STEREOTYPING BY ARTIFICIAL INTELLIGENCE IN PREDICTIVE POLICING: CASTE IN INDIA VERSUS RACE IN THE UNITED STATES

Ranjitha Naruganahalli Rangaswamy

Artificial intelligence (AI) has become a pivotal element in modernizing criminal justice systems, presenting opportunities to boost efficiency and precision. However, this technological advancement is a double-edged sword. It can simultaneously fuel the rise of more sophisticated crimes using machine learning and automated technologies on one hand, and holds the potential for innovative criminal investigation by prosecution and law enforcement agencies on the other hand in predictive policing and identification of suspects.[1] This study aims to find a delicate equilibrium in AI, offering a significant chance to enhance the efficiency and precision of automated systems in criminal justice, all while safeguarding the rights of individuals.

Big data has been categorized into predictive policing, domain awareness systems, and genetic data banks.[2] While domain awareness systems use surveillance tools such as Geographical Information Systems ('GIS'); genetic data banks collect large databases of DNA, biometrics, and identity related information. Unlike developed countries like the US which has adopted CompStat[3] to map crime statistics with other indicators to predict locations of crime, India is yet to delve into AI and consequential challenges that it poses. Few state governments in India have, however undertaken AI applications in crime detection, namely, JARVIS or Joint AI Research for Video Instances and Streams, to receive real time alerts using computer vision.[4] India stands out as a country in dire need of legal scrutiny concerning AI systems. The lower adoption of technology compared to the US, coupled with a prevalent and substantial level of discrimination, underscores the requirement for a more equitable justice system for these marginalized groups. My research aims to focus on the consequential effects of AI, specifically through predictive policing technologies, leading to discrimination against a certain category of persons, based on their race or caste.

---

[1] *See, e.g.,* B.H.M. Custers, *AI in Criminal Law: An Overview of AI Applications in Substantive and Procedural Criminal Law*, in B.H.M. Custers & E. Fosch Villaronga *(eds.) LAW AND ARTIFICIAL INTELLIGENCE,* HEIDELBERG: SPRINGER, 2022, p. 205-223.

[2] Elizabeth E. Joh, *Policing by Numbers: Big Data and the Fourth Amendment*, 89 WASH. L. REV. 35 (2014).

[3] Bureau of Justice Assistance, *"Compstat: Its Origins, Evolution, And Future In Law Enforcement Agencies*," 2013, https://bja.ojp.gov/sites/g/files/xyckuh186/files/Publications/PERF-Compstat.pdf (Last visited: Sept 15, 2023).

[4] Dr. Parvez Hayat, Nidhi Singh, *How AI can play a catalytic role in managing criminal justice system for more equitable outcomes*, 2022, https://government.economictimes.indiatimes.com/news/digital-india/how-ai-can-play-a-catalytic-role-in-managing-criminal-justice-system-for-more-equitable-outcomes/89502089, (Last visited: Oct 26, 2023).

Predictive policing has been defined to be an *"application of analytical techniques; particularly quantitative techniques-to identify likely targets for police intervention and prevent crime or solve past crimes by making statistical predictions"*.[5] By analyzing large volumes of crime data, machine learning models are used in predictive policing to map and forecast crimes, offenders, and the identities of both perpetrators and victims. However, the use of AI in this context has raised significant ethical and legal concerns.[6] Algorithms are being educated on subpar datasets, and individuals are deprived of the means to contest inaccurate algorithmic outcomes, potentially leading to their unwarranted detention—often at the expense of criminal justice standards and citizens' fundamental rights guaranteed by the constitution.[7] While AI presents opportunities to improve criminal justice systems, it is crucial to address the ethical and legal challenges associated with its implementation. This includes mitigating bias[8] and discrimination, protecting privacy, and ensuring transparency and accountability in AI-driven decision-making processes.[9]

As predictive policing is probability based, it aims to calculate risk of future crime occurring based on the statistical analysis of past crime data.[10] Potential discrimination may be either overt, though far less likely, or unintended.[11] As a result, inadvertent discrimination may occur as predictive models and their subjective and implicit biases are reflected in anticipated decisions[12], or the discrimination may not be accounted for at all. As of date, Indian law is devoid of any comprehensive legislation that empowers, oversees, and defines the evidentiary value of AI, such as the automated facial recognition technologies (AFRTs)[13] within the domestic law enforcement processes and the broader criminal justice system.

