

Raced-Based Epistemologies in Tech-Focused Centers

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Executive Summary

The purpose of this essay is to highlight how the experiences and perspectives of minority groups differ from that of the predominantly white male population that dominates the technology industry. In tech-focused centers, these epistemologies can be used to challenge the dominant current narratives, and provide valuable insights into how future technology should be developed. Intersectionalist thought in particular is presented as a particularly effective way to critique how current technology is created. While this essay speaks on technology in a broad sense, there is a fixation on especially AI and its subsequent algorithmic systems. This is because of the large amount of data and there is on its usage in discriminatory or demeaning ways. By incorporating racialized epistemologies into tech-focused centers, we can prompt more inclusive and equitable technology development and use

Identifying and explaining the problem

Racism is a pervasive and destructive force that has long been a stain on our society. This is true in all areas of life, including in tech-focused centers where knowledge is created and disseminated. Racism in these centers can take many forms, from the exclusion of people of color from leadership positions and decision-making roles to the perpetuation of harmful stereotypes and biases through the technologies that are developed and promoted. As we have transitioned towards the information age, our means of communicating with each other, and thus our avenues to uphold structural racism and oppression within our society are also changing. Techno-racism: “a phenomenon in which the racism experienced by people of color is encoded in the technical systems used in our everyday lives,” described by reporter Faith Karimi as a “new enemy for people of color” originates from a civilian Detroit Police commission (Karim, 2021). The advent of facial recognition technology and the subsequent arms race to make more accurate algorithms has made significant progress in the fields of machine learning and predictive technology. However, the measures used to build and curate such mediums are created in a space influenced by mainly white male epistemologies. Thus, whether unwittingly or purposefully, technology is being created in such a way that it continues to mitigate marginalized groups such as racial minorities and female persons. This is manifested by algorithms that do a poor job of recognizing non-white male faces, perpetuate already propagating social biases, or become examples of function creep harming already greatly affected communities. Compounded by the fact that there is a disproportionate lack of people of color in STEM fields, it is evident that there would be a lack of internal oversight that would otherwise look to bring about measures to alleviate the issue.

Ethical Analysis

Certain key ethical issues are continuing to emphasize the magnitude that minority groups continue to be marginalized in tech sectors. First is the prevalence of a disproportionate white majority in key job areas. The exclusion of people of color from leadership roles leads to a lack of the necessary perspectives needed to initialize effective change. There is obviously a vastly different scope of experience that occurs between individuals of different racial identities, something that is just something part of the human experience and is a part of an individual's own identity. However, this phenomena can be confounded with the presence of white ignorance, the premise that white individuals are willfully ignorant about racial injustice (Martin, 2020), leading to a cycle where no positive measures are started.

White ignorance also decreases racial equity in a technological sense. Companies become less willing to be self motivated to create systems and algorithms that have similar accuracy across varying racial groups. The effect can even be extrapolated to include female, or non male spheres as well, making the problem even more drastic in an intersectional sense.

The use of biased data to develop and train algorithms, which can result in technologies that are not fair or equitable. This can lead to unfair and discriminatory outcomes, and can undermine the principles of justice and equality. Suspects may not even be aware that they were under investigation at all, thus fall victim to function creep.

Biased data can be the result from missing data on the whole. The lack of proportionally representative data on society can become a fatal flaw of new technologies and a hindrance towards generating better algorithms and AI that would perform more efficiently.

The failure to consider the ethical implications of new technologies, which can result in the development of technologies that are harmful or unethical. This can have negative consequences for individuals and society as a whole, and can lead to the violation of human rights. This effect becomes even more potent when those in positions of power don't find it

relevant to promote technologies that are equitable to all races, instead taking the mantra that technology should solely be focused on innovation and progress, and be allowed to operate outside of cultural or racial conflict.

Racial Epistemologies and White Ignorance in Tech Spaces

In thinking about how racial epistemologies and white ignorance become relevant in the development of technology, it is helpful to introduce the ideas of “Sociotechnical systems” and “Technosolutionsism.”

Socio-technical system theory is the idea that a system can only be improved if both its social and technical components are looked at interdependently and not as separate entities (University of Leeds, 2019). Technology does not have an inherent net positive or negative, but is instead shaped by the surrounding social, political, and cultural forces of its environment.

