS, REPRESENTATION,
AND RACE-CONSCIOUS
DISTRICTING" BY LANI
GUINIER "SAPPHIRE BOUND"
BY REGINA AUSTIN

REVISED TENTH ANNIVERSARY EDITION

BLACK FEMINIST THOUGHT



Knowledge, Consciousness,
and the Politics of Empowerment

SECOND EDITION

Patricia Hill Collins

(Re)Defining Diversity-aware Technology

KENDALL THOMAS

Normative and conceptual diversity





Normative and conceptual diversity

Value statement for "diversity"	Definition of difference
Diversity is valuable because creates social justice and equality in society.	Users are different in their experiences of privilege and oppression.
“We are not just trying to fight oppression on one front or even two, but instead to address a whole range of oppressions” (Combahee River Collective 1996: 232ff)	“We live in a society that includes a population of people who are all similar yet ‘different’ in how they move through this world, experience this world, and are perceived by others in this world” (Anderson and Middleton 2018: 1)



Diversity-aware technology

Diversity-aware technology is a computer system that takes into account the different experiences of privilege and oppression of its stakeholders, that is designers, users, and those affected by the system. The technology enables inclusive and just societal structures and helps dismantle systems of oppression.



Reducing Bias through Contextualization

Contextualizing diversity categories: means looking beyond individual-level diversity and making visible the structural dynamics and power relations involved in a diversity dimension

Data feminism asserts that data are not neutral or objective. They are the products of unequal social relations, and this context is essential for conducting accurate, ethical analysis

(D'Ignazio and Klein 2020: 18).

Diversity-aware Technology Applied

ALL FILMS



▶ Boeing's Fatal Flaw

investigation of Boeing's
wed 10/11/2021 10:11 AM



▶ America After 9/11

FRONTLINE traces the U.S.
response to the September 11



▶ In the Shadow

How seven men
indicted for the
Qaeda plot since

AUGUST 10, 2021

RecSys that recommends documentaries

- User considered diverse in educational level (degree)
- Users considered diverse in preferences for documentaries
- Those less educated receive sports/nature/entertainment
- Those more educated receive politics/science/society

SEPTEMBER 7, 2021



Methodology for Contextualization

Map privileges and oppressions in a diversity domain, e.g. education
(cf. Wong-Villacres 2018, Erete et al. 2018)

Oppression	Privilege
Structural discrimination (Collins 2000, Crenshaw 1989)	Unearned advantages (McIntosh 1988)
School segregation	Parents with college degree
Underfunding for schools in Black neighborhoods	Access to quality education/financial capacity

→ Design to create equality and equity



Thank you!

Let's connect

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