---

[5] Walter L. Perry, Brian McInnis, Carter C. Price, Susan Smith & John S. Hollywood, (2013), *Predictive Policing: The Role of Crime Forecasting in Law Enforcement Operations*, RAND Corporation, 2013, http://www.rand.org/pubs/research_reports/RR233, (Last visited: Sept 29, 2023).

[6] *Ibid.*

[7] Antara Vats, *Building the Case for Restricted Use of Predictive Policing Tools in India*, THE INTERNATIONAL REVIEW OF INFORMATION ETHICS 32 (1), Edmonton, Canada (2022).

[8] Hannah Lebovits, *Automating inequality: how high-tech tools profile, police, and punish the poor. Public Integrity*, Routledge, 21(4), (2018), at 448-452.

[9] Md. Abdul Malek, *Criminal courts' artificial intelligence: the way it reinforces bias and discrimination,* AI and Ethics, SPRINGER LINK 2(1), (2022), at 233-245.

[10] *Supra* note 5, at 2, 11 (Table 1.3).

[11] Rohan George, *Predictive Policing: What is it, How it works, and its Legal Implications*, https://cis-india.org/internet-governance/blog/predictive-policing-what-is-it-how-it-works-and-it-legal-implications (Last visited: Nov 22, 2023).

[12] Solon Barocas, & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIFORNIA LAW REVIEW 671 (2016).

[13] Ameen Jauhar, *Facial recognition in law enforcement is the litmus test for India's commitment to "Responsible AI for All"*, https://www.orfonline.org/expert-speak/facial-recognition-in-law-enforcement-is-the-litmus-test-for-indias/ (Last visited on: 20-11-2023, 19:54pm).

There have also been studies suggesting a draft framework for Indian laws to regulate potential human right abuses caused by AI.[14] But what remains to be addressed are ethical and societal challenges in its integration to the society, for instance, balance of fundamental rights of persons and regulation of undesirable behaviour enabled by AI. According to *India Inequality Report 2022: Digital Divide by Oxfam*, digital literacy in India was divided by unequal access due to socio-economic factors; with only 31% of the rural population having access to the internet.[15] Albeit having theoretical framework to investigate the digital divide in the AI context, research needs to empirically test and validate the influential factors' practical and statistical significance.[16] Studies have further shown a massive gap in this inequal access to digital infrastructure such as Internet of Medical Things (IoMT) during the COVID-19 pandemic with its grappling effects on the masses.[17]

My research aims to examine the possible societal challenges to introduction of AI in criminal justice system, such as inequality in digital literacy, algorithmic biases in stereotyping based on caste or class system in India and based on racial attributes in the US, thereby drawing a contrast. Caste and race represent intricate social constructs with profound effects on diverse facets of society, encompassing health, employment, and instances of discrimination. The intersectionality of caste and race has gained growing attention, especially in the exploration of the intricate dynamics of privilege, discrimination, and social organization.[18] This research analysis will also determine the extent of precision and accuracy with which predictive policing has produced outputs without bias against the said stereotypes.

Despite colorblind policies in place in the United States, racially motivated thought and action is commonly found and altered racial attitudes can be deduced in decision making processes in the criminal justice system, with the reinforcement of a certain stereotype.[19] In

---

[14] Sheshadri Chatterjee & Sreenivasulu. N, *Artificial intelligence and human rights: a comprehensive study from Indian legal and policy perspective*, INTERNATIONAL JOURNAL OF LAW AND MANAGEMENT, 64(1), (2021), at 110-134.

[15] Oxfam, *India Inequality Report 2022: Digital Divide (2022)*, available at https://www.oxfamindia.org/publications/india-inequality-report-2022-digital-divide.(Last visited: Nov 23, 2023).

[16] Lemuria Carter, Dapeng Liu, & Caley Cantrell, *Exploring the Intersection of the Digital Divide and Artificial Intelligence: A Hermeneutic Literature Review*, AIS TRANSACTIONS ON HUMAN-COMPUTER INTERACTION, 12(4), (2020), at 253-275.

[17] Raazia Saher, Madiha Anjum, *Role of technology in COVID-19 pandemic* in RESEARCHES AND APPLICATIONS OF ARTIFICIAL INTELLIGENCE TO MITIGATE PANDEMICS, Epub 2021 PMCID: PMC8084752; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8084752/ (Last visited: Sept 22, 2023).

[18] *See, e.g.*, Jessica Chandras, *(Out)Caste Language ideologies: Intersectional raciolinguistic stigma and assimilation from denotified tribal students' perspectives in rural India*, JOURNAL OF LINGUISTIC ANTHROPOLOGY, 33(2), (2023) at161-183.