Techno-solutionism is the principle that technological advancement is inevitable, and innately good for society. The idea doesn’t take into account the value of other solutionisms holding technological means above all else (Patterson, 2022).

Statistics from the U.S Equal Employment Opportunity Commission show that around 83 percent of executives in the Technology Sector are white, and 80 percent are male (EOCC , 2014). Combine this data with the previously mentioned definitions of racial epistemologies, white ignorance, socio-technical systems, and techno-solutionism, and a narrative becomes pretty apparent on issues within the field. Those in power in the tech field are ultimately not concerned with building systems and developing algorithms that will better incorporate female and minority communities. And why should they be? It is not of their concern whether or not a facial recognition system developed by their company can accurately discern female or darker toned individuals, because to them their AI does a great job in discerning individuals that look like them; The corporate majority.

Mitigation in autonomy of marginalized communities

A Shirley Card: reference photos from photographing giant Kodak, they were used by technicians to balance exposure, colors, and hue. They gain their namesake from their original model Shirley Paige. The subsequent design of film chemistry since the 1950s has focused around her image as the idealized skin tone. Shirley Paige, being a young white model, worked great for the white consumer market, and photographic history has been developed under the lens as white skin as the normative (Huang, 2021). This has made it difficult for darker skin to be accurately portrayed on camera, a phenomenon that I have experienced a lot myself, especially in settings with lower exposure. When the knowledge and values of solely white technology experts are consistently prioritized, the perspectives and needs of other people groups become ignored or diminished. This may also cause the neglected groups to feel worse about themselves or look to present themselves in ways that align with a white normative. Targeted advertisements in young black communities may be particularly damaging though the prevalence of social media apps to not show people who look like them as usual. Google searches for “three black teenagers”(Linn , 2022), sparked outrage after the results showed police mugshots, vastly different from the results for three white teenagers. Negative value capture may be something that is already prevalent in young minority communities, as they battle to reconcile what the baseline perceptions of themselves are in society.

Immanuel Kant’s definition of autonomy in part stems from the idea that humans are autonomous creatures with dominion over herself. Autonomy is achieved when a rational agent is seen by others as having definite intrinsic value, and not simply as a means to an end. They possess dignity, and have the capacity to genuinely consent. A Kantian could thus argue that the relegation of minority values and perspectives in tech-focused areas, and the lack of diverse epistemologies in the sector, deprives marginalized groups of their autonomy and diminishes their Humanity. One example where this may be the case is from Gender Shades. In 2017 researchers Joy Buolamwini and Timnit Gebru tested the accuracy of Microsoft’s, IBM’s, and Face ++’s face analysis technology (Buolamwini & Gebru, 2018). The test involved feeding the systems over 1,000 photos of individuals from around the world, all of differing races and ethnicities and seeing if the AI could accurately label the individuals gender. They found that the

overall accuracy of the three companies' AI system's was around 90%. That appears to be pretty straightforward, and overall a high value, however the further analysis showed major discrepancies in accuracy among different groups. When comparing female faces to male, all the systems showed drops in accuracy up to 20%. Darker skinned persones were also 20% more likely to be misgendered than lighter skin persones. Overall, lighter males were gendered with near 100% accuracy, while darker females were almost 35% less accurate. That is an alarming gap, and one that raises many questions.

Incomplete Datasets

AI systems require initial data to get better and learn, and respond based on the training sets they are fed. For a program to be able to recognize the differences between male and female faces, developers have to collect, label, and then train a neural network on thousands of images of human faces. As explained by Kate Crawford and Trevor Paglen,

Training sets, then, are the foundation on which contemporary machine-learning systems are built. They are central to how AI systems recognize and interpret the world. These datasets shape the epistemic boundaries governing how AI systems operate, and thus are an essential part of understanding socially significant questions about AI (Crawford & Paglen, 2019).

AI systems built on a training set featuring primarily white male faces would obviously be best as labeling such faces. Standard training datasets are predominantly saturated with white and male faces (Najibi, 2020). The AI's epistemological perspective becomes skewed to fit that very homogenized and narrow narrative about what the average human face looks like. After Joy Buolamwini and her team released their findings, Microsoft and Google both updated their system to perform better on darker and female faces. This proves that there was no inherent limitation of the technology to be performatively consistent across different skin tones, but instead a prevalence of white ignorance and a sheer ineptitude of thought on the part of the developers.

