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Judicial Review of AI Use in ECI Voter Roll Management: Enforcing Transparency And Explainability

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During the 2025–2026 Special Intensive Revision (SIR) in states like West Bengal, the Election Commission of India (ECI) has increasingly used artificial intelligence (AI) and algorithmic tools for voter roll management, mainly through the Electoral Roll Officers' Network (ERONET). These tools include deduplication via facial recognition and flagging of 'logical discrepancies.' Over 1.36 crore voters have been flagged by these systems, which raises serious concerns about opacity, arbitrary exclusion, and violations of the constitution's guarantees of equality, a fair trial, and free and fair elections.[1] To require transparency and explainability (XAI) in ECI's AI-driven processes, Indian courts must exercise strong judicial review under Articles 14, 19, 21, and 324 of the Constitution, according to this paper, which is the first thorough scholarly analysis of the matter as of April 2026.[2] It suggests a doctrinal framework requiring mandatory AI impact assessments, post-hoc explanations, and auditability

[1] 'General Election to the Legislative Assemblies of Assam, Kerala, Tamil Nadu, West Bengal and Puducherry, 2026 – reg.' (*Chief Electoral Officer, Puducherry*, 15 March 2026) <https://ceopuducherry.py.gov.in/gepla2026/ECI_PressNote_15_03_2026.pdf> accessed 09 May 2026

[2] Ayushi Kar, 'ECI misled the Supreme Court on SIR in West Bengal' (*The Reporters' Collective*, 29 January 2026) <https://www.reporters-collective.in/trc/eci-misled-the-sc-on-sir-in-west-bengal> accessed 09 May 2026

as prerequisites for judicial deference, drawing on recent Supreme Court interventions in the Bengal SIR cases.[3] Opaque AI poses a threat to the fundamental framework of Indian democracy in the absence of such protections.[4]

Keywords: *SIR, ECI, ERONET, article 14, article 19.*

INTRODUCTION

At the core of India's constitutional democracy is the right to vote, which the Supreme Court has defined as a 'fundamental' aspect of free and fair elections safeguarded by the ECI's plenary powers under Article 324.[5]

However, the 'black box' issue has emerged as a result of the quick digitisation of electoral rolls using AI-assisted systems. ERONET, an ECI-centralised platform, suspended the voting rights of about 1.36 crore voters in the 2025–2026 SIR exercise in West Bengal due to a new category of 'logical discrepancies.' The algorithmic matching of legacy paper rolls using optical character recognition (OCR), string comparisons, and, in later stages, AI-based facial recognition for duplicate detection across 12 states was the source of these flags.[6] Critics, including members of civil society and political leaders, have pointed out that many flags were caused by common transliteration mistakes (such as 'Mohammed' v 'Muhammad' or 'Mondal' v 'Mandal'), implausible age differences, or low-quality scan problems that a human officer might miss but software flags arbitrarily.

Even though the ECI maintains structured datasets internally, it only publishes final rolls as non-searchable PDFs, excluding machine-readable data and making independent verification impossible. In contrast to the EU AI Act's high-risk classification for electoral systems, India has no specific legislation governing the use of AI in electoral administration. As a result, the main

[3] 'ECI releases 'logical discrepancies' list following Supreme Court order' *The Hindu* (25 January 2026) <https://www.thehindu.com/news/national/west-bengal/election-commission-uploads-on-website-names-of-people-on-logical-discrepancies-list-following-supreme-court-order/article70547602.ece> accessed 09 May 2026
[4] Ankit Jain, 'Bengal SIR: The wall ECI built around electoral data and how we broke through it' *Alt News* (03 April 2026) <https://www.altnews.in/bengal-sir-the-wall-eci-built-around-electoral-data-and-how-we-broke-through-it/> accessed 09 May 2026
[5] *Mohinder Singh Gill and Anr v The Chief Election Commissioner, New Delhi and Ors* (1978) 1 SCC 405
[6] 'ECI to use AI tools during SIR to identify duplicate voters' *The New Indian Express* (21 November 2025) <https://www.newindianexpress.com/india/2025/Nov/21/eci-to-use-ai-tools-during-sir-to-identify-duplicate-voters> accessed 09 May 2026

constitutional protection is judicial review. This essay argues that courts have an obligation to require ECI's AI systems to be transparent and explainable under Articles 14 (equality and non-arbitrariness), 21 (right to life and personal liberty, including the right to vote as part of democratic participation), 19(1)(a) (freedom of speech and expression, including the right to know), and 324 (ECI's superintendence subject to constitutional limits).[7]

