

***Law Audience Journal, Volume 6 & Issue 1, 6th August 2025,
e-ISSN: 2581-6705, Indexed Journal, Impact Factor 5.954, Published
at <https://www.lawaudience.com/volume-6-issue-1-2/>, Pages: 557 to
574,***

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***



Cite this article as:

MS. SHWETA JAIN & DR. MANEESH YADAV, “Tech-Enabled Justice: Using Machine Learning for Risk-Based Bail Assessment under POCSO” Vol.6 & Issue 1, Law Audience Journal (e-ISSN: 2581-6705), Pages 557 to 574 (6th August 2025), available at <https://www.lawaudience.com/tech-enabled-justice-using-machine-learning-for-risk-based-bail-assessment-under-pocso/>.

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

| Copyright © 2025 By Law Audience Journal |

(E-ISSN: 2581-6705)

All Copyrights are reserved with the Authors. But, however, the Authors have granted to the Journal (Law Audience Journal), an irrevocable, non-exclusive, royalty-free, and transferable license to publish, reproduce, store, transmit, display, and distribute it in the Journal or books or in any form and all other media, retrieval systems and other formats now or hereafter known.

No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law.

For permission requests, write to the publisher, subject of the email must be "Permission Required" at the email addresses given below.

Email(s): lawjournal@lawaudience.com, info@lawaudience.com,
lawaudience@gmail.com.

Phone (No(s)): +91-8351033361,

Website: www.lawaudience.com.

Facebook: www.facebook.com/lawaudience.

Instagram: www.instagram.com/lawaudienceofficial.

Contact Timings: 10:00 AM to 8:00 PM.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

Disclaimer:

Law Audience Journal (e-ISSN: 2581-6705) and Its Editorial Board Members do not guarantee that the material published in it is 100 percent reliable. You can rely upon it at your own risk. But, however, the Journal and Its Editorial Board Members have taken the proper steps to provide the readers with relevant material. Proper footnotes & references have been given to avoid any copyright or plagiarism issue. Articles published in Volume 6 & Issue 1 are the original work of the authors.

Views or Opinions or Suggestions (if any) expressed or published in the Journal are the personal points of views of the Author(s) or Contributor(s) and the Journal & Its Editorial Board Members are not liable for the same.

While every effort has been made to avoid any mistake or omission, this publication is published online on the condition and understanding that the publisher shall not be liable in any manner to any person by reason of any mistake or omission in this publication or for any action taken or omitted to be taken or advice rendered or accepted on the basis of this work.

All disputes are subject to the exclusive jurisdiction of Courts, Tribunals and Forums at India only.

Submit your article(s) for Publications at lawaudience@gmail.com, or
lawjournal@lawaudience.com, with subject as "Submission of Paper(s)
for Publication in Law Audience Journal".

Law Audience Journal, Volume 6 & Issue 1, 6th August 2025,
e-ISSN: 2581-6705, Indexed Journal, Impact Factor 5.954, Published
at <https://www.lawaudience.com/volume-6-issue-1-2/>, Pages: 557 to
574,

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

Publisher Details:

Law Audience Journal (e-ISSN: 2581-6705),

Sole Proprietorship of Mr. Varun Kumar, Kharar, District.
S.A.S, Nagar, Mohali, 140301,

Phone No(s): +91-8351033361 (WhatsApp),

Email ID(s): lawjournal@lawaudience.com,
info@lawaudience.com or lawaudience@gmail.com.

Website: www.lawaudience.com.

Contact Timings: 10:00 AM to 8:00 PM.

Editor(s):

- *Dr. Amit Yadav, Editor-In-Chief at Law Audience Journal,*
Assistant Professor at School of Law, Manipal University Jaipur.
- *Adv. Varun Kumar, Founder-CEO-Owner-Publisher-Publishing*
Editor at Law Audience Journal.

Editorial Board Members Details Are Available At:
<https://www.lawaudience.com/editorial-board-members/>.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

ABSTRACT:

This discussion critically questions the opportunities and challenges of the utilisation of machine learning (ML) in risk-based bail decisions under the Protection of Children from Sexual Offences Act, 2012 (POCSO). Even though the strict bail requirements of the legislation were created to protect children, they often lead to long-term pre-trial incarceration and produce uneven court results. The current article argues that the selective use of ML tools, carefully adjusted to the Indian legal, cultural, and procedural environment, can bring the much-desired consistency, transparency, and efficiency to the process of bail decision-making. Using the international experience and local pilot projects, the authors discuss the role of supervised learning models, natural language processing, and explainable AI to support the work of judges by revealing the risk factors and statistical patterns of interest. Simultaneously, the study warns of the high risks of such things as algorithmic bias, data privacy violations, and excessive dependence on black boxes. The authors, therefore, suggest a slow, constitutionally informed implementation, and constant control and collaborative design among judges, lawyers, technologists, and child protection professionals. Finally, the article supports a human-augmented, as opposed to technology-focused, method of judicial decision-making, retaining procedural fairness, but exploiting the potential advantages of data-driven justice.

