

# **The Socio-Political Implications of Facial Recognition Technology**

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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## **The Socio-Political Implications of Facial Recognition Technology**

*How has the use of Facial Recognition Technology by federal agencies impacted the public's trust in the government?*

### **Introduction**

Facial recognition technology has become a widespread phenomenon, and its use by law enforcement agencies has raised several ethical concerns, particularly regarding racial bias. Studies have shown that facial recognition technologies are more likely to falsely identify certain racial groups, particularly black women (Buolamwini & Gebru, 2018; Grother, Ngan, & Hanaoka, 2019). This issue highlights both the technical and social aspects of the topic as machine learning models behind facial recognition technologies can have inherent racial biases, which can negatively impact racial groups that are already subject to discrimination within the law enforcement system (National Institute of Standards and Technology [NIST], 2019).

The deep learning models behind facial recognition technology and how they are trained can help explain why this problem exists. Facial recognition technologies use deep learning convolutional neural networks that are trained using many faces to detect geometries in specific facial features. The network then compares new input to see if there is a match with the current set of faces that are already in a database. The problem of misidentification may stem from the disproportionate representation of certain marginalized groups in the training data (Buolamwini & Gebru, 2018).

Federal agencies heavily rely on these technologies to facilitate their investigations. Therefore, the issue of misidentification must be considered when assessing the severity of the repercussions of misidentifying a suspect. Studies have shown that using these technologies alongside human forensic examiners minimizes the margin of error and bias (NIST, 2019). However, the problem of bias within facial recognition technology used by federal agencies also lies in accountability. Most federal agencies use a third-party facial recognition system without properly considering the issue of bias. While these systems are highly accurate, it is the government's responsibility to ensure that they understand the limitations of these systems (Noble, 2018).

The issue of bias within facial recognition technology has real-world consequences for individuals, particularly for marginalized groups. The misidentification of a suspect can lead to wrongful arrests and prosecutions, which can be particularly devastating for marginalized groups that are already subject to discrimination within the law enforcement system. Innocent people have been falsely identified as suspects, and these cases have highlighted the need for greater accountability and transparency in the use of facial recognition technology (Garvie, Bedoya, & Frankle, 2016).

Moreover, there is growing evidence that the use of facial recognition technology can exacerbate the existing racial biases in the criminal justice system. Studies have shown that black women are particularly vulnerable to misidentification by facial recognition technology (Buolamwini & Gebru, 2018; Grother et al., 2019). This can have a chilling effect on the willingness of these communities to interact with law enforcement. As such, the impact of facial

recognition technology on trust in the government is a significant concern, particularly given the already existing climate of distrust in law enforcement (Noble, 2018).

The research question I aim to answer is: How can the use of facial recognition technology be made more transparent and accountable to rebuild public trust in law enforcement and mitigate the impact of racial biases on marginalized communities? One argument is that transparency and accountability should be prioritized to ensure that the use of facial recognition technology is fair and unbiased. This could involve increased public access to information about the use of facial recognition technology, including the specific algorithms and databases used by law enforcement agencies. It could also involve the implementation of regular audits and independent reviews to ensure that the technology is being used appropriately and without bias. Additionally, increased training for law enforcement officers on the limitations and potential biases of the technology could help to ensure that it is used in a responsible and unbiased manner. By promoting transparency and accountability in the use of facial recognition technology, law enforcement agencies can rebuild public trust and ensure that marginalized communities are not disproportionately impacted by the technology's potential biases.

Another argument is that greater community involvement and input is needed to ensure that the use of facial recognition technology is transparent and accountable. This could involve establishing community oversight boards or councils to provide guidance and input on the use of the technology by law enforcement agencies. Community involvement could also include soliciting feedback and input from marginalized communities to ensure that the technology is being used in a way that is fair and unbiased. By involving communities in the decision-making process, law enforcement agencies can help to rebuild trust and ensure that the use of facial recognition technology is serving the needs of all citizens.

## **Methods**

The literature review was conducted by searching various scholarly and governmental databases such as Hein Online Criminal Justice & Criminology, IEEE Xplore, and the United States Government Publishing Office to obtain relevant sources. The review was guided by ethical, technical, social, and psychological factors that impact public trust in the use of facial recognition technology. The sources were critically analyzed and synthesized to identify key themes and trends in literature. These themes were used to identify gaps in current knowledge and to develop a deeper understanding of the topic.

