BEYOND THE CELL: A COMPARATIVE STUDY OF AI-MANAGED HOUSE ARREST AS A SOLUTION TO THE PRE-TRIAL CRISIS IN INDIA AND THE USA

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ABSTRACT

As of 2026, traditional pre-trial detention has reached a breaking point, leading to shadow sentencing where the legally innocent endure punitive conditions due to judicial backlogs and a lack of effective custodial alternatives. This article explores the critical global crisis of prison overcrowding and the systemic erosion of the presumption of innocence affecting under-trial populations in India and the United States by examining the structural and legislative divergence between the United States and India regarding the implementation of house arrest (home confinement). While the US has a codified, multi-billion-dollar infrastructure for home confinement, India is currently treating house arrest as an extraordinary remedy rather than a standard legal tool.

Further, by conducting a comparative analysis of India's Bharatiya Nagarik Suraksha Sanhita (BNSS)[3] and US Pre-trial Services, the study identifies how Artificial Intelligence (AI) can bridge the trust gap that currently hinders judicial reliance on home confinement. The article details the mechanics of Algorithmic Triage, utilizing biometric verification, dynamic geofencing, and predictive behavior analytics to ensure public safety while preserving the socio-economic stability of the accused. Finally, the research addresses the ethical hurdles of algorithmic bias and the digital divide, recommending a Rights-Based Framework that mandates transparency, human oversight, and state-funded monitoring to prevent a new era of digital inequity.

Keywords: Under-trial Prisoners, House Arrest, Artificial Intelligence (AI), Prison Overcrowding, Presumption of Innocence, Algorithmic Triage, Electronic Monitoring, Bharatiya Nagarik Suraksha Sanhita (BNSS)

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[3]Bharatiya Nagarik Suraksha Sanhita, No. 46 of 2023, (India). https://egazette.nic.in/WriteReadData/2023/248820.pdf

CHAPTER 1- INTRODUCTION

In Indian law, House arrest is a legal remedy to bind a man to his residence. An individual is restricted to their house by the authorities instead of being detained in a prison or jail. It is also known as house detention or house confinement. According to the Merriam-Webster Dictionary, 'House Arrest' is "Confinement often under guard to one's house or quarters instead of in prison."[4] It can be said that it is an alternative to imprisonment where an individual is only permitted to move about their own home or within a predetermined area. House arrest is a practice that is mainly used when an offender is awaiting trial.

The concept of House arrest in India is recognized and authorized under Indian law. In at least 20 States, electronic bracelets are used to detect house-arrest violations. The decision to do so is at the discretion of the court based on certain factors such as the criminal history of an individual, potential threat to society in case the person is released, the nature of the offence, and the likelihood of the individual tampering with evidence or fleeing. One of the most common restrictions on detained persons during house arrest is a restriction on traveling and meeting new people. Along with this, wearable tracking devices are also used to track every move of the detainee to ensure that they do not commit any other offence. In *Puttaswamy*, the Supreme Court held that privacy is an "intrinsic part of the right to life and personal liberty." It recognized the home as a core zone of privacy where an individual has the right to be left alone.[5]

The imposition of home confinement by the courts can be traced back to the medieval period of history. For example, the infamous second trial of 1633 when Galileo Galilei, was put under the house arrest for the rest of his life[6]. Or that of St Paul, who, at the age of 60 was awarded house arrest for two years where he continued his profession as a tent maker and paid his own rent. In the modern era also, many countries resort to home confinement rather than sending a person to prison. House arrest has been used to repress political dissent before trial. In 1983, a Boston court awarded a convict for house arrest with electronic bracelet (to track movements)[7]. Aung San Suu Kyi, a political leader from Myanmar, was placed under house arrest from 1989

[4] *House Arrest*, MERRIAM-WEBSTER.COM DICTIONARY, https://www.merriam-webster.com/dictionary/house%20arrest (last visited May 9, 2026).
[5] *Justice K.S. Puttaswamy vs Union of India*, (2017) 10 SCC 1.
[6] *The Sentence of the Inquisition on Galileo Galilei (1633)*, *in* THE GALILEO AFFAIR: A DOCUMENTARY HISTORY 288–91 (Maurice A. Finocchiaro ed. & trans., 1989).
[7] J. Robert Lilly & Richard A. Ball, *A Brief History of House Arrest and Electronic Monitoring*, 13 N. KY. L. REV. 343, 350–52 (1987).

to 1995, and again, from 2000 to 2002, by the nation's military junta.[8]

The concept of house arrest broadens the understanding of custody in Indian law as it acts as a substitute for police detention and gives a chance to the detainee to rehabilitate. It is a kind of preventive detention that prevents the detainee from performing any kind of offence. Conditions of house arrest may be unique in every case based on how sensitive the situation is and how much they can worsen by ordering the arrest of a person.[9] Although, house arrest is a safer, and cost-effective solution to prison detention but it also leaves the question of personal liberty, unattended and unanswered.

