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Role Of Predictive Policing in Administration of Justice and Its Implementation in India

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ABSTRACT

Predictive policing involves the usage of analytical and statistical methods and algorithms by machines to identify 'hotspots' for crime, where there is usually a repeated trend in crime so as to ensure effective police intervention. Predictive policing tools rely on various data sources, including historical crime data, demographic information, socio-economic data, and even weather conditions. With a shift towards more preventive measures in dealing with crime, rather than reactionary measures, predictive policing becomes more important.

This research paper explores the evolving landscape of predictive policing and its implications for the administration of justice, with a specific focus on its implementation in India. Predictive policing, leveraging advanced data analytics and machine learning algorithms, has emerged as a promising tool to enhance law enforcement strategies, optimize resource allocation, and prevent criminal activities. The study begins by providing an overview of predictive policing methodologies and their global applications, emphasizing their potential to augment traditional policing methods. The research is based on a survey of existing articles and documents from countries that have adopted predictive policing, although the material is not exhaustive.

The paper will examine the barriers to preventive policing in India and analyse the impact of large-scale adoption of this technology in the country, suited to its unique socio-cultural and legal framework. In addition, the study will delve into the possible ethical dimensions of predictive policing. It examines the compliance of these initiatives with privacy laws, constitutional rights, and ethical standards, addressing potential biases in algorithms and the impact on individual liberties. The research underscores the need for a comprehensive policy framework that guides the responsible use of predictive policing tools in India. It makes recommendations to address legal and ethical considerations, ensuring transparency, fairness, and accountability in the deployment of these technologies.

Keywords: *Predictive policing, Biasness.*

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I. INTRODUCTION

Predictive policing is a method of crime prevention by using various algorithms to identify hotspots for crime for effective police intervention. It usually employs three ways of preventing crime- by predicting the time and place of crimes (crime hotspots), by identifying persons likely to commit crime, and by predicting persons likely to be victims of crime. Predictive policing is supported by the preventive theory of punishment. Although traditionally, policing has been reactive to crimes, predictive policing proposes a proactive method of administration of justice.[2]

Although it is argued that predictive policing has existed for centuries, automation and integration of policing with computerised data systems has been growing rapidly in the last decade. It is a relatively novel method of law enforcement, and involves the input of large amounts of data into computer systems, which analyse and predict future crimes. Vast data is required for effective prediction, including, but not limited to, demographics, geographical area, community history, population, etc.

II. GLOBAL APPLICATIONS

(A) Predpol

The most widely used software for predictive policing is PredPol, which was started by a collaboration between the Los Angeles Police Department and a professor at the University of California. It is often held as the pioneer in the field. PredPol was initially based on the same technology that predicts earthquakes. It claims to use just three data points- "event type, event location, and event date/time."[3] It analyses this data and constructs predictive models of crime hotspots. Police officers are subsequently sent to monitor these areas.

In Richmond, the use of this tool helped the police department to achieve a 47% decrease in gunfire over the subsequent three years, and saved around 15,000 USD, by helping it anticipate the place, time and nature of such crimes.[4] Although PredPol argues that it uses only three data types, ethnic and community biases have been found in its usage, resulting in over-policing of specific communities. PredPol claims that it does not use any personal data. This leads to the concern of whether personal data should be left out when predicting crime, since such data would make such software more accurate. However, privacy concerns and laws restrict such

[2] Perry and others, *Predictive Policing: The Role of Crime Forecasting in Law Enforcement Operations*, THE RAND CORPORATION (Jan. 20, 2024, 10:06 AM), https://www.rand.org/pubs/research_reports/RR233.html.
[3] Tian An Wong, *The Mathematics of Policing*, UNIVERSITY OF MICHIGAN, (Jan. 18, 2024, 11:24 AM), https://www-personal.umd.umich.edu/~tiananw/PredPol.pdf.
[4] Beth Pearsall, *Predictive Policing: The Future of Law Enforcement?*, OFFICE OF JUSTICE PROGRAMS, (Jan. 23, 2024, 05:10 PM), https://www.ojp.gov/pdffiles1/nij/230414.pdf.