The STS technological citizenship framework, as proposed by Andrews (2006), was employed as a means of analyzing the use of facial recognition technology by government agencies to provide an understanding of how it affects public trust. This framework emphasizes the importance of citizens in shaping the development, implementation, and regulation of technology. It suggests that citizens have the right to participate in decision-making processes related to technology, and that their input should be considered and respected.

The review, guided by the STS framework, explored various themes, including the impact of facial recognition technology on racial discrimination, ethical implications, cultural and societal implications, reliability, potential for human bias, and the current state of facial recognition technology in government agencies. By using the STS technological citizenship framework (Andrews, 2006), our analysis addressed the complex interplay between technology and citizenship, focusing on the rights and responsibilities of individuals and communities, the role of power dynamics in shaping technology use and impact, the ethical and social implications of technology, and the agency and engagement of citizens in the development and use of facial recognition technology.

This approach allowed us to examine the ways in which facial recognition technology affects the rights and responsibilities of individuals and communities as citizens, while also exploring the role of power dynamics, ethical implications, and the agency of individuals and communities. By using the STS framework to guide our analysis, we were able to provide a comprehensive understanding of the challenges and opportunities associated with the use of facial recognition technology by government agencies and the implications for public trust.

## **Findings**

Utilizing the technological citizenship framework, our analysis of facial recognition technology addresses the various ways this technology affects the rights and responsibilities of individuals and communities as citizens, while also exploring power dynamics, ethical implications, and the agency of individuals and communities.

In addressing the rights and responsibilities of individuals and communities, we considered Bacchini and Lorusso's (2019) study on racial discrimination in facial recognition technology and Gates' (2011) book on the cultural and societal implications. These sources highlighted privacy, security, and the potential for reinforcing biases, thereby informing our recommendations for safeguarding individual rights and promoting equitable use of the technology. Furthermore, we examined the Public Policy Institute of California's (n.d.) report on racial disparities in law enforcement stops, which provided valuable insights into the consequences of these disparities on public trust and the responsibilities of law enforcement agencies.

To explore power dynamics in shaping the use and impact of technology, we drew upon Deck and Wilson's (2002) study on competitive pressures on businesses and Tyler and Huo's (2002) report on trust in the law. By analyzing the influence of competition and the relationship between public trust and cooperation, we were able to suggest ways in which power dynamics can be mitigated to ensure transparency and accountability in facial recognition technology use. We also investigated Barsamian Kahn and Martin's (2020) study on the social psychology of

racially biased policing, which further emphasized the connection between biased policing and public trust, contributing to our understanding of power dynamics within law enforcement.

Our research also considered the ethical, social, and political implications of technology use in relation to justice and inequality. Collectif's (2018) report on research ethics in machine learning and Silva and Kenney's (2018) essay on algorithms, platforms, and ethnic bias guided our understanding of the ethical concerns and the impact of algorithmic biases on marginalized communities. These insights, combined with Phillips et al.'s (2018) study on face recognition accuracy and potential human bias, helped us develop comprehensive recommendations for addressing ethical concerns, minimizing biases, and improving the technology's reliability.

In examining the agency and engagement of individuals and communities in shaping the development and use of technology, we analyzed Spencer et al.'s (2016) study on implicit bias in policing. By understanding the effects of racial biases in law enforcement and their impact on public trust, we were able to propose measures that encourage community involvement and collaboration in the development and application of facial recognition technology. Furthermore, T.G.'s (2019) article on facial recognition transcending bias provided examples of the technology's potential to overcome biases when implemented responsibly, emphasizing the importance of community engagement in the process.

Our research contributes to broader discussions of technological citizenship by synthesizing insights from diverse sources, which inform policies and practices that promote responsible and ethical technology use. For instance, Hein Online Criminal Justice & Criminology's (2021) report on privacy risks and the United States Congress House Committee on Oversight and Reform's (2019) report on the current state of facial recognition technology in government agencies provide valuable information for policymakers to enhance transparency and accountability in the technology's application.

By using the technological citizenship framework, our analysis not only addresses the complexities surrounding facial recognition technology but also offers a comprehensive understanding of the challenges and opportunities to rebuild public trust, mitigate the impact of racial biases, and promote responsible and ethical technology use within the context of citizenship. Through this expanded examination, we strive to foster an inclusive dialogue that empowers individuals and communities to shape the development and use of technology in a manner that aligns with their rights, responsibilities, and values.

