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INTERPLAY OF ARTIFICIAL INTELLIGENCE AND NDPS OFFENCES

[1] Anupam Maithani , [2] D. Dr. Lakshmi Priya Vinjamuri

Law College Dehradun, Uttaranchal University
Professor of Law College Dehradun

ABSTRACT

The interplay between artificial intelligence (AI) and NDPS (narcotic drugs and psychotropic substances) marks a transformative period in India's handling of drug trafficking and abuse. As sophisticated trafficking networks and new substances engulf law enforcement, traditional methods of detection and attribution are becoming increasingly ineffective. In this research paper, I will describe how AI provides unprecedented capabilities in detection, prevention, and prediction. Tools ranging from real-time surveillance to advanced forensic analysis are revolutionizing NDPS law enforcement and judicial processes domestically and internationally. I will describe challenging issues that accompany the shift to such powerful technologies, including the suspected decreased civil liberties of users afforded by the Fourth Amendment, the operational infrastructure required to make AI work, the need for a public that trusts law enforcement, and the framework within which AI can function effectively in India.

Keywords: Artificial Intelligence, NDPS Act, Drug Law Enforcement, Predictive Analytics, Legal Technology

1. Introduction

The NDPS Act, 1985, is India's fundamental legal instrument for controlling narcotic drugs and psychotropic substances. Enacted in 1985, it arose from growing concern about drug abuse and trafficking and fulfills India's obligations under international conventions. The Act consolidated and replaced previous, less effective laws. Its main intent is to prohibit and regulate the most dangerous substances; it does this with an array of penalties that range from fines to death sentences. The Act wasn't meant to be a public health tool, but to say it's an ineffective tool for public health criminalizes drug users while not really facing up to the problems that cause drug addiction.

Concurrent with these happenings, artificial intelligence (AI) has commenced remaking global legal systems, India's included. The new technologies—like predictive analytics, the automated review of documents, and forensics on steroids—are beginning to find homes in law enforcement, the running of courts, and the management of cases. With respect to matters arising under the NDPS Act, AI could help spot trafficking patterns, make the sifting through of evidence more efficient, and enable the kind of fair, consistent adjudication that the law (and life) demands. But is it fulfilling those promises? And what about those pesky issues of transparency, accountability, and individual rights? This research grapples with all of that.

2. Literature Review

The NDPS Act of 1985 has been the subject of both research and sustained discourse. All of this scholarship, in totality, critiques the Act, pointing out its as well as its many good points, persistent challenges, and virtually impossible goals. What this growing body of work serves to do, rather handily, is create a road map for necessary reforms. The right kind of reforms, it seems, would make the enforcement and adjudication of the NDPS Act, 1985, much more effective and much fairer. (Some would add: "and much more constitutional," since it is alleged that the Act, as enforced, is often in violation of the Fourth, Eighth, and Fourteenth Amendments to the Constitution.)

The integration of artificial intelligence into legal practice around the world has garnered ever more academic and professional interest. The international literature examines how tools driven by artificial intelligence—predictive analytics, for example, or automated document review and digital forensics—are reshaping law enforcement, judicial decision-making, and legal research. In such places as the United States and parts of Europe, artificial intelligence has been used to assist in risk assessment, to streamline evidence analysis, and to support the generation of consistent sentences. These innovations have improved efficiency and even, in some respects, enhanced accuracy. Yet many of our authors voice concerns that bias—either human bias that has made its way into the algorithm or a new kind of bias that the algorithm generates—could lead to improper outcomes. These same authors also highlight concerns about data privacy and about the different kinds of opacity associated with A.I. decision-making. There's also disagreement about whether A.I.-generated evidence is admissible in court and about the kind of regulatory framework that might govern A.I.'s use in criminal justice systems.

Notable gaps persist in the research, especially when it comes to understanding how exactly AI should be applied in NDPS cases within the Indian context. This lack of directed interest to our study subject matter has resulted in a limited body of relevant literature. Most existing studies concentrate on tough-to-tackle enforcement and judicial trends in the pre-AI world. They afford limited attention to the operational, ethical, and legal implications of

adopting AI in drug law enforcement and adjudication. For instance, can we confidently claim that using AI tools will improve conviction rates or reduce the size of stubborn judicial backlogs? Can we ensure that our fair trial timeframe promises are being kept without compromising individual liberties? Or are we simply ignoring the elephant in the room and the unique socio-legal landscape of India in which we live by not questioning these things? Moreover, what happens when the above is looked at through an empirical lens?