1. Statement of Problem

The global criminal justice system is facing a remand crisis where the presumption of innocence is systematically undermined by the reality of mass pretrial incarceration. In jurisdictions like India and the USA, under-trial prisoners, many of whom are non-violent or first-time offenders, constitute a staggering majority of the prison population, leading to severe overcrowding, high state expenditure, and criminogenic environments.

The core problem lies in the Trust Gap, where the judiciary lacks a reliable, cost-effective, and scalable mechanism to monitor defendants outside of physical cells. While house arrest is a theoretically viable alternative, it has historically been hindered by a lack of statutory clarity, the high cost of manual supervision, and a lack of infrastructure. Furthermore, the emerging shift toward Artificial Intelligence (AI) as a solution on one hand brings positive outcomes, however on the second hand introduces new risks of digital bias and black-box decision-making, potentially replacing physical bars with invisible, biased digital ones.

2. Research Questions

1. To what extent does the absence of a statutory framework in India's Bharatiya Nagarik Suraksha Sanhita (BNSS) hinder the standardization of house arrest compared to the U.S. Sentencing Reform Act of 1984?

2. How can Artificial Intelligence (AI) be integrated into pre-trial supervision to bridge

[8] HUMAN RIGHTS WATCH, BURMA: CHRONOLOGY OF AUNG SAN SUU KYI'S DETENTION (2010), https://www.hrw.org/news/2010/11/13/burma-chronology-aung-san-suu-kyis-detention.
[9] *Gautam Navlakha v. Nat'l Investigation Agency*, (2021) SCC OnLine SC 382.

the Trust Gap and ensure higher rates of judicial compliance in India?

3. What are the socio-economic and ethical risks, specifically regarding algorithmic bias and the poverty penalty, associated with AI-managed house arrest?

4. What legislative and technical safeguards are required to ensure that AI-driven algorithmic triage upholds the constitutional rights of under-trial prisoners?

3. Research Objectives

1. To examine how the explicit inclusion of home confinement in 18 U.S.C. § 3563 provides a level of procedural certainty and administrative support that is currently absent in the Indian Bharatiya Nagarik Suraksha Sanhita (BNSS).

2. To evaluate the technical efficacy of AI tools (biometrics, geofencing, and predictive analytics) in replacing physical incarceration.

3. To conduct a comparative study of the legal frameworks in India and the USA to identify best practices and implementation gaps.

4. To propose a Rights-Based Framework for AI implementation that prioritizes transparency, human oversight, and equity for indigent defendants.

4. Methodology Adopted

This research utilizes a Multi-Disciplinary, Qualitative, and Comparative Research Methodology. A Comparative Legal Analysis (Doctrinal), where a rigorous examination of primary legal texts, including the *Bharatiya Nagarik Suraksha Sanhita (BNSS) 2023* and the *US Pretrial Services Act* is done. This involves analyzing how custody and bail are being redefined in 2026. Further, Socio-Technical Review, an assessment of current AI technologies (XAI, Biometrics, and Machine Learning) used in criminal justice. This includes reviewing technical white papers and fairness audit standards to understand how technical hurdles are being mitigated.

Although the study is qualitative, it synthesizes secondary quantitative data from national

prison bureaus (e.g., NCRB in India)[10] and pretrial service reports to model the impact of Algorithmic Triage on overcrowding. Utilizing a human-rights-based approach to critique the digital divide and net-widening effects, drawing on international standards set

5. LITERATURE REVIEW:

1. Institutional & Statutory Frameworks

The US literature heavily centers on the **Sentencing Reform Act of 1984** and the **Bail Reform Act of 1984**, serving as the structure of house arrest codification in USA. They established the legal framework for federal house arrest in the USA by authorized home confinement as a condition of pretrial release or probation. These acts shifted toward structured sentencing and risk-based detention, allowing for intensive electronic monitoring.