## **Discussion**

Considering the findings, we argue that a multi-faceted approach is needed to address the research question: How can the use of facial recognition technology be made more transparent and accountable to rebuild public trust in law enforcement and mitigate the impact of racial biases on marginalized communities? Our analysis, guided by the technological citizenship

framework, suggests that transparency and accountability, community involvement, and addressing biases and ethical concerns are crucial to rebuilding public trust and mitigating the technology's potential adverse impacts.

First, prioritizing transparency and accountability is essential to ensure that the use of facial recognition technology is fair and unbiased. Increased public access to information about the technology, as well as the specific algorithms and databases employed by law enforcement agencies, is necessary to facilitate informed discourse and decision-making. Implementing regular audits and independent reviews can help ensure that the technology is being used appropriately and without bias. Moreover, training law enforcement officers on the limitations and potential biases of facial recognition technology can help promote responsible and unbiased usage.

Second, fostering community involvement and input is crucial for enhancing transparency and accountability. Establishing community oversight boards or councils to provide guidance and input on law enforcement agencies' use of the technology can help rebuild trust and ensure that the technology serves the needs of all citizens. Soliciting feedback and input from marginalized communities is particularly important for ensuring that facial recognition technology is used fairly and unbiasedly. By actively involving communities in the decision-making process, law enforcement agencies can help rebuild trust and address potential biases in the technology's application.

Finally, addressing biases and ethical concerns is vital for ensuring that facial recognition technology is used responsibly. Our research highlights the importance of understanding and minimizing algorithmic biases and their impact on marginalized communities. Policymakers and law enforcement agencies should take into account the ethical concerns raised by Collectif (2018) and Silva and Kenney (2018), and work towards addressing these issues by implementing bias-aware algorithms, improving the technology's reliability, and ensuring ethical use.

By adopting a comprehensive approach that emphasizes transparency and accountability, community involvement, and addressing biases and ethical concerns, the use of facial recognition technology can be made more transparent and accountable. This, in turn, can help rebuild public trust in law enforcement and mitigate the impact of racial biases on marginalized communities. By utilizing the technological citizenship framework, our research provides a solid foundation for further dialogue and action to promote responsible and ethical technology use within the context of citizenship, ultimately serving the needs and values of all individuals and communities.

## **Conclusion**

In conclusion, the use of facial recognition technology by government agencies and law enforcement raises significant ethical, technical, social, and psychological concerns that have far-reaching implications. This literature review, guided by the STS technological citizenship

framework (Andrews, 2006), provided a comprehensive understanding of these concerns, emphasizing their importance in maintaining public trust and ensuring the fair and unbiased application of the technology.

The potential for reinforcing racial biases, eroding privacy and security, and undermining trust in law enforcement agencies is not only a matter of immediate concern but also has broader implications for social justice and equality in our society. To promote the responsible use of facial recognition technology and maintain public trust, a multi-faceted approach is needed, which includes addressing systemic biases, developing reliable and unbiased algorithms, ensuring transparent and unbiased data collection and analysis, and establishing accountability and transparency in the use of this technology by government agencies.

Moreover, fostering community involvement and input, as well as ongoing training and awareness-raising for law enforcement officers, can help to mitigate the negative impacts of racial biases on marginalized communities. By prioritizing transparency, accountability, and community engagement in the development, implementation, and regulation of facial recognition technology, government agencies can rebuild public trust and ensure that the technology serves the needs of all citizens fairly and without bias.

As facial recognition technology continues to evolve and become more prevalent, future research should focus on exploring novel ways to address the identified concerns, developing more equitable algorithms, and investigating best practices for engaging communities in decision-making processes related to technology. In addition, ongoing monitoring and evaluation of the technology's real-world impacts are essential to assess its effectiveness and to ensure that the rights and well-being of individuals and communities are safeguarded.

The findings of this literature review emphasize the importance of addressing the ethical, technical, social, and psychological concerns associated with facial recognition technology. By connecting these concerns to larger issues of social justice, equality, and technological citizenship, this review highlights the critical need for continued research, collaboration, and policy development to ensure that facial recognition technology is used responsibly and equitably for the benefit of all.

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