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application. Recently, the LAPD has ended its PredPol and Operation Laser programmes, due to evidence detailing how they reinforce ethnic biases and have led to over-policing of the Black and Brown communities.[5]

(B) Other tools

ResourceRouter, another predictive policing tool, has helped the South Bend Police Department increase efficiency by 80%. Analysts now spend only 45 minutes each week reviewing and refining the automated directed patrols generated by ResourceRouter on a daily basis, thus drastically reducing the time spent in deciding hotspots to patrol.[6]

In the UK, the Durham Constabulary has used the 'Harm Assessment Risk Tool' (HART) to identify the likelihood of people re-offending, between 2016 and 2021. Criminals are classified on the basis of low, moderate or high chance of them committing an offence. However, it has recently been criticised for using discriminatory data profiles and racist stereotypes.[7]

In Germany, KrimPro is one tool used to predict domestic burglary in Berlin, by dividing the city into small areas, and using socio-economic data, among other things. In Hessen, the KLB-operativ is a tool that has been modelled into an app, installed on the smartphones of police officers. It gathers data and updates a daily record of crime hotspots.[8]

III. ETHICAL CONCERNS

(A) Biased Algorithms

The strongest criticism of predictive policing is on the issue of bias. Algorithms use historical police data in their equations. Such data will undeniably manifest certain inherent biases instilled in police officers. The decision of who to arrest and detain, where to patrol, etc., is influenced by the officers' own thinking. When software rely on such biased historical data, they only reinforce existing stereotypes.[9] Discriminatory policing, targeting minority communities, would inevitably reduce efficiency. PredPol was discontinued by the LAPD due

[5] Johana Bhuiyan, *LAPD ended predictive policing programs amid public outcry. A new effort shares many of their flaws*, THE GUARDIAN, (Jan. 23, 2024, 06:45 PM), https://www.theguardian.com/us-news/2021/nov/07/lapd-predictive-policing-surveillance-reform.

[6] Soundthinking, *South Bend PD Maximizes Limited Patrol & Analyst Resources to Build Community Trust and Promote Effective Crime Prevention Tactics*, SOUNDTHINKING (Jan. 19, 2024, 09:56 PM), https://www.soundthinking.com/wp-content/uploads/2022/09/2023-03-21-South-Bend-Success-Story.pdf.

[7] FairTrials, *FOI reveals over 12,000 people profiled by flawed Durham police predictive AI tool*, (Jan. 20, 2024, 07:09 PM), FAIR TRIALS, https://www.fairtrials.org/articles/news/foi-reveals-over-12000-people-profiled-by-flawed-durham-police-predictive-ai-tool/.

[8] Seidensticker, Kai Bode, Felix Stoffel & Florian, '*Predictive Policing in Germany*', UNIVERSITY OF KONSTANZ, (Jan. 20, 2024, 07:58 PM), http://nbn-resolving.de/urn:nbn:de:bsz:352-2-14sbvox1ik0z06.

[9] Will Douglas Heaven, *Predictive policing algorithms are racist. They need to be dismantled.*, MIT TECHNOLOGY REVIEW, (Jan. 17, 2024, 07:33 PM), https://www.technologyreview.com/2020/07/17/1005396/predictive-policing-algorithms-racist-dismantled-machine-learning-bias-criminal-justice/.

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to public outcry over its discriminatory nature, among other things. Biased outcomes are disadvantageous for public safety. These algorithms do not consider how social conditions can possibly skew crime reports and other data.

Another important consideration is that predictive policing tools have the drawback of feedback loops. This means that when a particular area is targeted more often, it will lead to more arrests and reports from that area.[10] This data, processed by the data analytic tool, will invariably direct officers back to that area, creating a vicious cycle. If predictive technologies do not take into account the change in perpetrators, victims and locations of crime, feedback loops will result in misuse of police resources.