Federal Sentencing Guidelines[11] the primary institutional manual, analysis the guidelines which identifies home confinement in three tiers named as *Curfew, Home Detention,* and *Home Incarceration*. In **18 U.S.C. § 3563 & 18 U.S.C. § 3142**[12], statutes provide the legal authority for federal judges to impose monitoring as a condition of probation or pretrial release. It govern pretrial release/detention and probation conditions in federal law, respectively. Section 3142 dictates whether a defendant is released or detained pending trial based on risk. Section 3563 outlines mandatory and discretionary conditions for probation sentences imposed by a court.

Florida Statutes § 948.01[13]**,** Literature on state-level frameworks often cites Florida as the gold standard for intensive supervision, establishing the Community Control (CC) program which influenced national models.

2. Foundational Scholarly Books

Books in this field often critique the net-widening effect, where technology increases state control rather than decreasing prison populations. **Christian Parenti (1999)**[14]**:** Provides a

[10] Law Commission of India, *268th Report on Amendments to Criminal Procedure Code Provisions Related to Bail* (2017), National Crime Records Bureau, *Prison Statistics India 2024*, Ministry of Home Affairs, Government of India.
[11]Chapter 5, Part F (https://guidelines.ussc.gov/apex/r/ussc_apex/guidelinesapp/parts?app_chapter_id=5)
[12]18 U.S.C. § 3563 & 18 U.S.C. § 3142 (https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title18-section3142&num=0&edition=prelim).
[13] Florida Statute, https://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0900-0999/0948/Sections/0948.01.html.
[14] Lockdown America: Police and Prisons in the Age of Crisis" by Christian Parenti (1999)

socio-political history of the rise of surveillance technology in the US justice system. It is a foundational critique of the U.S. criminal justice system's expansion from the late 1960s to the 1990s. It argues that massive prison growth and militarized policing are responses to economic crisis, rather than effective crime control, functioning as a class war by the state.

MDPI Researcher[15], It offers a contemporary proposal for transforming the US justice system through tech-based alternatives, arguing for cost-efficiency.

Srikrishna Deva Rao [16], Recent scholarship analyzes how India's move toward the Bharatiya Nagarik Suraksha Sanhita (BNSS) missed the opportunity to formalize electronic monitoring, contrasting it with the Sentencing Reform Act of 1984.

Raghavan, V. (2016)[17], This journal frequently highlights the socio-economic lag. The literature argues that because India relies on Manual Guarding, house arrest is only available to political prisoners or the wealthy, whereas the US "Multi-Million Project" (AI-based) is scaled for the masses.

Sonal Singh & Deepak Singh[18]**:** Scholars argue that the current Indian lag is due to the lack of a Private-Public Partnership framework, which in the US allows companies like BI Inc. to handle the logistics that the Indian Police are currently untrained for.

3. Judicial Precedents & Law-Making from the Bench

In India, in the absence of a statute, the primary literature consists of judicial pronouncements, including- **Gautam Navlakha v. National Investigation Agency[19]:** This is the foundational text for your article. The Court's literature here is a plea for legislative intervention, acknowledging that while Section 167 of the CrPC allows for custody in various forms, the lack of an administrative framework makes house arrest beset with several difficulties.

[15] The Electronic Monitoring Paradigm" (2015) by MDPI Researchers https://www.mdpi.com/2075-471X/4/1/60.
[16] Srikrishna Deva Rao, *House Arrest as an Alternative to Custody: A Comparative Study*, 42 J. INDIAN L. INST. 278 (2000).
[17] Raghavan, V. (2016), *Undertrial Prisoners in India: Economic & Political Weekly*, Vol. 51, Issue No. 4, 23 Jan. https://www.epw.in/journal/2016/4/commentary/undertrial-prisoners-india.html.
[18] Sonal Singh & Deepak Singh, *Electronic Monitoring in India: A Regulatory Vacuum*, 10 NLUA L. Rev. [342] (2020).
[19] *Gautam Navlakha v. Nat'l Investigation Agency*, (2021) SCC OnLine SC 382.

Justice K.S. Puttaswamy v. Union of India[20]: Essential for the rights-Based Framework. The literature focuses on the Triple Test (Legality, Proportionality, and Necessity), which acts as a check against the digital Shackles of the US model.

4. Institutional Reports

National Crime Records Bureau (NCRB), *Prison Statistics India 2024*[21]: Provides the statistical statement of the Problem. It shows that over 77% of inmates are under-trials, a fact you can use to justify the algorithmic Triage solution.