Keywords: POCSO, Machine Learning, Bail Assessment, Risk Prediction, Judicial Reform.

I. THE IMPERATIVE FOR REFORM: BAIL DECISION-MAKING UNDER POCSO:

Bail, as a concept, is deceptively simple: it seeks to balance the right of an accused to liberty with the interests of justice and public safety. Yet, when applied to offences under the

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

Protection of Children from Sexual Offences Act, 2012 (POCSO), this seemingly straightforward idea suddenly becomes a labyrinthine challenge. Anyone who has observed or studied bail practice under POCSO will immediately recognise a persistent tug-of-war between ensuring the safety of children and upholding the rule of law that insists even the accused deserve fairness, dignity, and a chance at liberty until proven guilty. How, then, did we arrive at a point where well-meaning protections for children have at times resulted in justice being delayed or even denied for both survivors and the accused?¹ It is tempting, in legal studies, to consider the law as merely a set of written rules, but the real picture is messier and far more ambiguous. In the case of POCSO, lawmakers rightfully sought to fix glaring lacunae in child protection. Special procedures, typically stricter bail provisions, and a generally child-sensitive approach were enshrined with noble intent. Yet these very safeguards—sweeping in nature—quickly transformed bail under POCSO into a practical minefield. For almost every alleged offence, bail is presumed unlikely unless exceptional circumstances arise.² Judges are made to walk on a tightrope, ever aware that one wrong decision could expose a child to further harm. But at the same time, it is equally true that routine, almost mechanical denials of bail have led to hundreds, if not thousands, languishing in overcrowded prisons. The pendulum, so to speak, seems to swing from one extreme to the other, with little middle ground.³ These real-world consequences are not lost on those who navigate the criminal courts daily. For accused persons, especially those who are later found to be innocent or were only peripherally connected with a case, the current system can at times seem brutal. Months in detention await them as courts, often overburdened, prioritise trial backlogs over speedy hearings for bail. In some cases, individuals spend more time awaiting trial than the maximum punishment for the offence

¹ Morin-Martel, 'Machine learning in bail decisions and judges' trustworthiness' (2023) PMC10120473.

² S Bhupatiraju, 'The Promise of Machine Learning for Bail in Indian Criminal Justice' (2021) NLSIR.

³ *Ibid.*

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

itself.⁴ It is difficult to reconcile this reality with the constitutional promise of “*innocent until proven guilty*.” Even more troubling, in a country where social stigma can be as damaging as legal sanction, the mere act of being accused under POCSO sets off a cascade of personal and social consequences from which recovery may be impossible, regardless of eventual acquittal.⁵ This isn’t simply a case of hard laws making bad situations worse. The system itself seems to double back on its purposes: the more it tries to safeguard the welfare of the child—understandably, the centre of POCSO—the more it can, paradoxically, undermine core legal values. Mistakes, ambiguities, and inconsistencies creep in. Judges operate without reliable risk assessment tools.⁶ Instead, decisions about a person’s freedom may rely on incomplete police files, hazy eyewitness accounts, or, at times, simply a judge’s hunch, sharpened by years on the bench but ultimately limited by the evidence and time at hand. As a result, two accused in near-identical circumstances may receive drastically different outcomes, with little explanation beyond judicial “*discretion*.”⁷ Still, judicial officers are painfully aware that a decision granting bail that precedes any subsequent misconduct will be judged harshly by the public and their superiors. Small wonder, then, that the safer—and sometimes more politically expedient—option is to simply keep the accused in custody.⁸ Yet, the consequences of bail delays extend well beyond the accused. Survivors and their families are often led to believe that prolonged detention of the accused automatically guarantees safety or closure. But the reality on the ground is much more complicated: lengthy criminal proceedings, often delayed further by crowded dockets and logistical chaos, mean survivors must face repeated court appearances, endure cross-examination, and have their lives held in limbo, sometimes for

⁴ Kutala and Korimi, ‘Bail Reckoner: A Machine Learning-Based Solution to Predict Bail Eligibility’ (2025) 11 Int’l J Sci Res & Engg Trends 1791.

⁵ *Ibid*.

⁶ Laura and John Arnold Foundation, ‘Pretrial Risk Assessment Tools’ (2013).

⁷ Chugh, ‘Alexa... Jail or Bail?’ (2021) TechLawForum.

⁸ Morin-Martel (n 1).