[19] Itay Ravid, True Colors: Crime, Race and Colorblindness Revisited, 28(2) CORNELL J. L. & PUBLIC POLICY 243 (2018), Available at SSRN: https://ssrn.com/abstract=3405543.

India, Scheduled Castes, and Scheduled Tribes ('SC/STs')[20] are historically marginalized communities that have faced systemic discrimination and social exclusion.[21] Although there are safeguards and affirmative action policies[22] to protect the rights of SC/STs, societal profiling, discrimination and hate crimes have a recurrent occurrence pattern.[23] Another angle that I want to explore in this research is the role of predictive policing in preventing hate crimes against persons subjugated on the basis of caste in India. In the context of the United States, race has been the primary and bipolar official and popular identity axis, unlike caste in India.[24] This difference underscores the need to consider the specific historical, social, and cultural contexts in which caste and race operate.[25]

To supplement my research, I intend to conduct empirical studies on datasets including mixed ethnic groups, race, caste and gender as parameters of research. I intend to compute relevant statistical data and observations based on publicly available databases such as National Crime Records Bureau[26], National Sample Survey Organization[27]; information collected by the independent think-tanks and non-profit organizations such as the Centre for Internet and Society[28], and Oxfam India[29]. I have also been studying various law commission reports[30] in India to collate an understanding of historical and societal background of these marginalized caste groups, based on which the Centre recognizes them. I further intend to compile a database of relevant information on social influences and ethical implications regarding race on the introduction of predictive policing by AI in the U.S. criminal justice system. I will also add information collected via surveys, case studies, or opinions from a limited set of interviews conducted through quantitative research methods to further the research objectives. This proposed analysis would allow evaluating the hypothesis that socio-economic factors can become possible barriers against accuracy in predictive policing and most certainly act as a

---

[20] The Constitution (Scheduled Castes) Order, 1950, Published with the Ministry of Law Notification No. S.R.O. 385, dated the 10th August, 1950, Gazette of India, Extraordinary, 1950, Part II, Section 3, at 163.

[21] Art. 341, Constitution of India, 1950.

[22] Arts. 17, 330, 332 of the Constitution of India, 1950.

[23] National Crime Records Bureau, *Crime in India Report, 2021*, Ministry of Home Affairs, Government of India, Vol.II, at 537-737.

[24] Narendra Subramanian, *From bondage to citizenship: a comparison of African American and Indian lower-caste mobilization in two regions of deep inequality*, in COMPARATIVE STUDIES IN SOCIETY AND HISTORY, Cambridge University Press 62(4), (2020), at 770-809.

[25] Andre Beteille, *Society and Politics in India: Essays in a Comparative Perspective* (Routledge, 1st ed.), (1991).

[26] National Crime Records Bureau, https://data.gov.in/ministrydepartment/national-crime-records-bureau-ncrb, (Last visited: Oct 28, 2023).

[27] National Sample Survey Organization, https://www.mospi.gov.in/download-reports, (Last visited: Oct 28, 2023).

[28] The Centre for Internet Society, https://cis-india.org/, (Last visited: Oct 28, 2023).

[29] Oxfam India homepage, https://www.oxfamindia.org/ (Last visited: Oct 28, 2023).

[30] *For eg.*, Department of Social Security, Government of India, *The Report of the Advisory Committee on the revision of the Lists of Scheduled Castes and Scheduled Tribes*, (1965), published in 2023.

future deterrent in achieving an egalitarian society. Moreover, the profound ethical impact that AI has on violation of fundamental rights of persons can also be identified in this research.

The possible implications of this research are as following: (a) First, the societal impact of AI technologies on crime prevention and law enforcement also extends to the economic welfare of different parts of society. Crime prevention measures can affect the economic welfare of different parts of society differently, raising significant equity concerns; (b) Albeit their different connotations, there could be a symmetric corelation between caste in India and race in the US as comparable societal stereotypes[31], as both factors are major social constructs leading to prejudice and discrimination; (c) Lastly, determine whether we could anticipate a heightened incidence of race/ caste- based profiling of individuals and subsequent conviction of individuals, even more so because of introduction of AI. In essence, the outcomes of this study could play a crucial role in determining whether advancements in AI, such as predictive policing techniques, evolve into tools that perpetuate discrimination and profiling against specific societal classes.

---

[31] Anurag Bhaskar, *Ambedkar, Lohia, and the segregations of caste and gender: envisioning a global agenda for social justice,* CASTE / A GLOBAL JOURNAL ON SOCIAL EXCLUSION, 1(2), (2020), at 63-72.