These interventions are still ad hoc, though. The intersection of judicial review, constitutional explainability requirements, and AI-driven voter roll management by the ECI has not been thoroughly studied in any previous academic work, so this paper closes a significant scholarly gap. It is divided into four sections:

- The Constitutional Framework;
- AI opacity in ECI practices,
- XAI solutions and comparative lessons; and
- A suggested judicial review framework with recommendations.

CONSTITUTIONAL FRAMEWORK FOR JUDICIAL REVIEW OF ECI ACTIONS

The ECI has 'superintendence, direction, and control' over elections under Article 324, but this authority is not unqualified. ECI rulings are still subject to judicial review on the grounds of arbitrariness, mala fides, or violations of fundamental rights, according to the Supreme Court's repeated rulings.[8] The Court upheld that Article 324 is 'subject to the constitutional scheme' and cannot supersede fundamental structural principles, such as free and fair elections, in Mohinder Singh Gill v Chief Election Commissioner (1978).[9]

Administrative actions, including algorithmic ones, must be free from arbitrariness in accordance with Article 14's guarantee of equality before the law. According to K.S. Puttaswamy v Union of India (2017), the transition from Wednesbury unreasonableness to proportionality review mandates that any limitations on voting rights be reasonable, essential, and the least invasive method possible.[10] This is prima facie violated by opaque AI decisions that

[7] Dhananjay Mahapatra, 'SIR logical discrepancy: SC's West Bengal order effective all-India' *The Times of India* (30 January 2026) <https://timesofindia.indiatimes.com/india/sir-logical-discrepancy-scs-west-bengal-order-effective-all-india/articleshow/127785583.cms> accessed 09 May 2026
[8] *Election Commission of India Th Secretary v Ashok Kumar and Ors* AIR 2000 SC 2979
[9] *Mohinder Singh Gill and Anr v The Chief Election Commissioner, New Delhi and Ors* (1978) 1 SCC 405
[10] *Justice K S Puttaswamy (Retd) and Anr v Union of India and Ors* (2017) 10 SCC 1

disproportionately flag voters from specific linguistic or demographic groups (e.g., Bengali name variations).

The claim is further supported by Article 21, which is interpreted broadly to include the right to vote as an incident of personal liberty and dignity.[11] Reasoned decisions in administrative matters are now covered by the 'right to know' under Article 19(1)(a), read with Article 21 (State of U.P. v Raj Narain, 1975).[12] Voters and candidates must understand why their names are flagged in the electoral context; failing to reveal algorithmic reasoning amounts to a denial of natural justice.

Article 324 plenary powers must uphold these rights despite their scope. The Court's recent SIR decisions (January–April 2026), which mandated the release of 1.25 crore 'logical discrepancy' names as a way to enforce openness through judicial review, serve as evidence. The employment of ECI AI without explainability runs the risk of turning Article 324 into an unaccountable 'digital sovereign.'

AI SYSTEMS IN ECI VOTER ROLL MANAGEMENT: THE OPACITY CHALLENGE

ECI's main digital platform, ERONET, automates deduplication, field verification, and electoral roll preparation. The ECI specifically used AI capabilities for machine-learning-based demographic matching and facial recognition to detect duplicate photos in the 2025 SIR. In previous versions, algorithmic deduplication software, which has been a part of ERONET since 2018, flagged 'suspect entries' based on similarities in name, relative, address, and age.[13]

Systemic opacity was revealed by the Bengal SIR. Over 1.36 crore flags resulted from: (a) OCR errors on paper rolls from the 2002 era; (b) algorithm updates that were not disclosed in the middle of the process; and (c) strict string-matching rules that were insensitive to common linguistic variations in India. Notifications were sent to voters without revealing the exact

[11] *Union of India v Association for Democratic Reforms* (2002) 5 SCC 294
[12] *State of U P v Raj Narain and Ors* (1975) 4 SCC 428
[13] Ayushi Kar and Harshitha Manwani, 'ECI Pulls a U-Turn: Rolls Out Algorithms Midway into SIR Without Protocols, Manual and Written Instructions' (*The Reporters Collective*, 28 December 2025) <https://www.reporters-collective.in/trc/eci-pulls-a-u-turn-rolls-out-algorithms-midway-into-sir> accessed 09 May 2026

algorithmic trigger or confidence score. Civil society organisations had to invest resources in digitising PDFs because the data was still not available in a machine-readable format.