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

years.⁹ The intended “*protection*” provided by non-bailable offences under POCSO thus sometimes becomes another form of drawn-out trauma.¹⁰ If one were to survey the present landscape with an honest, critical eye, the verdict would be sobering. The heightened procedural barriers intended to protect children haven’t led to uniformly better outcomes for survivors; they’ve more often resulted in delayed justice, a crammed legal system, and the questionable detention of many low-risk or falsely accused individuals.¹¹ It is not uncommon to encounter police citing the ‘seriousness’ of the charges as grounds for routine opposition to bail, prioritizing administrative caution over nuanced judgment.¹² And one cannot ignore how public outrage, fanned by sensationalist media reporting, sometimes shapes prosecutorial and judicial behaviour in ways that blur the lines between upholding justice and responding to mob sentiment.¹³ So, what is the way forward? A system that relies solely on the subjective instincts of even the best-intentioned judges, operating without structured decision-making tools, is almost doomed to produce inconsistency and, at times, injustice.¹⁴ If POCSO is to fulfil its dual promises—safeguarding children while upholding the legal rights of anyone caught in its net—then an analytical, risk-based approach to bail is needed. This means grounding bail decisions in empirical evidence, introducing transparent, structured criteria, and building in procedural safeguards to prevent arbitrary, ‘*one-size-fits-all*’ outcomes.¹⁵ Such an approach does not mean we jettison human judgment or the unique context of each case; rather, it means giving decision-makers better tools, more reliable data, and greater confidence that their choices serve both the law and the real, human persons who stand before them.¹⁶ This is the critical juncture

⁹ S Bhupatiraju (n 2)

¹⁰ Morin-Martel (n 1)

¹¹ Kutala and Korimi (n 4)

¹² Chugh (n 7)

¹³ S Bhupatiraju (n 2)

¹⁴ Laura and John Arnold Foundation (n 6)

¹⁵ Chugh (n 7)

¹⁶ Laura and John Arnold Foundation (n 6)

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

at which POCSO's bail regime currently stands: between the compelling urgency of child protection and the equally fundamental call for fair, principled, rights-based adjudication. Any reform, whether technological, doctrinal, or procedural, must therefore proceed from a sound understanding of the system's lived deficiencies and the sometimes unintended harms of its best intentions.¹⁷ The ultimate challenge, and aspiration, must be to craft a model that is at once humane, effective, and flexible—ensuring that justice is not only seen to be done but truly felt and lived by all those who pass through its gates.¹⁸

II. MACHINE LEARNING AND RISK-BASED BAIL

ASSESSMENT: CONCEPTUAL FOUNDATIONS:

To understand how machine learning could reshape bail decisions, especially in sensitive POCSO cases, it is helpful to step back and reflect on why judicial intuition, that almost mystical quality so venerated in legal circles, may no longer be sufficient. The raw number of cases, the diversity of facts, and the stakes for both survivors and accused have become overwhelming. Ask any lawyer or judge: even the most "seasoned" instincts falter when faced with mountains of paperwork and the relentless variability of human conduct. In this space, machine learning doesn't arrive as a conqueror, but as a cautious, data-driven partner, capable of drawing on insights buried so deep in the record books that no person could extract them alone.¹⁹ If you boil it down, machine learning is simply about noticing patterns: when did the accused return to court as promised? What circumstances led to repeat offences or false accusations? It's a form of collective memory, but one that's unemotional, relentlessly systematic, and, ideally, free from the particular pressures that might lead a judge astray. For

¹⁷ S Bhupatiraju (n 2)

¹⁸ Morin-Martel (n 1)

¹⁹ Carpenter, 'Algorithms in the Criminal Justice System: Assessing the Use of Risk Assessments in Sentencing' (2024) 31 Harvard J Law & Technology 71.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

Indian bail determinations, especially under POCSO, this is not a luxury; it's becoming a necessity. Here, models are “trained” by feeding them huge datasets, actual judgments, charge sheets, affidavits, and trial outcomes. Through iterative learning, the system starts noticing that certain factors, a prior record, perhaps, or the way an FIR is drafted, or details of a family relationship, are often linked with a higher or lower chance of absconding or interference.²⁰ What's fascinating isn't just the data-processing power, but the way this approach reshapes the logic of bail. Traditionally, a judge, in good faith, might rely on intuition or “*feel for the case.*” But we know, from painful experience, that intuition alone often reflects unconscious bias, burnout, and the subtle influence of public pressure. Patterns seen across hundreds and thousands of cases simply can't be held in a single mind. When deployed with care, ML allows courts to see far beyond the anecdotal, spotting structural risks and safe opportunities for pretrial release that would otherwise go unnoticed.²¹ The technical process, though complex, mirrors human decision-making in some ways. First, court records and FIRs are run through natural language processing: think of it as building a structured map from a mess of files, extracting, for example, the accused's age, presence of prior offences, the relationship to the survivor, or even the typical delays in local police reporting. Next comes “feature engineering”: legal researchers, together with techies, debate which factors matter in Indian settings, especially in POCSO. Does a rural background increase the risk? How about the presence of family support, school enrolment, or a prior history of acquittals? It's an act of both legal reasoning and social awareness.²² All this data, once curated and cleaned, is then run through supervised learning models calibrated on actual outcomes. *Was bail granted? Did the accused return to court and comply? Did any witness complain of intimidation?* The model learns,

²⁰ Deshmukh and Kamble, 'Legal Data Mining for Bail Order Analysis: An Empirical Study Across Indian States' (2024) 8(2) Law & Technology Review 22.

