Thesis Project Portfolio

Amazon Rekognition: Addressing Privacy Concerns and Bias

(Technical Report)

Exploring Ethical and Legal Complexities of Facial Recognition in Law Enforcement

(STS Research Paper)

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Sociotechnical Synthesis

In an era defined by rapid technological advancement, the intersection of artificial intelligence (AI) and societal structures has emerged as a critical focal point. The pervasive integration of AI systems into various facets of human life has reshaped how we interact, work, and govern. Amidst this transformative landscape, facial recognition technology stands out as both a symbol of innovation and a source of contention.

Powered by sophisticated algorithms and machine learning techniques, facial recognition holds immense potential to revolutionize diverse sectors from security and law enforcement to marketing and healthcare. Its ability to rapidly identify individuals based on facial features has been touted as a game-changer for enhancing security protocols, streamlining authentication processes, and improving customer experiences. However, within this landscape, the deployment of facial recognition technology has ignited a confluence of ethical, legal, and societal debates, punctuated by concerns over privacy infringement, biases, and civil liberties.

At the forefront of these discussions is Amazon Rekognition, a leading facial recognition system developed by the tech giant Amazon. As its usage proliferates across various domains, concerns over privacy infringements, biases, and civil liberties violations have intensified. The controversy surrounding the system underscores broader debates about responsible deployment of AI and the need to reconcile technological innovation with ethical imperatives.

Simultaneously, the integration of facial recognition technology into law enforcement practices has sparked intense scrutiny and debate. While proponents argue that it can enhance public safety, aid in criminal investigations, and streamline administrative processes, critics raise alarm bells about its potential for abuse, racial bias, and erosion of privacy rights. The

sociotechnical landscape surrounding facial recognition in law enforcement is marked by a complex interplay of technological capabilities, legal frameworks, public sentiments, and ethical considerations.

I seek to navigate this complex terrain by adopting the multifaceted dimensions of facial recognition through two distinct yet interconnected lenses: a technical analysis of Amazon Rekognition's privacy concerns and biases, and a sociotechnical examination of facial recognition in law enforcement practices. The primary components of the thesis provide a glimpse into the divergent yet complementary perspectives they offer. The technical report delves into the intricacies of Amazon Rekognition, a prominent facial recognition system, emphasizing the imperative of addressing privacy concerns and biases to ensure ethical deployment and compliance with evolving regulations. By proposing concrete measures, such as differential integration and continuous auditing mechanisms, I seek to chart a path toward improved privacy protection and enhanced accuracy, bolstering public trust and ethical standards.

Conversely, the STS research paper delves into the ethical and legal complexities surrounding the integration of facial recognition technology into law enforcement practices. Through a nuanced literature examination and a case study focusing on Pinellas County, Florida, it unpacks the tensions between the purported benefits of facial recognition, such as aiding criminal investigations, and the myriad concerns related to privacy infringement, racial bias, and false arrests. Highlighting Pinellas County's proactive approach to addressing criticisms, it emphasizes the necessity of regulatory frameworks, stakeholder collaboration, and public awareness in understanding facial recognition technology in the context of law enforcement.

While these two components offer distinct perspectives, they converge on a central theme: the imperative of responsible and ethical technology deployment in the face of evolving societal norms and regulatory landscapes. By interrogating the technical intricacies of facial recognition systems and examining their real-world implications within law enforcement frameworks, I seek to bridge the gap between technological innovation and societal values, fostering dialogue and critical reflection on the ethical dimensions of AI development.

At its core, the thesis grapples with a fundamental question: how can facial recognition be harnessed to advance societal interests while mitigating potential harm and upholding ethical principles? Through an interdisciplinary lens that integrates technical expertise with socio-ethical inquiry, it endeavors to offer insights, recommendations, and frameworks for navigating the ethical complexities inherent in the deployment of facial recognition technology.

The exploration extends beyond mere analysis, aiming to provide practical guidance for policymakers, industry practitioners, and researchers alike. By synthesizing technical insights with socio-ethical analyses, it seeks to inform policy discussions, guide industry practices, and empower stakeholders to navigate the ethical challenges posed by facial recognition technology in the pursuit of a more just and equitable future.

As the discourse surrounding facial recognition continues to evolve, this thesis serves as a timely contribution to ongoing debates, offering a holistic understanding of the interplay between technology, society, and ethics. Divulging the nuanced dynamics of facial recognition, I seek to foster a culture of responsible innovation to enhance societal well-being while safeguarding individual rights and liberties.