3. The NDPS Act: Legal Framework

The NDPS Act, 1985, this foundational law on psychotropic substances and narcotics across India, stems from the drug epidemic in the country since the mid-eighties. This led the Indian government to push for stronger regulations which were towards aligning with the drug control regimes of the United Nations. It was finally through these efforts that the NDPS Act got enacted on 14 November 1985. In response to this drug control regime, the Act tries to cover all bases, from the manufacture to regulation of sale and even towards those who are into the transport and peddling business, not just them but also the end consumer. It talks about drugs that are harmful for humans, about psychotropic substances and the like. The Act still remains a comprehensive piece of work.

Key provisions of the NDPS Act include the absolute prohibition of the cultivation, production, manufacture, possession, sale, purchase, transport, storage, and consumption of narcotic drugs and psychotropic substances without proper authorization. The Act is divided into six chapters and 83 sections, covering definitions, offenses, penalties, procedures, and the establishment of authorities such as the Narcotics Control Bureau (NCB). Over time, the NDPS Act has undergone significant amendments to address emerging challenges. The 1988 amendment introduced stricter penalties and property forfeiture provisions. The 2001 amendment brought the death penalty for repeat offenses and sought to strengthen enforcement. The 2014 amendment allowed for bail in specific cases involving small quantities, reflecting a shift towards balancing strict enforcement with individual rights. The most recent amendment in 2021 aimed to further refine the law in response to new trends in drug abuse and trafficking.

Though comprehensive, the NDPS Act faces difficulties in enforcement and adjudication. One reason is that the Act has cumbersome procedural requirements. If they are not followed to the letter, even serious cases can lead to an acquittal. Another is that the Act makes no distinction in degree of culpability it assigns. It treats users and carriers, whether at the small or large end of the scale, the same way. It also has, for the most part, non-bailable and cognizable offenses, which, as you will see, leads to some prisoners being held in pretrial detention for far too long. Overall, this is a bad law.

Judicial interpretations have played a vital part in shaping how the NDPS Act is applied in practice. They have laid down strict guidelines for admissibility of evidence, maintenance of the chain of custody, and granting of bail—especially in cases involving commercial quantities of drugs. Despite these strictures, however, the Act suffers from a high rate of acquittals, highlighting serious gaps in enforcement. The need for a more nuanced approach—one that distinguishes between addiction, petty offenses, and organized crime—remains a subject of policy debate. As new synthetic drugs and trafficking methods emerge, the NDPS Act continues to evolve, but its effective implementation requires ongoing legal reform, capacity building, and something that is often forgotten: the infusion of life science and technology expertise into enforcement and adjudication processes.

The 1985 Narcotic Drugs and Psychotropic Substances Act was a major step in India's legislative efforts to deal with the crisis of drug addiction, which was peaking in the 1980s. Prior to the Act, drug regulation in India was governed by colonial laws, such as the Opium Acts of 1857 and 1878, and the Dangerous Drugs Act of 1930. Treatments in these laws that dealt with "drugs" were woefully inadequate to cover the complex forms of drug trafficking that were getting out of hand across the country. The 1985 NDPS Act replaced those older laws and is far more competent in dealing with the forms and social problems of modern drug use.

The NDPS Act contains certain key provisions that absolutely prohibit anything and everything that pertains to narcotic drugs and psychotropic substances. Especially, the Act bars the uncultivated, uncontrolled, and unauthorized production and manufacture of such drugs; I make mention of these substances only because they are spelled out under the Act. This Act is Divided into six pivotal chapters, ten parts, and a total of eighty-three key sections; and in these sections, the key components of the authority, definitions, offenses, and penalties are detailed.

Even with its all-encompassing structure, enforcement and adjudication of the NDPS Act have long faced severe challenges. One major hurdle is the Act's stringent procedural prerequisites, which if not followed à la letter can result in acquittals even in some serious cases. Another is that the Act does not differentiate among users, small-time peddlers, and big-time traffickers. Concerns have been raised that, in all these instances, we're talking about undue punishment and a strain on our prison facilities. Altogether this falls under the heading of the Act's not-so-good human rights record.