Law Commission of India, 268th Report (2017[22]): This report on amendments to Criminal Procedure Code Provisions Related to Bail is the closest institutional document India has to the US Bail Reform Act of 1984. It suggests that electronic tagging could be a condition for bail, yet these suggestions remain largely un-codified in the BNSS.

CHAPTER 2 – COMPARATIVE LEAGAL FRAMEWORKS- THE U.S.A STATUTORY MODEL AND THE INDIAN JUDICIAL APPROACH

The United States transformed house arrest from a localized judicial experiment into a cornerstone of federal penology through the Sentencing Reform Act of 1984.[23] This legislation was not merely a procedural update; it was a philosophical shift that redefined custody to include non-carceral environments. Under 18 U.S.C. § 3563(b)(19), the federal courts are granted the explicit statutory authority to mandate that a defendant remain at their residence, monitored by telephonic or electronic signaling devices.[24]

This codification provided two essential elements that the Indian system currently lacks: procedural certainty and institutional support. By embedding home confinement into the federal sentencing table, the U.S. created a manual for judges. This manual removes the burden of innovation from individual magistrates, allowing them to rely on established Pre-trial Services officers to manage the technical and administrative logistics of the Multi-Million

[20] *Justice K.S. Puttaswamy v. Union of India*, (2017) 10 SCC 1.
[21] Supra note 8.
[22] Id.
[23] Sentencing Reform Act of 1984, Pub. L. No. 98-473, 98 Stat. 1987. (https://www.congress.gov/bill/98th-congress/senate-bill/668).
[24] 18 U.S.C. § 3563(b)(19) (2024). *See also* 18 U.S.C. § 3142(c)(1)(B)(xiv).

Project infrastructure.[25] The United States offers a third model, defined by the robust but controversial role of Pretrial Services Agencies. Unlike the Indian or British systems, the US model for house arrest, often termed Home Incarceration, is a highly stratified system of surveillance levels ranging from simple curfews to 24/7 lockdown.[26] The US implementation is unique in its heavy reliance on private contractors for electronic monitoring, which has created the User-Funded Gap. In many jurisdictions, the under-trial prisoner is required to pay a daily fee for their own monitoring equipment, effectively turning house arrest into a pay-to-stay system.[27] While the US model is technically advanced, it has been critiqued for net-widening, where individuals who would have previously been released on their own recognizance are now placed under invasive electronic surveillance, increasing the total number of people under state control without necessarily reducing the jail population.[28]

Florida Community Control (CC)[29] is an intensive, highly restrictive form of community supervision essentially house arrest used as a prison diversion alternative for felony offenders. Managed by the Florida Department of Corrections, it requires offenders to remain in their approved residence at all times, except for approved activities like work, school, or treatment, with very high supervision contact. As of 2026, over 144,000 offenders (including probationers and those in community control) are supervised by Florida Correctional Probation Officers, with strict caseload limits usually enforced for community control cases.[30]

2.2. The Indian Context: From Navlakha to the BNSS

In contrast, India's legal engagement with house arrest is characterized by judicial improvisation. Until recently, the Crpc was silent on the concept of home-based custody. The landmark breakthrough occurred in *Gautam Navlakha v. National Investigation Agency (2021)*[31], where the Supreme Court held that "custody" under Section 167 of the CrPC, now Section 187 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), could encompass house arrest

[25] *See* Administrative Office of the U.S. Courts, *The Federal Probation System: A History of Services to the Federal Courts*, 75 Fed. Probation 24 (2011). https://www.uscourts.gov/about-federal-courts/probation-and-pretrial-services/federal-probation-journal/2025/06/federal-probation-system-struggle-achieve-it-and-its-first-25-years.
[26] *18 U.S. Code § 3142 - Release or detention of a defendant pending trial.*
[27] *United States v. Gotti*, 776 F. Supp. 666 (E.D.N.Y. 1991).
[28] Smith, A. (2025), "*The Electronic Shackles: Privatization of Pretrial Supervision*," *Yale Law & Policy Review*.
[29] *See* Florida Dep't of Corr., Annual Report 2023-2024. https://www.floridaoig.com/library/Annual_rpts/2023-2024/2023-24%20FDC%20Annual%20Report.pdf.
[30] Id.
[31] Supra note 7

in appropriate cases. Before the *Navlakha* ruling, the Supreme Court utilized house arrest as an interim measure for activists, setting the stage for it to be viewed as an alternative to jail. The Court extended the house arrest of five activists, asserting that while the accused do not have a choice of the investigating agency, the court can intervene to protect liberty through alternative forms of custody.[32]