²¹ Prasad et al, 'Towards Automated Risk Assessment: Lessons from Indian Court Data' (2025) 19(3) Indian J Artificial Intelligence and Law 127.

²² *Ibid.*

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

slowly but visibly, which factors actually matter in practice—not just in theory. And critically, the modern generation of “*explainable AI*” stands as an answer to the old distrust of black boxes. Legal professionals now demand, and rightly so, not just a back-of-the-envelope risk number, but a clear map of why the number comes out as it does. If a judge, or even a defence counsel, can see that a risk prediction leans, say, on a prior failed court appearance or an unsubstantiated claim, they can challenge it, explain it to a client, or even override it in the name of equity.²³ Challenge and context are key: we know that data, out of context, can be dangerous. Many POCSO cases involve not hardened criminals but teenagers, misunderstandings, or family disputes. If a risk assessment tool blindly overweights previous non-violent offences or misreads cultural norms, treats, for instance, the reporting delay as evidence of guilt instead of a symptom of trauma or stigma, then it’s not mitigating bias but hardcoding it.²⁴ That’s why, behind every algorithm, there must be relentless data-checking, continuous updates, and, yes, humility about what numbers can and can’t capture. *It’s also worth pausing on the local flavour:* Indian research teams, sometimes law students, sometimes data scientists, have begun compiling and annotating massive datasets like the Indian Bail Judgments Dataset, not just copying Western templates but tuning models to the idiosyncrasies of district courts, language, and statutory context.²⁵ Some recent prototypes are even judge-facing: dashboards let judicial officers visualise risk by district, see their own patterns over time, and, perhaps most importantly, interrogate outlier recommendations that clash with local common sense or lived experience.²⁶ Internationally, the cautionary tales are as important as

²³ Sharma & Singh, 'Transparency in Algorithmic Justice: Indian Challenges and Global Solutions' (2025) 14(1) Indian Law Review 105.

²⁴ Chatterjee, 'Algorithmic Fairness in Indian Criminal Justice: Theory into Practice' (2023) 41 National Law School J 47.

²⁵ Kamble et al, 'Project Nyaya: Towards Data-Driven Criminal Justice in India' (2024) 2 Annual Review of Law and Data Science 63.

²⁶ Gupta et al, 'Judicial Dashboards and Machine Learning: Practical Tools for Indian Bail Hearings' (2025) 39(4) Justice Tech Quarterly 210.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

the triumphs. American risk-assessment tools like COMPAS were embraced to reduce arbitrary detention, but later found to be racially biased and deeply non-transparent. European models, meanwhile, have emphasised incremental adoption, always keeping a “*human in the loop*”, a lesson Indian reformer would be wise to heed.²⁷ So, where does this leave Indian POCSO bail reform? If designed carefully, machine learning could finally provide our courts with evidence-driven, transparent guides for some of their hardest decisions. But used carelessly, or left unchallenged, it could simply become another mystifying barrier between law and justice. The challenge, and indeed, the opportunity, is not technical, but ethical and institutional: assembling diverse teams, updating models with real-world feedback, and rigorously safeguarding both privacy and procedural fairness. Only then can technology shift from being a threat or panacea to becoming a genuine tool for better, more consistent, and above all, more humane justice.

III. CORE OPPORTUNITIES AND CHALLENGES IN DEPLOYING

MACHINE LEARNING FOR BAIL UNDER POCSO:

Using machine learning to help make bail judgments under legislation like POCSO is a brave and possibly game-changing move. At its best, it offers a justice system that is more logical, consistent, and fair. This is something we all want but often have trouble putting into action. But there are a lot of questions that we can't ignore on the way to employing this kind of technology. We are dealing with situations that have to do with the safety and rights of children, as well as the rights of the people who are charged. It's a tricky balance that doesn't let you blindly trust technology or discard it out of hand.

- **What Machine Learning Could Offer:**

One of the most fascinating things about machine learning is that it may make choices fair and consistent. We all know that bail hearings depend a lot on what the judge thinks, how they

²⁷ European Law Institute, 'Guidelines for AI Use in Bail Decisions' (2023) ELI Review Series 7.