4. Artificial Intelligence in Legal Practice

Artificial Intelligence (AI) used in the legal practice refers to the use of computer systems and algorithms that can perform human-like tasks requiring intelligence, such as reasoning, learning, and decision-making. In the legal sector, AI can actually encompass several levels of technology, from rule-based expert systems to natural language processing—and even advanced machine-learning and generative models. These days, we might also refer to some forms of predictive analytics as a type of AI used in law. Obviously, predictive analytics forecasts case outcomes. But it is just one flavor of AI. On the other hand, the legal domain encompasses a much larger set of AI applications. We might also consider types of document automation in that set. Document automation generates and reviews legal documents. It's not just a future imagining. It's with us today. E-discovery tools: These are part of the set, too. Used for sifting through large, varied volumes of electronically stored evidence, they work faster and more reliably than you do. If you're using one of these tools, that is. Virtual assistants. Billed as a kind of AI for law, they help with some directing research tasks and even doing some kinds of direct-to-client communication.

AI is transforming the global legal sector in several direct ways. Legal research platforms now employ AI to procure insights from immense databases of case law, statutes, and regulations. This modern approach to legal research reduces both the time and, notably, the cost associated with the kind of traditional research that used to occupy the hours of junior associates, not to mention the research assistants who predated the nationwide hiring of law student interns when the internet came along.Most large law firms now use AI-enhanced document review tools in transactional law to analyze contracts, pinpoint deviations from standard clauses, and identify potential risks. Both e-discovery software and AI's "baby brother," machine learning, are now

employed in litigation to distinguish relevant electronically stored information from your average ho-hum emails and even more "stored" information in the life of most U.S. citizens, all the way back to our founding documents.

The potential of AI in legal practice is expansive. AI has the capacity to improve access to justice by automating routine tasks, lowering costs, and making legal services more affordable and accessible than ever before. The use of predictive analytics might allow lawyers and judges to evaluate better (and maybe even predict) the likely outcomes of cases (both in individual and aggregate terms), something that ought to result in more informed (and maybe even better) decision-making. Most folks think that AI will make compliance and regulatory monitoring of all kinds (and especially in the dirty data world we inhabit) "easier" and "better" (whatever that means) by providing real-time updates on the law and suggesting necessary actions. For clients, the use of AI-powered chatbots and virtual assistants ought to provide timely, if not instant, responses to their queries and serve to streamline the intake process. When it comes to strategy and policy development, the use of AI promises to uncover (for both the client and their beleaguered attorney) all kinds of patterns and trends that formerly would have taken lifetimes to divine. In short, there is very little in the way of downside (at first glance, anyway) to these developments from the perspective of access to justice in terms of making it cheaper, more efficient, and more comprehensible (which is a good thing, in my book).

5. Application of AI in NDPS Cases

The automation of processes and the accuracy of evidence analysis and case management have substantially benefited from artificial intelligence in NDPS cases. However, this does not mean that AI is going it alone. The human effort that goes into working with AI to ensure that its processes are reliable and correct is considerable.If an investigator or team of investigators working on a case isn't searching for evidence the same way a human might, how does the NDPS law enforcement use AI reliably? It sifts through untold amounts of digital evidence. Personalized searches. Amassing intelligence in ways preposterously beyond human imagination. And then for what? Automation only makes human error more efficient. And efficient human error is what makes up no small part of the NDPS law enforcement backlog. Moreover, NDPS case backlog isn't just a domain concern. Increasing the reliability of evidence and the efficiency of human operations addresses a decreased case throughput concern universally. But predictive analytics is more concerning than what I've just mentioned. It's not just the discrimination question that is a legitimate concern. It's the fact that algorithms are now part of the increasing GDP of the American intelligence community.

AI is transforming the investigation and forensic science, especially in how we detect and identify new psychoactive substances, or NPS, and synthetic drugs. These often elude conventional law enforcement. AI has chemical analysis tools that can summon an almost magical capacity to predict the substance's structure before the drug hits the streets. This has allowed the authorities to labor over and revise the controlled substance schedules and do so with the speed of a drug trafficker's inhalation. The kinds of substances predicted by these tools often aren't even in here yet in the Bureaus of Narcotics laboratories. But they will be soon enough if they haven't run afoul of the Constitution and the liberties it affords us. Meanwhile, the uptick in judicial decision-making AI can interpolate hasn't fared as well. That's in part because AI can help law enforcement identify defendants but hasn't quite helped courts with the evidence it produces yet.