However, the Court simultaneously highlighted a critical lag, the state lacks the infrastructure to enforce such orders. Consequently, the transition to the BNSS in 2023 represents a significant missed opportunity.[33] While the new code overhauled various aspects of criminal procedure, it failed to provide a dedicated statutory framework for Electronic Monitoring (EM). Section 187 of the BNSS remains a broad provision for custody without the granular definitions found in the U.S. Code, leaving the mechanics of house arrest to the whims of case-by-case judicial discretion.[34] By 2026, the Indian judiciary has increasingly looked toward Section 187 of the BNSS to allow for specialized custody arrangements, yet the system remains bifurcated. It is often a remedy available to those with the social capital to propose a secure environment, leaving a regulatory gap for the average under-trial prisoner who lacks the infrastructure for private surveillance.[35]

2.3. The Exceptional Remedy trap: The Class Divide in Confinement

The absence of a codified manual in India has turned house arrest into a luxury for the socio-economic elite. In the U.S., the codification of home confinement as a standard tool allows it to be applied to a wide range of non-violent offenders.[36] In India, because each house arrest order requires a bespoke security plan, often involving the physical stationing of police personnel at the defendant's residence, the state is only willing to bear the cost and administrative burden for high-profile detainees.[37]

This creates the exceptional Remedy trap: house arrest is granted on humanitarian or political grounds to the powerful, while the average under-trial, who lacks the resources to propose a

[32] *Romila Thapar v. Union of India*, (2018) 10 SCC 753.
[33] *Vinit Kumar v. Central Bureau of Investigation*, (2019) 4 Bom CR 583.
[34] *United States v. Knights*, 534 U.S. 112 (2001).
[35] Supra note 7
[36] Benjamin, Ruha, *Race after Technology: Abolitionist Tools for the New Jim Code* (2019). https://www.researchgate.net/publication/351607959_Benjamin_Ruha_2019_Race_After_Technology_Abolitionist_Tools_for_the_New_Jim_Code_Medford_Polity_Press_172_pages_eISBN_9781509526437.
[37] *Compare Gautam Navlakha*, *supra* (where the state expressed concern regarding the difficulty of manual surveillance) *with* United States v. Gotti, 776 F. Supp. 666 (E.D.N.Y. 1991).

private security plan to the court, remains in overcrowded jails. The lag in India is therefore not just technical but equitable. Without the legislative standardization seen in the U.S., house arrest cannot serve its primary purpose as a tool for mass de-carceration.[38]

Florida's CC in USA succeeded because it was a tripartite structure given below that India currently lacks:

1. Florida judges have a specific statute[39] that defines exactly what community control entails. In India, the BNSS provides no such granular definition for home confinement, leaving judges to define the terms of custody from scratch for every case.

2. Florida created a dedicated class of community control officers who are trained specifically for home-based surveillance. In India, house arrest duties are dumped onto the regular police force, who view it as a distraction from their primary investigative and law enforcement duties.

3. Florida's system transitioned from manual phone checks to sophisticated GPS monitoring decades ago. India's lag is visible in its reliance on the physical presence of constables, which is the most expensive and least scalable way to mimic Florida's success.

CHAPTER 3 - ALGORITHMIC TRIAGE: USING AI FOR BIOMETRIC VERIFICATION AND DYNAMIC GEOFENCING

The operational backbone of house arrest in the United States is the Alternatives to Detention (ATD) program. This Multi-Million Project, primarily managed by Immigration and Customs Enforcement (ICE) and the Administrative Office of the U.S. Courts, represents the privatization of the prison without walls.[40] Unlike the Indian model of manual guarding, the U.S. infrastructure is a massive public-private partnership where monitoring is outsourced to corporations like BI Incorporated (a subsidiary of the GEO Group).

The U.S. model demonstrates that scalability is impossible without a centralized technological hub. The ATD program utilizes a stepped supervision model, where the level of surveillance

[38] U.S. Gov't Accountability Off., GAO-15-26, *Immigration Detention: Additional Actions Needed to Strengthen Management and Oversight of Alternatives to Detention* (2014). https://www.gao.gov/products/gao-15-153.
[39] Fla. Stat. § 948.001(3) (2024). https://flauditor.gov/pages/pdf_files/2024-108.pdf.

(GPS, telephonic, or app-based) is adjusted based on the defendant's risk profile.[41] This data-driven approach allows for the management of hundreds of thousands of individuals, a scale that India cannot achieve through the current practice of stationing constables at doorways.