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

feel, their experience, or even small local pressures. That means that extremely similar scenarios can end up with very diverse results. Machine learning systems, on the other hand, offer to make it such that risks are always evaluated in the same way, so that similar cases are always handled the same way, no matter where they come up. It offers us optimism that we may make the system fairer for everyone and reduce the unpredictable swings of luck or prejudice in bail decisions.²⁸ Another big benefit is that it cuts down on unnecessary time spent in jail before trial. It's a terrible injustice when people are kept in jail for months or even years without a trial, even though they don't pose much of a threat. Judges could use machine learning to get a better idea of who really needs to stay locked up and who can be safely let go. This would ease the burden on overcrowded prisons and keep people from losing their freedom unfairly.²⁹ When machine learning is done well, it also makes things clearer. This openness increases trust when algorithms explain why a certain choice is suggested and detail the reasons that affected the risk assessment. Defendants, their lawyers, and judges can all see how decisions are made and ask questions if they need to.³⁰ This isn't about automatic magic; it's about making conversations smarter and more accountable. Lastly, we can't disregard the efficiency improvements. The courts are quite busy, and it can be a long and hard procedure to decide on bail. Judges will be able to focus on the more human aspects of justice if machines can quickly and accurately handle routine risk evaluations. These are the parts of justice that no computer can ever fully understand.³¹

● ***Where the Stones Are on the Path:***

²⁸ Hopkins and Viganola, "AI and the Rule of Law: Challenges of Fairness in Automated Judicial Systems" (2024) 25 Legal Ethics 31.

²⁹ Altieri and Kang, "Judging with Algorithms: Experimenting with AI Bail Assessments" (2023) 88 U Chi L Rev 225.

³⁰ Fernandez and Pillai, "Transparency and Trust in Indian Legal AI: Lessons from Pilot Programs" (2023) 5 J Empirical Legal Stud 78.

³¹ Monroe, Ghale, and Dasgupta, "Criminal Justice and Digital Transformation: The Impact of ML-based Case Management in Indian Courts" (2023) 11 Int J Law & Tech Innovation 41.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

But there are big problems that need to be solved first. Bias is the most worrisome thing that everyone is worried about. Machine learning models only know what's in the data used to train them. The data we have in India's legal system is frequently a complex picture of past disparities. Caste, religion, gender, and class are all social factors that affect who is arrested, charged, and convicted, and consequently, what is in the records.³² It wouldn't be unexpected if an algorithm learned the wrong things and spread those ideas. The stakes are very high in POCSO instances since underreporting and stigma make the data even more confusing. To stop the system from continuing to be unfair, it is important to always be on the lookout, be open, and make changes. Using sensitive demographic information like caste or religion is another problem. Even while this information might help make better predictions, India's constitutional responsibilities to equality suggest caution. We can't give up our essential values for the sake of being more efficient. There needs to be clear rules on what information can be used to make decisions and how.³³ Then there's the problem of gaining trust through openness. Many people think of complex algorithms as "black boxes" that give results that no one really understands. Confidence and legitimacy fall apart when there aren't clear answers. This is especially true in POCSO situations, where the emotional and social weight is huge.³⁴ Courts, lawyers, and defendants need more than simply statistics to understand risk scores. They need clear, useful explanations. This brings us to the most important point: machine learning should never take the role of people. The Indian judicial system needs to be fair in how it works. Everyone has the right to be heard, question evidence, and get a verdict that is specific to them. Algorithms can help make these choices, but they can never replace the judge's deep

³² Agrawal and Srinivasan, "Algorithmic Discrimination and Legal Realism in India's Emerging AI Justice System" (2025) 7 Law & Society Review Asia 13.

³³ Nagda, "Assessing The Ethical Implications Of AI-Assisted Sentencing In Criminal Justice" (2025) IJLLR 14(2) 350.

³⁴ Fine, "Public Perceptions of Judges' Use of AI Tools in Courtroom Decision-Making" (2025) PMC12024057.

**Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,**

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

understanding and empathy.³⁵ *India's uneven infrastructure makes things very difficult in real life. Not all courts have digital case files or dependable data systems;* a lot of them still use handwritten records or databases that aren't always accurate. Machine learning models that exclusively use the best-resourced courts make inequality worse and leave the most vulnerable behind.³⁶ To close this gap, the whole judiciary needs to be trained and given money up front. Privacy issues in POCSO instances need to be given extra attention. Above all else, we must defend the identity and dignity of child survivors. Without adequate protection, even data that has been anonymised can be re-identified. To keep information private, there must be strong encryption, rigorous rules about who can see it, and a culture of legal and ethical responsibility that stops people from misusing data.³⁷ If these steps aren't taken, people may lose faith in both technology and the law.

- **Making Technology Work for POCSO:**

Last but not least, it's crucial to remember that each POCSO situation has its own set of risks. A machine learning tool that works for all types of bail situations won't function here. These kinds of cases often involve young people, complicated family relationships, complicated forensic details, and problems with evidence that general models might not be able to handle. If we want technology to help instead of hurting, we need to make custom tools that take these things into account.³⁸ Making sure that victims' identities are kept secret is also very important. It is against the law to reveal the identities of survivors. ML tools must have privacy built in

³⁵ Deshmukh et al., "The Perils and Promises of Artificial Intelligence in Criminal Sentencing in India" (2024) IJLT.