6. Case Studies and Practical Examples

The case studies—both actual and hypothetical—that follow demonstrate the burgeoning possibilities of AI really transforming not just the investigation but also the prosecution of NDPS offenses. For instance, in a recent operation, the narcotics arm of the Indian government employed AI-driven surveillance drones and satellite imaging, as well as other technology, to find hidden opium poppy plantations in remote parts of the country. The AI system did the heavy visual data processing, going through tons of information and flagging what it thought were some very suspicious farming patterns. This was done at a speed that would have made human teams, under the best of circumstances, working day and night, too slow to accomplish this task in anything like real-time. And just to emphasize: these patterns were flagged according to farming data that doesn't match what would be expected from a legal grower of any kind.

The increasingly evident impact of AI on NDPS case outcomes, efficiency, and fairness can be discerned from such applications. To automate evidence analysis and case management, AI has started to work its way into daily law enforcement processes. This is still in the early stages, which makes the lack of detail about how these tools operate understandable, but the overwhelming reason for their development runs counter to the public's perception of AI: they are designed, first and foremost, to enhance human decision-making in a consistent and transparent manner. In this increasingly digital world, law enforcement must use every tool at its disposal to be successful in its mission; failing to employ certain resources because of a fear that they might be seen as futuristic could very well result in a lack of operational efficiency and effectiveness.

AI has shown itself to be extremely valuable for the enforcement of the NDPS in addressing the unrelenting and fast-moving threat of new psychoactive substances (NPS) and digital drug trafficking. As traffickers take to encrypted digital platforms, virtual currencies, and the dark web, employing traditional investigative techniques often yields wanting results. But while some police forces around the world struggle even to keep up with these digital payment methods, AI has not only enabled but empowered our law enforcement agencies to monitor online forums, analyze blockchain transactions, and "see" further into the digital drug marketplace—better, in some cases, than the traffickers we are trying to catch. Case in point: In 2024, AI tools helped the Narcotics Control Bureau identify and flag a new fentanyl analog in Gujarat.

7. Legal, Ethical, and Procedural Challenges

- **Data privacy and security concerns**

Integrating AI into the enforcement of NDPS necessitates the collection and processing of copious amounts of almost sensitive data that personalizes and identifies us, like never before. This involves a mix of our personal lives, hidden from public view and always in the shadows, as they are meant to be:

intimate conversations in our homes (as revealed by eavesdropping devices); nakedness (as revealed by fibrous sensors, sometimes through walls); our encrypted love letters (as revealed by computer-readable electronic formats), and en masse without the encryption that preserves individual rights. This is both an unfriendly and inappropriate e-call to public prisons.

- **Algorithmic bias and transparency**

The AI systems employed in NDPS cases possess only the level of objectivity that the training data allows. If that data has been influenced by biases of any kind—say, in the kind of communities or regions that law enforcement tends to over-police—then the AI is likely to dish out some unfair and maybe even unlawful amounts of suspicion to individuals, on top of which the wrong kind of equal protection under the law may also get upheld. The real danger here is that the lack of transparency and explainability in AI-driven decisions undermines accountability. Even people who trust the presumed benefits of objective AI fairness might start losing faith in law enforcement and the judicial process if they can't even see what's happening on the other side of the black box.

• Acceptability of Evidence Generated by AI

The legal framework currently prevalent under the NDPS Act is quite old and does not attend to the issue of acceptability of AI-generated evidence. This leaves the courts with a great deal of uncertainty, as evidenced by a Delhi court in 2024 that said no to AI-generated evidence in the form of suspect profiles because the legal status was just too murky. There are also many questions concerning the reliability and authenticity of AI-generated evidence. For instance, something that always gets a hard read is chain of custody: if the evidence was generated by using AI, has the prosecution had a chance to really cross-examine what was presented because the AI "witness" wasn't there to be questioned in the same way that human witnesses can be? Indeed, until and unless Ada Lovelace gets a spot on the chain of custody, which is more likely to happen with a legislative update, courts are understandably hesitant to take AI-generated outputs at face value.

• Who is liable for what when it comes to AI?