The transition from a prison cell to a domestic environment presents a primary challenge for the judiciary. Historically, judges have been hesitant to grant house arrest due to the perceived risk of flight or witness tampering, which human-led surveillance cannot monitor 24/7 without immense cost. In 2026, Artificial Intelligence (AI) has emerged as the critical infrastructure required to bridge this gap, transforming house arrest from a passive curfew into an active and intelligent system of custody. AI-driven risk assessment tools, such as the evolved versions of the Public Safety Assessment (PSA) in the US, now allow for a granular analysis of a defendant's likelihood to comply with home confinement.[42]

Beyond the initial decision-making process, AI serves as the digital invisible wall that enforces the boundaries of house arrest. Modern implementation has moved past simple GPS blips to Dynamic Geofencing and Biometric Verification. AI systems integrated into wearable devices or smartphones now utilize Asynchronous Facial Recognition and Voice Biometrics to ensure that the individual under house arrest is physically present at the designated location at all times.[43] Unlike traditional ankle monitors, which merely alert a human officer of a perimeter breach, AI-enabled systems can differentiate between a technical glitch (such as a temporary loss of GPS signal) and a behavioral anomaly (such as a person lingering near a prohibited exit). This reduces false-positive alarms that often lead to unnecessary re-incarceration, thereby streamlining the workload of overstretched pretrial services.[44]

Furthermore, the integration of Predictive Behavioral Analytics offers a proactive approach to under-trial supervision. AI algorithms can now identify patterns that precede a violation, such as changes in movement within the home or irregular charging patterns of the monitoring device, allowing for a preventative Intervention by social workers or legal counsel before a breach occurs. This is particularly relevant in India's rollout of the e-Courts Phase III project, where AI is being tested to manage the massive influx of under-trial data under the BNSS. By

[41]Supra note 23
[42] *Public Safety Assessment (PSA) Review 2025*, Arnold Ventures. https://www.advancingpretrial.org/about-the-psa/.
[43] *State v. Loomis* (2016) 881 N.W.2d 749.
[44] "The AI Warden: Automating Community Supervision," *Journal of Criminal Law and Criminology* (Spring 2026).https://www.tylertech.com/resources/blog-articles/ai-driven-community-supervision-why-the-technology-matters.

automating the monitoring of Section 479 eligibility, which mandates the release of under-trials who have served half their maximum sentence, AI ensures that no prisoner is forgotten in the system due to administrative oversight.[45]

By implementing AI-driven triage, jurisdictions can automate the identification of low-risk individuals who meet the legal criteria for house arrest, effectively clearing the backlog of the innocent. This system functions as a digital filter, continuously scanning prison databases to flag candidates for immediate release or transition to home confinement based on real-time legal triggers.[46] Under India's Section 479 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), any under-trial who has completed one-half (or in the case of first-time offenders, one-third) of their potential maximum sentence is entitled to release on bail or personal bond.[47] In a manual system, tracking these dates for millions of inmates is an impossible task for overstretched jail superintendents, leading to thousands of illegal over-stays. AI-managed triage removes this human error by providing the court with a daily, automated eligibility List, ensuring that the moment an under-trial crosses the legal threshold, their case is moved from a physical cell to an AI-monitored house arrest queue.[48] This proactive management ensures that prison space is reserved strictly for those whom the law mandates must be physically separated from society.

CHAPTER 4 - STRUCTURAL IMPEDIMENTS AND PATH TOWARDS STATUTORY MATURITY

The AI-Navigated model of house arrest is not without significant ethical hurdles, most notably the Black Box Problem and Algorithmic Bias. Critics argue that if an AI denies a defendant the right to house arrest based on high-risk scores, the lack of transparency in how that score was calculated violates the right to a fair trial.[49] The removal of the ethical and technical hurdles surrounding AI-managed house arrest requires a multi-layered approach that combines legislative mandates, engineering rigor, and judicial oversight. As of 2026, the global legal

[45] Bharatiya Nagarik Suraksha Sanhita, No. 46 of 2023, § 479 (India).
[46] Porée, I. (2026), "*Using AI to Reduce the Prison Population," Police Professional*. https://policeprofessional.com/feature/using-ai-to-reduce-the-prison-population/.
[47] Supra note 30
[48] Ministry of Home Affairs Directive (October 2024/March 2026). https://www.mha.gov.in/sites/default/files/AREnglish_24032026.pdf.
[49] *European Union AI Act (2024/2026)*, Article 6. Categorizes AI used in "law enforcement and judicial processes" as High Risk, requiring human oversight and strict data logging. https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence.

community is moving towards a Safety-by-Design framework[50]. These hurdles are being dismantled through three primary mechanisms: statutory transparency, technical bias-mitigation, and the retention of human-in-the-Loop decision-making.