(B) Privacy

Predictive data algorithms have to use vast data, including information about individuals' activities, behaviour, and relationships for them to effectively work. However, they have been criticised for invading private domains, for example, by surveillance and questioning people.[11] Using this data, judgements are made about a person's character and their likelihood of committing a crime. Most people share data with e-commerce and social media companies but would have reservations about sharing their data with the police. Although police data is public, using an individual's personal data without their specific consent is a grave violation of their right to privacy, and many data protection laws, including the European Union's General Data Protection Regulation. Misuse of this data would also have serious consequences.

(C) Individual Liberties

A constant state of surveillance would curtail individual liberties, including the right to move freely. It has been found that rigorous surveillance of prisoners induces paranoia and is a source of embarrassment for them. This leads to the question- if surveillance and processing of data violate the freedom of the individual, is it even worth it to enhance policing using such measures? This can only be solved by developing algorithms that do not use such data and are restricted to the public domain. Such tools would not be as effective and would also cost more.

The right to free expression would be adversely affected. Citizens may alter their behaviour or limit their engagement in certain activities due to the fear of being flagged by the predictive algorithms, even if their actions are entirely legal and within their rights. If individuals are

[10] Will Douglas Heaven, *Predictive policing is still racist—whatever data it uses*., (Jan. 20, 2024, 08:38 PM), MIT TECHNOLOGY REVIEW, https://www.technologyreview.com/2021/02/05/1017560/predictive-policing-racist-algorithmic-bias-data-crime-predpol/.

[11] Kiana Alikhademi, Emma Drobina, Diandra Prioleau, Brianna Richardson, Duncan Purves & Juan E. Gilbert, *A review of predictive policing from the perspective of fairness*, NATIONAL SCIENCE FOUNDATION, (Jan. 20, 2024, 09:54 PM), https://par.nsf.gov/servlets/purl/10276841.

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targeted based on predictions rather than evidence of actual criminal activity, it raises concerns about the presumption of innocence and the right to a fair trial.

IS IT EVEN ETHICAL?

The questions that arises is whether it is moral or justified to use predictive policing tools on people without their knowledge. One example is the HART tool used by the Durham Constabulary, which classifies offenders into low, moderate and high categories based on their chances of re-offending. Those who are identified as having moderate chance of re-offending are sent for rehabilitation, while those with high chances are charged and prosecuted.[12] This practice is greatly unfair for those who are charged. This tool is employed without their specific knowledge and consent.

Partial application on a case-to-case basis, or based on the area is grossly discriminatory. The deployment of predictive policing without proper communication and community engagement can erode trust between law enforcement and the communities they serve. If residents perceive these technologies as invasive or discriminatory, it can undermine the legitimacy of law enforcement efforts.

IV. PREDICTIVE POLICING IN INDIA

Predictive policing is practised in some cities in India in some form, although the practice is not as wide as in the U.S. For example, the Hyderabad police have constructed the 'Integrated People Information Hub' (IPIH), a citizen profiling system intended for smart policing and foreign investment attraction. The database integrates CCTV footage, fingerprints, call records, and personal details to provide a comprehensive view. Derived from the 'Samagra Kutumba Survey,' conducted by the state government, the IPIH collects extensive data on citizens' personal information, relationships, and crime history.[13]

The Delhi Police use CMAPS, a predictive policing software, to pinpoint crime hotspots and predict potential criminal incidents. The web-based tool utilizes real-time data from the Dial 100 helpline and satellite imagery from ISRO to visualize call clusters, offering insights into areas at risk. This represents a departure from manual crime mapping, providing swift updates every three minutes across Delhi's 1,483 square kilometers and 13 police districts.[14]

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[12] Durham Constubulary, *AI can predict reoffending, university study finds*, (Jan. 23, 2024, 6:45 PM), DURHAM CONSTUBULARY, https://www.durham.police.uk/News/News-Articles/2022/January/AI-can-predict-reoffending-university-study-finds.aspx.