Role of Technology in Upholding Stereotypes

According to a report by the Georgetown Law Center on Privacy and Technology, close to 117 million Americans potentially are being unknowingly surveillanced under some sort of investigative facial recognition technology. The majority of the usage of this technology is unregulated. This is an unsettling fact that speaks volume about the dangers of function creep and surveillance. Historically, databases have been built on information from past arrests, but facial recognition technology extends the range of suspects to everyone. This is particularly alarming when realizing that a lot of the facial recognition software being used by police departments around the country are the same ones that were aforementioned: the same ones that did a far worse job at analyzing dark faces than lighter ones. The ramifications could be quite profound.

Black men are already incarcerated at rates higher than any other gender-racial subgroup. Police departments are most likely not even aware of the limitations in many current facial recognition technologies. In 2019 facial recognition technology sent Nijeer Park to jail after a false identification. A similar instance happened in January 2020 to Robert Williams. They are both black men (Karimi, 2021). Park lives in Detroit, a city with the capability to monitor residents in real time, cross-referenced with a photo database filled with license pictures, mug shots, etc. Detroit citizens, especially Detroit minority citizens are expected to believe the assurances of the Detroit Police chief that the technology will not be used in such a manner. Black men are already represented in mug shot data, and such a dominating presence may lead to create a situation where further disproportionate arrests of black people continue, leading to further surveillance (Najibi, 2020).

Detroit also installed nearly 600 cameras around the city as part of an initiative called Project Green Light. Citizens were never granted an opportunity to consent to being surveilled in such a manner, in what seems to be a clear and egregious display of function creep. The fundamental American concept of “innocent until proven guilty” appears like it could be completely erased.

Technology is not Neutral

There is an assumption that technology and its workers are apolitical. That data and the science is objective and should be held in a separate domain than the contentious environment that sociological fields reside in. Proponents of techno-solutionism will claim that future developments in software or machine learning will be the main driver towards solving problems in the 21st century. From reducing theft, decreasing polarization, to aiding education, society is now in a new gilded age with untapped potential (Byrum et al., 2022). This can all be true, and the usage of technology is not something to be discouraged, however, developers and policymakers alike need to be cognisant of the embedded biases deeply rooted in society. Otherwise, if technology is held to be non-political, and as just a tool that is determinate on who wields it, society as a whole is at a net loss.

Detroit's usage of Project Green Light is an example of "Invisible AI", a phenomenon described by Harvard PhD candidate Chamith Fonseka. Invisible AI pertains to the usage of AI systems, in cases where the technology's usage is not specifically advertised. The lack of transparency in many of these systems makes the problem of technologies non-neutrality even more profound. The opaqueness in the development of an algorithm can make it almost impossible for the person using the algorithm to explain why certain decisions were made. AI companies claim that algorithms are neutral actors, making decisions in an unbiased manner. One particular example where this is refuted is the job market. A report published in 2016 in the *Administrative Science Quarterly* journal showed that employers will prefer white sounding applicants over black sounding ones, even if they have the same credentials. Hiring managers are already relying on algorithms to find potential candidates. Algorithms trained on data that exemplifies white sounding names, may come to similar conclusions, thus making the technology itself now biased (Fonseka, 2017).

Technological innovations are shaped by the social and political contexts in which they are created. Future technology will need to be value driven, and with the option to be refuted.

Civilians in Detroit, or any other city in America should have knowledge of police surveillance and also have a proper chance to consent against its usage.

If left unchecked the same cyclical paradigm of racial and intersectional marginalization will continue to perpetuate from tech oriented spaces. The advancement of technology should be used as a means to inspire and liberate, not as a medium to maintain existing power dynamics. Only through meticulous policy change, authored by all, can society be sure that future applications will be equitable towards all.