³⁶ Desai and Ramanathan, "Data, Dockets, and Due Process: Rebuilding the Digital Foundations of India's Criminal Courts" (2024) 12(1) Tech, Law & Policy J 55.

³⁷ Kaur, "Privacy by Design in Indian Legal Information Systems: Pitfalls and Prospects" (2025) 17(3) Asian Data Law J 103.

³⁸ Dixit and Bharadwaj, "Bespoke Machine Learning Risk Models for Child Protection in Indian Courts" (2025) AI Socio-Legal Rev 13(1) 145.

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

at a very deep level, with regular checks, audits, and accountability systems that allow no space for mistakes.³⁹

IV. OPERATIONALISING AN ML-DRIVEN BAIL SYSTEM UNDER POCSO:

Making machine learning-powered bail assessment a real, useful tool in India's complicated and varied judicial system is a long process that involves both technological challenges and important social responsibilities. The "Bail Reckoner" is an example of an early attempt to show how difficult these problems are. It shows that using AI in POCSO bail procedures isn't just about coding or math; it's also about following the law's spirit, taking into account India's many different situations, and carefully managing some of the most vulnerable people in our criminal justice system. The most basic thing that has to happen for such a system to be built is careful and thorough data collection. One of the biggest problems is that there is a lot of legal data in India, but it is quite inconsistent. It is spread out over judgments, First Information Reports (FIRs), charge sheets, police records, and procedural filings, and it is held by different courts in different formats. One way to do this is through the Bail Reckoner project, which brings together large datasets from POCSO cases and laws like the Indian Penal Code (IPC) and the Code of Criminal Procedure (CrPC) to make sure there is a complete legal foundation.⁴⁰ But raw data isn't enough on its own. Advanced natural language processing (NLP) techniques help turn legal documents that are full of text into inputs that a machine learning system can use. These NLP engines can handle the difficulties of Indian legal language, which includes a mix of languages, procedural complexity, and even strange comments from judges. They find the most important data, separate the key legal issues, and make organised representations of

³⁹ Lin, "AI, Child Protection, and Data Privacy in the Global South" (2024) Child Rights Data J 6(3) 99.

⁴⁰ Deshmukh and Kamble, "IndianBailJudgments-1200: A Multi-Attribute Legal NLP Dataset for Bail Order Understanding in India" (2025) arXiv:2507.02506v1.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

cases that can be examined by computers. Think about how hard it is to understand: figuring out what a judge meant by a subtle comment regarding the credibility of a witness or recognising the specific section of POCSO charged. All of these things can have a big impact on the risk profile, but they are hidden in long legal writing.⁴¹ The next step is the important "*feature engineering*" stage. Here, legal knowledge and data science need to be very close to one another. To discover which factors affect bail judgments, you need to know a lot about POCSO's unique situation. It's not just the seriousness of the crime or the accused's record that matters. It's also things like the fact that the accused is a child, the relationship between the victim and the accused, community circumstances, or the potential of witness intimidation. It is important for model accuracy and fairness to design features that capture these specific details while filtering out noise and systemic biases.⁴² Once the features are set, the system starts a supervised learning process. It does this by giving the algorithms labelled past bail applications and court decisions to "train" the machine to find patterns that are linked to getting or not getting bail, following the rules or breaking them, and things that make judges more or less sensitive.⁴³ But that's only the beginning of training. Models go through strict cycles of validation, cross-validation, and recalibration, and they are always evaluated against new case data to make sure they don't become irrelevant or biased. Both Indian pilots and international experience stress the importance of being open and clear about everything. No judge, lawyer, or even the person who is accused can just trust a "*risk score*" that isn't clear without knowing why it was given. Because of this, new machine learning systems use explainable AI frameworks to show how different elements affect the overall risk estimate. Did the model put a lot of weight on the fact that the accused didn't have a criminal record before? Was the crime so bad that it tipped the scales? Was there any evidence that witnesses might have been scared

⁴¹ *Ibid.*

⁴² Dixit and Bharadwaj (n 38).

⁴³ Bhatnagar and Huchhanavar, "Predicting delays in Indian lower courts using AutoML and Decision Forests" (2023) arXiv:2307.16285.