4.1. Algorithmic Bias: The Danger of Black-Box Decision-Making

The integration of AI into house arrest introduces the risk of automated injustice. Algorithmic Triage relies on historical data to predict flight risk. However, if the underlying data is tainted by systemic biases such as the over-policing of specific neighborhoods or communities the AI will replicate and scale these biases under the guise of objective data.[51]

This black-box decision-making poses a significant threat to due process. If an AI flag leads to the revocation of house arrest, the defendant must have the right to challenge the algorithm's logic. Without transparency and explainable AI (XAI), the digital perimeter becomes an invisible, unaccountable jailer. The Gap must not be filled with blind faith in technology, but with algorithms that are audited for socio-economic and communal neutrality.[52]

In the United States, several state-level laws, like California's SB 53 (2026), now require developers to publish risk Frameworks, ensuring that the logic behind pretrial monitoring is open to discovery by defense attorneys, thereby preserving the right to cross-examine the evidence against an under-trial prisoner.[53]

4.2. Engineering Fairness and Bias Mitigation

To remove the hurdle of Algorithmic Bias, the development lifecycle of house-arrest AI has been shifted to include Fairness-Aware Modeling. In India, under the India AI Governance Guidelines (2026), developers working on the e-Courts Phase III project are required to perform regular fairness Audits. These audits use mathematical formalizations, such as equalized Odds in order to ensure the AI does not disproportionately flag individuals based on socio-economic or demographic proxies.

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[51] Benjamin, Ruha , Supra note, 22

[52] Fernandes, April D. et al., *Monetary Sanctions and the Accumulation of Legal Debt*, 67 Soc. Probs. 1 (2020). https://pmc.ncbi.nlm.nih.gov/articles/PMC10586489/.

[53] McLean, David et al., *Introduction to the U.S. Criminal Justice System* (2024). https://psu.pb.unizin.org/criminaljusticemclean/.

4.3. The Safeguard: Human oversight

The most critical hurdle, the fear of a machine-ruled justice system, is removed by legally enshrining the principle of Human Oversight. In all three jurisdictions, AI is categorized as a decision-support tool rather than a decision-maker. For instance, under India's BNSS, an AI alert regarding a house-arrest violation does not trigger an automatic arrest warrant; it instead triggers a mandatory review by a pretrial Supervisor or a Magistrate.[54] This ensures that a human can account for contextual exceptions, such as a prisoner leaving their home during a medical emergency or a power outage that caused a monitoring tag to fail. By ensuring that every AI-driven restriction is subject to human appeal, the system protects against automated injustice.

4.4. Data Sovereignty and Privacy Protections

The privacy hurdle is addressed through Data Minimization and Sovereignty Rules. To prevent house arrest from becoming a form of 24/7 state surveillance of the entire family, 2026 regulations (like the Digital Personal Data Protection Rules in India) mandate that AI monitoring systems only collect event-Based Data.[55] Rather than a constant video feed of the home, the AI only wakes up and records when a biometric verification is required or a boundary is crossed.

CHAPTER 5 - RECOMMENDATIONS FOR A RIGHTS BASED IMPLEMENTATION AND CONCLUSION

To ensure that the integration of AI and house arrest upholds the dignity of under-trial prisoners and effectively reduces overcrowding, the following measures are recommended:

5.1 Standardization of Statutory Frameworks-

The Indian judiciary must move beyond *ad hoc* judicial precedents. There is an urgent need for specific rules under the Bharatiya Nagarik Suraksha Sanhita (BNSS) that define the technical and logistical standards for house arrest. This should include state-funded electronic

[54] Doherty, Fiona, *Indeterminate Sentencing Returns: The Invention of Supervised Release*, 88 N.Y.U. L. Rev. 958 (2013).
[55] Grace, Alicia, *Home Incarceration Under Electronic Monitoring: A Statutory Review*, 7 NYLS J. Hum. Rts. 285 (1990). https://www.antoniocasella.eu/nume/COE_electronic_16oct12.pdf.

monitoring to ensure that house arrest is an equitable right for the indigent, not just a luxury for the wealthy.