[13] Srinivas Kodali, *Hyderabad's 'Smart Policing' Project Is Simply Mass Surveillance in Disguise*, *The Wire*, (Jan. 25, 2024, 06:32 PM), https://thewire.in/government/hyderabad-smart-policing-surveillance.

[14] Karn Pratap Singh, *Preventing crime before it happens: How data is helping Delhi Police*, HINDUSTAN TIMES, (Jan. 22, 2024, 07:13 PM), https://www.hindustantimes.com/delhi/delhi-police-is-using-precrime-data-analysis-

In Himachal Pradesh, the police has adopted predictive policing with the CCTV Surveillance Matrix system, modeled after the US approach. This strategy utilizes mathematical and analytical methods to anticipate criminal activity in monitored areas, emphasizing the prevention of crime. There are currently 19,000 CCTV cameras for crime prevention, traffic management, and improving police efficiency. The installation of 68,000 cameras has been proposed to adequately cover the state's population of over 68 lakh.[15]

Although it is too soon to decide on the result of these efforts, there are various challenges to adopting large-scale predictive policing in India.

V. CHALLENGES

(A) Police biasness and distrust

The issue of police biasness is particularly entrenched in India, a country divided on religious and casteist lines. A 2019 study[16] conducted by Common Cause and Centre for the Study of Developing Societies (CSDS) shows that a majority of police officers believe that Muslims and the Scheduled Castes and Scheduled Tribes are more likely to commit crime. Similarly, these minority communities show higher distrust towards police personnel. About 44% of the police are willing to use extra-judicial means, showing the worsening state of the legal process in the country. Moreover, the police are severely understaffed and lack proper training.

The problem is augmented when corrupt politicians interfere in the policing process. Data relating to all such biased arrests will be recorded and perpetuate prejudice. The biased algorithms will produce discriminatory outcomes, where certain groups like minorities are unfairly targeted or subject to increased surveillance. Moreover, inherent biases lead to over-policing of certain neighbourhoods, such as slums. Increased criminal reports from low-income neighbourhoods would serve to reinforce the perception of more criminals from those areas. Arbitrary arrests, such as that of Fahad Shah, a Kashmiri journalist, in 2021, feed incorrect information into data systems. One important consideration is non-reporting of crimes, particularly crimes against women and children.

(B) Privacy and surveillance

Right to privacy was recognised by the Supreme Court in the landmark case of K. S.

to-send-its-men-to-likely-trouble-spots/story-hZcCRyWMVoNSsRhnBNgOHI.html.

[15] Outlook Web Bureau, *19,000 CCTV Cameras On Real-Time Streaming At HP Police HQs*, OUTLOOK INDIA, (Jan. 20, 2024, 9:41 PM), https://www.outlookindia.com/website/story/india-news-19000-cctv-cameras-on-real-time-streaming-at-hp-police-hqs/360917.

[16] Lokniti-CSDS and Common Cause , *Status of Policing in India Report 2019*, (Jan. 19, 2024, 08:48 PM), COMMON CAUSE, https://www.commoncause.in/uploadimage/page/Status_of_Policing_in_India_Report_2019_by_Common_Cause_and_CSDS.pdf.

Puttaswamy v. Union of India.[17] It laid down three conditions for a breach of privacy- legality, need or purpose, and proportionality between the object and the means of achieving it. Protection of data in the Indian context has been a controversial issue. The recent Digital Personal Data Protection Act, 2023 (DPDP Act) has been criticised for allowing the State to collect personal data on grounds of national security and maintenance of public order. It does not provide for deletion of personal data after its usage and data principals do not have the right to be forgotten. [18]

For predictive policing, this means that vast data will be available with the government for 360-degree surveillance of all citizens.[19] There is lack of transparency regarding the use of AI tools. Efforts to gather information about the effectiveness and usage of these tools have been hampered by exceptions for law enforcement under the Right to Information (RTI) Act, 2005. The DPDP Act also exempts personal information from an RTI application.