Figuring out liability for errors or abuses involving AI systems is a complex, knotty problem—and for good reasons. Current laws don't neatly fit the AI scenario. They don't clearly name—and the few that do name tend to list many—who is responsible when, for example, an AI-driven decision results in a wrongful arrest. Is it the developers who created the intelligence that isn't quite intelligent enough? Is it the operators who have entrusted their judgment to a system with a way of reasoning that we just don't understand and that it's quite unclear we presumably should understand? Or is it law enforcement that just hasn't quite figured out how to use the upscale 'smart' tools at its disposal? Whatever the answer, one thing is clear: If we don't hold someone responsible and ensure that dialogues about responsibility happen to the satisfaction of all parties involved, then we can kiss our right to accountability.

Using AI in NDPS investigations means handling highly sensitive personal and transactional data. This data typically comes from digital communications, financial records, and surveillance technologies. But where sensitive data is concerned, AI raises urgent questions about data security, access to personal data without authorization, and the misuse of that data by goons or hackers. And it raises these questions when the legal protections for the personal data of ordinary citizens are at their weakest. Listeners might take that claim as hyperbolic, but they should consider the dark scenario in which all our data are vulnerable and surveillance technologies can do the heavy lifting required to sort and make sense of it.

When errors, rights violations, or abuses occur, the integration of AI into NDPS enforcement raises complex accountability questions. Tools that AI powers, or "smart" tools, must still obey the orders of their human handlers if they exist in lawful condition. When they act unlawfully, the human principles of illegal search and seizure, false arrest, abuse of power, and violation of civil rights and privacy come into play. Who is responsible for these unlawful acts when an AI tool, for instance, leads to a wrongful arrest? The diffusion of responsibility in these situations is compounded by the lack of independent oversight bodies with the technical expertise to audit AI systems, investigate complaints, or enforce standards. Understanding where to draw the line of accountability is paramount for public trust.

8. Policy Implementation and Recommendations

NDPS case AI use guidelines must stem from ethical basics, legal compliance, and operational transparency. Individual privacy must be respected in system design. Discrimination should not occur as a result of AI's use. Every stage of enforcement must exhibit what is insisted upon as the "new normal"—AI used in enforcement as a tool for ensuring privacy, discrimination avoidance, and procedural fairness. Of course, individuals recognizing the importance of these enforcements must also recognize the importance of verifiability and explainability in whatever AI tools are employed for evidence analysis, surveillance, or predictive analytics.

Ensuring the successful and ethical use of AI in NDPS cases calls for stakeholder training and capacity building. Knowledge and understanding of new technologies, along with their possibilities and limitations, are necessary for the law enforcement officers, prosecutors, judges, and forensic experts who will use—and decide on the use of—AI tools. Most of the specialized training these individuals receive does not cover the fundamental topics that their new jobs will require them to understand. This lack of knowledge can lead to awful decisions, wrongful convictions, and (as we've seen before) public outcry.

To preclude such an eventuality, the Workshop will recommend fundamental and specialized training for NDPS stakeholders, particularly on the discussed topics; and public awareness and communications campaigns concerning the role and capabilities of AI in law enforcement and human rights. The objectives in achieving these outcomes are obvious: Trust in the justice system is fundamental, and stakeholders must understand their tools moving forward.

9. Conclusion

Artificial Intelligence is an emergent and powerful force that is transforming the enforcement and adjudication of NDPS cases. Its applications address many of the challenges posed by trafficking networks that are becoming ever more sophisticated, by the new psychoactive substances that they and legitimate industry are continually producing, and by the burgeoning digital and encrypted online platforms that are being used for drug crimes. AI-driven tools enhance the detection, prediction, and disruption of these kinds of crimes, and crime commissions tend to occur in upsurges. Advances in AI are allowing for a massive upgrade in the capabilities of these tools, by which is meant applications toward really getting a handle on what is going on within a given jurisdictions and with entities operating across them. These applications of AI are still in their infancy but are already showing promise. They are also opening up a suite of issues that are not just going to go away and for which no one has yet developed answers.

The future of AI in NDPS and the larger criminal justice system looks bright. Yet its promise depends completely on responsible use by an inclusive array of implementers. As tech gets better, AI is moving towards a bigger role in predictive policing and the like. In India—oh, what a place to be in!—we understudy the world in tech-driven public safety.

To actually make tech work for us, robust legal frameworks, ethical guidelines, and independent watchdogs are essential. They guarantee rights, ensuring the tech is actually 'safe' and doesn't er, upend public safety.

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