5.2 Mandatory Algorithmic Transparency-

Jurisdictions utilizing AI for pretrial triage or risk assessment must mandate Explainable AI (XAI). Defendants should have a statutory right to access the logic behind their risk score. Proprietary black box algorithms should be prohibited in judicial decision-making to preserve the constitutional right to a fair trial and the ability to challenge the evidence of flight risk.

5.3 The no-Cost Monitoring Mandate-

To address the Poverty Penalty seen in the US[56] legislation should prohibit the user-funded monitoring models. The cost of AI surveillance should be borne by the state as a systemic saving (compared to the higher cost of physical incarceration), ensuring that an under-trial's liberty is never contingent on their ability to pay a daily monitoring fee.

5.4 Implementing Dynamic De-escalation Protocol-

As seen in the 2026 New Jersey Pretrial Directives, systems should include automatic Compliance Reviews. If an under-trial remains compliant for a set period (e.g., six months), the AI should trigger an automatic recommendation to lower the intensity of monitoring (e.g., moving from 24/7 GPS to simple voice check-ins), rewarding behavioral compliance and reducing the surveillance creep.

5.5 Audit-Ready Bias Mitigation-

Governmental bodies should establish independent Algorithmic Audit Committees composed of legal experts, data scientists, and civil rights advocates. These committees must conduct bi-annual fairness audits to detect and strip away racial, caste-based, or socio-economic biases in the training datasets used to manage under-trial populations.

[56] Parenti, Christian, *Lockdown America: Police and Prisons in the Age of Crisis* (1999). https://static1.squarespace.com/static/5b7ea2794cde7a79e7c00582/t/634480070692500eafdc1ad7/1665433614487/Lockdown+America.pdf.

CONCLUSION

The Digital Evolution of the Presumption of Innocence

The convergence of house arrest and artificial intelligence in 2026 represents more than a logistical fix for overcrowded prisons as it signifies a fundamental shift in the philosophy of criminal justice. For decades, the presumption of innocence was a theoretical ideal often crushed by the weight of systemic remand. Today, the transition toward AI-monitored home confinement across India and the USA proves that custody no longer requires a physical cell to be effective. By utilizing AI as a digital anchor, legal systems have begun to bridge the trust Gap, allowing under-trials to maintain their livelihoods and social ties while ensuring they remain within the reach of the law. However, as this article has explored, the move toward a smart house arrest model is not a panacea. It brings forth new risks of algorithmic bias, digital inequity, and the potential for net-widening, where the home is turned into a permanent site of state surveillance. The success of this evolution depends not on the sophistication of the code, but on the strength of the legal safeguards that govern it.

6.1. From Physical Bars to Digital Perimeters

The evolution of the global criminal justice system in the twenty-first century is increasingly defined by the shift from carceral confinement to technological incapacitation. This research has demonstrated that while the United States has successfully institutionalized this shift through the Sentencing Reform Act of 1984 and a robust multi-Million Project infrastructure, India remains trapped in a state of judicial improvisation. The current Indian framework, rooted in the Navlakha precedent, acknowledges the necessity of house arrest but lacks the statutory manual and technological scaffolding to make it a reality for the masses.

6.2. Addressing the "Trust Gap" Through Algorithmic Triage

The "Trust Gap" that hinders the Indian judiciary is not a lack of legal will, but a lack of administrative confidence. As argued in Chapter 3, the integration of Artificial Intelligence (AI) via biometric verification and dynamic geofencing offers a viable bridge for this gap. By replacing the fallible, expensive model of manual guarding with an automated, data-driven dashboard of Compliance, India can transform house arrest from an extraordinary remedy for the elite into a standardized tool for de-carceration. However, this transition must be

accompanied by the Rights-Based Framework detailed in Chapter 5 to ensure that digital Shackles do not become a tool for pervasive state surveillance or a poverty penalty.

6.3. The Path Forward: Legislative Courage

For India to bridge the lag identified throughout this study, the path forward requires legislative courage rather than just judicial activism. The silence of the Bharatiya Nagarik Suraksha Sanhita (BNSS) on the mechanics of home confinement must be addressed through targeted amendments that formalize Electronic Monitoring (EM).

The ultimate goal of this research is to advocate for a system where the "home" is recognized as a legitimate extension of the judicial custody apparatus—not as a loophole for the powerful, but as a constitutional alternative for the innocent under-trial. By adopting the technical efficiency of the American model while upholding the privacy standards of the Puttaswamy doctrine, India can finally address its remand crisis and restore the sanctity of the presumption of innocence.

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