(C) Feasibility

Although software like PredPol may have worked well for developed nations, before any large-scale introduction of predictive policing in the Indian system, a thorough cost-benefit analysis will be required. The majority of the states do not have the required infrastructure to support such AI tools. More importantly, if such software is developed by outside agencies, the high cost would inhibit its adoption. Public safety may be disregarded by profit-minded companies. In fact, many of the companies that develop predictive software do not disclose the details of its working. Moreover, there is the concern of over-reliability on technology, without due consideration of inaccuracies in data and biased systems.

Although many regions have started developing in-house predictive systems within the police departments, lack of training and expertise persists as an issue. According to the study by Common Cause, only about 6.4% of police forces have received training during service, between 2012 and 2016. Understaffed personnel, combined with negligible technology literacy, makes predictive policing a difficult option in India.

VI. CONCLUSION

In the realm of law enforcement, the adoption of predictive policing tools like PredPol and ResourceRouter holds potential benefits but raises significant ethical concerns. These tools, while aiming to enhance efficiency and crime prevention, often rely on biased historical data,

[17] Justice K. S. Puttaswamy (Retd.) and Anr. v Union Of India And Ors., AIR 2017 SC 4161 (India).
[18] The Digital Personal Data Protection Act, 2023, No. 22, Acts of Parliament, 2023 (India).
[19] Lokniti-CSDS and Common Cause , *Status of Policing in India Report 2023*, COMMON CAUSE, (Jan. 24, 2024, 10:22 PM), https://www.commoncause.in/wotadmin/upload/REPORT_2023.pdf.

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leading to over-policing of specific communities and reinforcing discriminatory practices. Privacy issues loom large as the vast amounts of personal data required for predictive algorithms may infringe upon citizens' rights, with existing legislation lacking clear safeguards. Challenges in implementing predictive policing in India include deep-seated biases within the police force, political interference, and a lack of infrastructure and training. The potential for profit-driven motives in developing these technologies adds a layer of complexity, posing risks to public safety and privacy. The constant surveillance associated with predictive policing tools raises questions about individual liberties, impacting the right to move freely and the right to free expression. Striking a balance between public safety and protecting fundamental rights is crucial. A transparent and community-engaged approach is necessary to ensure the responsible and ethical use of predictive policing tools in the evolving landscape of law enforcement in India.

VII. RECOMMENDATIONS

Large-scale adoption of predictive policing in India is not feasible, and not even recommended. To ensure comprehensive development of such technologies, they have to be evolved in compliance with democratic considerations. A multi-faceted approach, combining concerns regarding privacy, reliability and ethical use is necessitated.

Biases must be removed through the installation of internal oversight factor in AI technologies. These may measure the extent of possible bias. Regular audits and evaluations of predictive algorithms would help to identify and rectify biases. Independent audits can help ensure transparency and accountability in the functioning of these systems. Citizens must be informed of the use of their data actively. Community involvement in the development of predictive policing would settle concerns and encourage proactive participation in the adoption of AI. However, transparency would only be ensured by providing clear explanations for the decisions made by the algorithms, allowing law enforcement agencies and the public to understand the factors influencing predictions.

Before the use of any technology, however, Parliamentary action may be required. From the banning of PredPol by the LAPD, it can be seen that if these tools can have such pervasive effects, they would violate multiple rights and freedoms. Rather than having courts decide on the constitutionality of the practice, a clear law relating to predictive policing is a must, supplemented by academia, ethicists, and experts in the field.

The issues listed out in this study is not specific to predictive policing alone. It unfolds a series of problems in the existing legal framework relating to data protection, surveillance and privacy.

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There is a need to address these issues before any cohesive development towards the implementation of predictive policing.

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