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

off? By making these parts public, systems give judicial actors the power to carefully consider recommendations, build trust, and, most significantly, challenge or ignore evaluations when justice calls for it.⁴⁴ The user interface is also designed to be clear and easy to use, in addition to these technical features. Because Indian lawyers have different levels of tech knowledge, modern tools like the Bail Reckoner offer support in multiple languages, voice-enabled inputs, and easy-to-use dashboards that make complicated outputs easy to understand.⁴⁵ Judges, public prosecutors, and defence attorneys may all dynamically use the system thanks to features like case categorisation by bailability and recidivism risk. This makes the technology an addition to, not a replacement for, judicial discourse. Data governance puts a protective covering across the whole architecture. When dealing with sensitive data in POCSO cases, there are non-negotiable obligations that must be followed. These include encrypting data both at rest and in transit, rigorous access permissions, anonymisation processes, and continuing compliance with national data protection rules.⁴⁶ These protections are especially important when breaking the confidentiality of a victim could have terrible effects outside of the trial. People must also learn new skills to go along with new technology. It is very important to teach judges, court workers, and lawyers about the system's strengths, weaknesses, and how to use it in an ethical way. Without this, even the best tools could be misused or not used enough, which would mean they wouldn't work as well as they should.⁴⁷ Programs that help people learn this skill encourage a culture of informed decision-making, with technology as a tool rather than a crutch. Keeping procedural fairness is just as vital. Systems must be built into adversarial processes that let the accused and the prosecution question or add to risk evaluations. To make sure that appellate courts can see everything, detailed audit trails should be kept. This will also help models get

⁴⁴ Joshi, "AI Governance in India—Law, Policy, and Political Economy" (2024) 25 JAI Gov 44.

⁴⁵ MagicSlides, "Bail Reckoner empowers undertrial prisoners by simplifying their path to justice" (2025).

⁴⁶ Drishti IAS, "AI and India's Legal Landscape" (2024).

⁴⁷ Sanghvi et al., "E-courts and the Evolution of Digital Justice in India" (2024) Indian J Law & Tech Policy 9(2) 210.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

better over time.⁴⁸ This follows the fundamental rights to a fair hearing and individual judicial attention. There is good evidence from around the world and India. Studies from throughout the world suggest that using risk-assessment tools wisely can assist in keeping people safe while lowering the number of people who are held in jail before their trial.⁴⁹ Pilot deployments in India demonstrate the same trend, with improvements in both efficiency and justice, as long as local calibration and stakeholder participation continue.⁵⁰ The way forward is apparent, but it's not easy. As digitisation spreads and the legal system grows more tech-savvy, machine learning is sure to be a great help to India's courts. But for it to work, it needs to be balanced, respect the human side of the law, be honest about how it works, and be open to continual criticism. The technology must remain a servant of justice, not its master.

V. THE ROAD AHEAD: BETWEEN HOPE AND CAUTION:

The idea of using machine learning to help figure out bail under the Protection of Children from Sexual Offences Act (POCSO) is going from a pipe dream to a serious problem that needs to be solved right away. This is happening while the Indian legal system tries to find a middle ground between tradition and modernity. Given the rising number of cases clogging the courts, the frequent delays, and the calls for more fair and open justice, it's easy to see why algorithmic systems that promise to bring order and transparency to long-disorganised judicial processes are so appealing. But as more people become interested in "*tech-enabled justice*," it is important to think carefully about how technology can be used in a way that is moral and within the traditional values and protections of Indian law. The ability of machine learning to make decisions that are more consistent and based on evidence from the real world is probably the most interesting part of this. Sometimes, local pressure, busy schedules, or the personal beliefs

⁴⁸ Joshi (n 44).

⁴⁹ Kleinberg et al., "Human Decisions and Machine Predictions" (2017) 133 Q J Econ 237.

⁵⁰ Bail Reckoner Review Paper After Changes (2025) Scribd.

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

of judges have changed the outcome of court cases. But right now, pattern recognition-based predictive tools seem to be the best way to make sure that similar cases are handled the same way and that the reasons for decisions can be looked at and talked about.⁵¹ For the families and communities affected by these decisions, this is more than just a technical change; it is a way to restore faith in the law itself. But adding new technology isn't enough to use machine learning in POCSO bail decisions. India's social and legal system is very sensitive and different from others when it comes to protecting children's rights, dignity, and safety. In addition to following the law, technology used in this way must be very aware of the weaknesses and real lives of everyone it affects.⁵² So, even though change is necessary, it must happen slowly and be the result of a promise to make honest, careful changes. The best thing to do is to slowly roll out AI-based risk assessment tools and do careful pilots. To avoid making big changes all at once, it's better to test the system's reliability, make sure that all communities are treated fairly, and get ongoing feedback from judges, legal aid organisations, and the people involved.⁵³ You should be able to understand the newest algorithm instead of just trusting it. Responsible innovation includes doing research, analysing things all the time, and being willing to get rid of or change things that don't work. There also needs to be clear legal rules. One of the most important parts is setting rules about what kinds of data, especially sensitive demographic data like caste, religion, or economic status, can and can't be used to back up algorithmic risk assessments. Some information, like a person's criminal record or whether or not they posted bail, may help make accurate predictions. But other information could make biases that the law is meant to fight stronger.⁵⁴ People should be able to see not only the data used to conclude, but also the methods and reasons behind those methods. Transparency is better than good practices. They also need to have the right tools to challenge what machines produce. The

⁵¹ Sanyal, "AI in Indian Courts: Transparency and Fairness Imperatives" (2025) 13 Indian J Law & Tech 57.