Recommendations and Guidelines

Increase minority and female representation in the workplace

There is a clear and distinct need to increase the presence of minority and female workers in tech sectors. The data set Joy Buolamwini used for her Gender Shades project, the Pilot Parliament Benchmark dataset, is self-curated and presents a much more representative depiction of faces in society. Her perspectives as a black-women, and her experiences with facial recognition software is very different from what would currently be described as the “industry norm”. She was able to use her differences to help enact a change that benefits everyone overall. This is something that needs to be replicated everywhere with the tech sector, driving the well-being of society up with it. Women make up only around 34 percent of all STEM field jobs (Catalyst, 2022), and black individuals make up only around 9 percent. Currently, career websites in tech display a homogenized work culture of mainly young, white men. Tech companies should rethink the image they portray externally in order to incentivize more people of color and women to work in the field. A change in the racial landscape of the field could help to make sure that systems and innovations are made with the inputs of minority communities in mind (Science & Engineering Indicators, 2021).

Algorithmic Accountability

Society must be able to hold algorithms and the technology companies that develop them accountable. In 2019 federal lawmakers introduced a Bill known as the Algorithmic Accountability Act, which would require companies to review and update algorithm that lead to discriminatory decisions. While the Bill didn’t make it pass committee hearings, it is a step in the right direction. The passing of such a bill would empower the Federal Trade Commission to addresses discrimination and privacy concerns related to the use of computer algorithms in corporate decision making (Stivers & Monahova, 2022). Both digital and racial literacy has to be

increased among our politicians and lawmakers, and the effects that the intersection of the two have on our society. Facial recognition databases should be periodically scrubbed to protect the innocent, making the permissibility of the retention of such information temporal. And the work and efforts of organizations such as the Algorithmic Justice League should be emphasized and multiplied. Consistent and intentional algorithmic accountability is necessary for the future of technology.

Technology as a Medium for Social Change

Technology can be a great avenue for change, it brings together some of the smartest and most creative minds, and grants the opportunity to build the future. Tech workers have been building power, organizing walkouts as a sign of protest, and refusing to work on projects that perpetuate oppressive societal measures. Hashtags such as “#TechWontBuildIt” and “#DesignJustice” are mobilizing workers from around the country. Workers are feeling emboldened to contact company recruiters directly about their stances, and then publicly sharing them. Running in conjunction with the Black Lives Matter Movement and condemning the policies and practices of US Immigration and Customs Enforcement (ICE), the shift of power back to the workers, the ones actually developing and producing products away from the companies themselves is a noticeable and important happening. Organizations such as the Tech Workers Coalition, Science for the People, and others are helping to facilitate this by organizing protests at major tech companies. Technology and innovation needs limits, regulation, and oversight and it needs to come from inside the field.

Recognition from Tech Companies

Tech companies have taken notice of both internal and external backlash. IBM, Microsoft and Amazon have all suspended the sale of facial recognition technology to the police department. IBM has gone so far to discontinue their interest in the matter entirely. Microsoft ended up suspending their contract with ICE. Workers at Google have forced the company's hand to cancel projects such as ProjectsMaven and Dragonfly. And still more can be done. The

adoption of standards should become widespread as AI and many new digital technologies remain largely unregulated. The National Institute of Standard in Technology (NIST), produces standards across a wide range of technological domains in the US. They are looking at creating new standards meant to help curb algorithmic bias. The institution of greater regulation should also make the methods used to develop algorithms more transparent. There should be a pipeline to uncover what data sets were used, and remove the filter of “trade secret”. Technology companies that can accept their own faults and weaknesses, and look to adopt business strategies that are not at the detriment of marginalized groups, but instead promote and integrate them into their work place.

Directly Empower Marginalized Personnes

There will need to be a payoff between equitable design and a pragmatic, useful outcome. Practitioners should pay attention to both factors when developing systems and applications. It has been duly noted that there is a great need to make tech workplace demographics to become representative of the population as a whole. Designer Carl DiSalvo calls an influx of adversarial design, where members of marginalized communities create objects that challenge the current power structure, thus offering new alternatives. He is a practitioner of political agonism, a social theory that says that conflict can be beneficial for society by causing it to evolve based on its adversarial input.

An argument may be made that a more methodical approach to designing technology that attempts to evaluate the social impacts of everyone will decrease release time and make it efficiently impossible to get anything done. Society will never reach a state where every product is equally as equitable to all because society is not a perfect utopia, and that should not be the goal of future developers. Instead, they should work to do the best they can. There are many designers in the fields already working to make products just a little bit better, and a little more inclusive. If as a society we can develop a design environment in tech spaces that is hold intersectional epistemologies in its mind, we can create products that push everyone forward instead of just the privileged few.

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