

**BIAS IN FACIAL RECOGNITION TECHNOLOGY FOR LAW
ENFORCEMENT AND SURVEILLANCE: ETHICAL
CHALLENGES AND SOLUTIONS**

Submitted by:

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Abstract

As a tool for enhancing public security and crime prevention, facial recognition technology (FRT) has pervaded extensively in surveillance and law enforcement. However, its use has created serious ethical and legal issues, mainly issues with biases resulting in racial discrimination, illegal arrests, and misuse of civil liberties. This study examines the implications of FRT bias for law enforcement and surveillance, assessing the existing legislation, analyzing the legal and social consequences, and presenting technological and legislative recommendations to increase accountability, transparency, and equality..

1. Overview

FRT, whose ability to scan and identify human beings within a matter of seconds from facial features, has been made possible by the coming together of artificial intelligence (AI) with police procedures. Though FRT is fast and provides an added security feature, its occurrence of bias while in use has tarnished its introduction, and it has ignited ethical questions together with controversy. In light of reducing prejudice and maintaining civil rights, the subsequent essay will analyze these problems using reported occurrences, regulatory action, and available remedies.

2. Case Studies Illustrating FRT Bias

The harms caused by the biasing of FRT used by the police have been underscored in the following cases:

Robert Williams' Wrongful Arrest (2020): After a facial recognition misidentification on a false identity, the Detroit police illegally arrested Robert Williams, a Black individual, in January 2020. He was detained for thirty hours before the mistake was realized. It was the first illegal arrest based on FRT misidentification to be reported.

ACLU

Texas Man's Misidentification (2023): Face recognition technology mistakenly identified a Texas man as a participant in a robbery, and he was unfairly detained. He was in Sacramento at the time of the crime, demonstrating that FRT can produce false positives and lead to unwarranted legal repercussions.

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• **Brazilian Man Accused of 62 Offences (2025):** A Brazilian Black man, Paulo Alberto da Silva Costa, was wrongfully detained for three years upon being wrongly accused by the police of committing 62 offenses via defective photo identifications. The police used self-taken photos of Costa on his Facebook page to make racially motivated and incorrect identifications.
ngtheguardian.com

These examples show that FRT errors disproportionately target individuals from socially disadvantaged groups, imbuing social prejudices.

3. Review of Existing Rules and Regulations

There are some governments that come up with regulations after issues of discriminatory FRT:

United States State Legislation: At the end of 2024, fifteen US states had passed legislation to restrict police use of face recognition, and growing stronger ones at that. Maryland, for example, passed comprehensive legislation covering training, accountability, transparency, approved use, and prohibition.

Illinois Biometric Information Privacy Act (BIPA): This act gives legal recourse a basis for abuse and requires informed record-holders' permission to collect and utilize biometric data, i.e., face scanning. Technical applications of facial recognition technologies and legal definition conflicts have arisen, though, that highlight the demands of sophisticated methods of regulation.

4. Impact on Society and Law There are immense social and legal consequences when discriminatory FRT is implemented in law enforcement and surveillance:

Undermining of Civil Liberties: The use of FRT deployment can result in mass surveillance, which would violate the right of assembly and privacy of citizens. It would deter legitimate expressions of dissent, especially problematic when FRT is deployed to monitor protests or public demonstrations. The wired

Racial Disparities: Research suggests that African and Asian populations are disproportionately vulnerable to false positives with FRT, leading to over-targeting and reinforcing racial stereotypes in the criminal justice system.

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Legal Problems: Police departments have been taken to court for false arrest resulting from FRT misidentification, which is a subject of public concern and necessitates more control. A good example is the case of Robert Williams, which was greatly publicized in the media and controversy regarding proper ethics when applying FRT.

5. Policy-Based and Technical Solutions

There must be a multi-pronged strategy to address the issues raised by discriminatory FRT:

Technical Solutions:

Algorithmic Fairness: FRT accuracy differences can be reduced by creating and using algorithms that have been extensively tested for bias in various demographic groups.

Enhancement of Data Quality: FRT performance improvement across various populations entails training data sets that are representative and unbiased in nature.

Inclusive Legislation: Police powers can be provided with explicit guidelines by enacting legislation with good prescriptions for FRT applications, creating oversight systems, and ensuring transparency.

Community Engagement: Engaging communities in planning for the deployment of FRTs fosters trust and ensures that surveillance activities remain in line with social values and norms.

Independent Audits: Independent bodies can regularly audit FRT systems against ethics and efficacy to ensure they are not biased.

6. Suggested Solutions

Mitigation of Bias: More equitable results are guaranteed once technical solutions are used to minimize algorithmic prejudice.

Public Awareness and Education: Public education that raises awareness among the public regarding the potentiality and boundaries of FRT can result in wise usage as well as informed discussion.

Prototype Development: Protecting Privacy with Face Recognition

It is proposed as a solution for prejudice and ethics for FRT that a prototype developed on privacy-preservation methods is present. With the strengthening of law enforcement, the cure tries to promote justice, responsibility, and accountability.

Plan of Implementation:

Development: Implement the above highlighted components on machine learning platforms (e.g., TensorFlow and PyTorch) to create the privacy-protecting FRT model.

Testing: Test the performance, bias removal, and safeguarding of the prototype using varied datasets.

Deployment: Roll out the system with law enforcement agencies while ensuring that all regulations and ethical guidelines are followed.

Differential privacy is adding noise to data processing to secure individual identities and avoid outputs from disclosing private information.

Federated Learning: Privatization and reduction of data breach risk through model training across scattered devices with local data samples without sharing.

Re-sampling, re-weighting, and adversarial debiasing are some of the techniques employed within bias mitigation algorithms to minimize algorithmic biases.

Explainable AI (XAI): Creating models that give brief explanations of their decisions to enhance transparency and confidence.

Human judgment systems: Blending human judgment with the decision-making process to validate important outcomes and minimize chances of mistakes.

Conclusion

Some very serious ethical and social concerns arise from prejudice in facial recognition systems, particularly in the context of surveillance and criminal justice. There is a data protection blueprint in place through the existing law like GDPR, but algorithmic prejudices are far too often not properly addressed by such laws. The creation of fair and ethical FRT systems relies on the introduction of technical measures such as diverse training databases, algorithms with bias reduction, and privacy control techniques together with robust regulations and civic engagement. The prototype that is envisioned, aimed at balancing human rights protection and society values and technological advancements, demonstrates that the application of these solutions is viable.

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