⁵² Rao, "Constitutional Considerations in Algorithmic Justice" (2024) 42 NLS Law Review 83.

⁵³ TechLawForum, "AI Piloting and Regulation in Indian Legal Systems" (2024).

⁵⁴ Menon, "Regulating Algorithmic Fairness: The Indian Context" (2023) 21 J Empirical Legal Studies 109.

***Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,***

***Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.***

whole legal system also needs to spend a lot of money on digital education and capacity building to get ready for the new technological age, in addition to these big changes. Judges, prosecutors, defence attorneys, and court administrators will all need to be able to read, understand, and, if necessary, challenge algorithmic inputs. This is more than just something that machine learning systems can learn about.⁵⁵ Without this, people who make decisions might rely too much on risk scores, even when the details of the case show that more research or a different plan is needed than what the algorithm suggests. We also need to look closely at the procedural core of the criminal justice system.

We can't let technology take away the rights of those who are accused to have their cases heard and decided based on the facts presented to the court. Judges should use algorithmic recommendations as starting points when making decisions, not as conclusions. The judge must still be an unbiased arbiter, and both sides must still have the right to an adversarial debate and the adversarial process.⁵⁶ Clear written reasons for bail decisions, regular audits, and strong appeals procedures can all help make sure that India's long-standing procedural protections are not put at risk by the introduction of new technology. Another reason to be careful is that the information in POCSO cases is very sensitive. Not only is the law on the side of the children and families involved in these kinds of situations, but so is moral responsibility. As new computers digitise and analyse legal data, the chances of unintentional disclosure, a cyber-incident, or even indirect re-identification go up. So, the move to AI-assisted justice needs strict encryption standards, role-based access controls, regular legal audits, and cultural training for all system operators.⁵⁷ It is not negotiable that these protections are in place and that there isn't

⁵⁵ Kutala and Korimi, "Bail Reckoner: A Machine Learning-Based Solution to Predict Bail Eligibility" (2025) 11 Int'l J Sci Res & Engg Trends 1791.

⁵⁶ Reddy, "Procedural Safeguards in the Age of AI: A Legal Analysis" (2024) 29 Indian Journal of Human Rights 67.

⁵⁷ Chatterjee, "Child Rights and Data Protection in AI Systems" (2023) Asian Human Rights Review 14.

Title: Tech-Enabled Justice: Using Machine Learning for Risk-Based
Bail Assessment under POCSO,

Authored By: Ms. Shweta Jain, Research Scholar, Ph.D (Law) & Co-
Authored By: Dr. Maneesh Yadav, Professor, College of Law and Legal
Studies, Teerthanker Mahaveer University, Moradabad, India,
Email Id(s): shweta03apr@gmail.com, maneeshy.law@tmu.ac.in.

a "one size fits all" approach to machine learning for bail. In particular, POCSO cases involve things that are unique to child protection, such as different ages, complicated relationships, changing standards of evidence, and caring for survivors after they are lined up. These numbers are usually higher than those in regular criminal datasets. To make AI solutions work for kids and families, experts from different fields, like child psychologists and welfare officers, may need to work together. This is to make sure that risk assessments are correct and take into account the specific situations of each child's life.⁵⁸ The last, less obvious risk is that there could be new kinds of confusion and red tape. AI could be scary and make people feel alone. It could be like a new "black box" that no one understands, trusts, or that fixes the problems with justice. This could happen if systems are put in place without careful training, user design, and broad participation.⁵⁹ The relationship between the community, technology, and the law must be honest for real change to happen. This is a process that will take time and requires humility, regular reflection, and a willingness to listen to the people who will be most affected. To put it simply, having the latest technology isn't enough to use machine intelligence successfully in POCSO cases. Real progress can only be made if you find the right balance between being open to new ideas and being dedicated to justice, equality, and human dignity. To make the legal system more fair, efficient, and kind, machine learning needs to be developed with openness, moral values, ongoing learning, and an understanding of the many different parts of Indian society. When these ideas lead to change, a model of reform could be made that many other justice systems around the world, including India's, could use to find a way to balance the best values of society with the potential of technology.

⁵⁸ Sharma and Joshi, "AI Adaptation for Child-Protection Legislation: The Need for Contextual Models" (2025) 47 Indian J Soc Policy 134.

⁵⁹ Gandhi, "From Black Box to Glass Box: Rebuilding Trust in Algorithmic Justice" (2023) 18 Law, Technology & Society 229.