ECI's own 2025 advisories requiring the labelling of AI-generated campaign content for transparency are violated by this opacity. However, internal administrative AI for voter rolls is not subject to the same scrutiny. According to Prashant Bhushan's criticism, ECI maintains 'arbitrary power' by withholding transparency despite having sophisticated deduplication tools. As a result, legitimate voters, including well-known individuals like Nobel laureate Amartya Sen, were identified, undermining public confidence.[14]

THE IMPERATIVE OF TRANSPARENCY AND EXPLAINABILITY: XAI AS A CONSTITUTIONAL TOOL

Black-box models can be made interpretable without sacrificing accuracy using explainable AI (XAI) techniques like SHAP (Shapley Additive exPlanations) values, LIME (Local Interpretable Model-agnostic Explanations), or decision-tree approximations. The following could be required features for ECI systems: (i) feature importance and per-flag confidence scores (e.g., transliteration mismatch: 0.72); (ii) audit logs of training data and model updates; and (iii) human-in-the-loop overrides with reasoned records.[15]

According to the Constitution, explainability guarantees that decisions are intelligible and subject to challenge, fulfilling natural justice. This is consistent with the proportionality test under Article 14/21. Electoral AI is categorised as 'high-risk' by the EU AI Act, which requires transparency. The non-arbitrariness doctrine of Article 14 allows Indian courts to establish comparable standards, as demonstrated in Puttaswamy for Aadhaar algorithms. Judicial mandating is both necessary and feasible because there is currently no Indian statute that enforces this.[16]

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[14] 'Names deleted through AI on BJP's instructions": Mamata Banerjee slams ECI over SIR, calls 'logical discrepancies' a "dubious category"' (*ANI News*, 13 Jan 2026) <https://www.aninews.in/news/national/politics/names-deleted-through-ai-on-bjps-instructions-mamata-banerjee-slams-eci-over-sir-calls-logical-discrepancies-a-dubious-category20260113203300/> accessed 09 May 2026

[15] Christoph Molnar, *Interpretable Machine Learning: A Guide for Making Black Box Models Explainable* (Leanpub Publishing 2019)

[16] EU AI Act 2024

JUDICIAL REVIEW MECHANISMS AND PROPOSED FRAMEWORK

A tiered review should be used by courts:

Procedural: Make ECI submit AI impact assessments (bias audits, error rates) before deployment.

Substantive: Request post-decision justifications for voters who have been flagged.

Remedial: If opacity continues, courts may order independent technical audits or halt AI-driven purges.

The Court required reasonable orders for rights restrictions in Anuradha Bhasin v Union of India (2020). It is doctrinally sound to extend this to AI. Mandatory XAI disclosures, regular algorithmic audits by an impartial body (e.g., under the Chief Justice-nominated oversight), and machine-readable roll publication are all possible judicial developments of a proposed ECI AI Transparency Protocol. Comparative observations from the EU and the US, where agencies are required by the Administrative Procedure Act to explain algorithmic rulemaking, support the idea that judicial insistence on explainability improves rather than impedes administrative efficiency.

CONCLUSION

The Election Commission of India's (ECI) use of artificial intelligence (AI) to manage electoral rolls presents revolutionary opportunities for improving the effectiveness, precision, and integrity of voter registration systems. AI can greatly lessen administrative burdens and enhance the calibre of electoral databases through automated data verification, duplicate detection, error identification, and predictive analytics. Adoption of AI-driven technologies seems both feasible and inevitable in a nation as large and diverse as India, where handling hundreds of millions of voter records is an enormous undertaking.

However, there are serious constitutional and democratic issues with integrating AI into voter roll management at the same time. The exercise of the fundamental right to vote is directly impacted by any technological system that influences inclusion or exclusion from the voter list. Electoral rolls are the cornerstone of democratic participation. AI systems run the risk of

producing arbitrary results, discriminatory effects, and wrongful disenfranchisement when they use opaque algorithms, undisclosed decision-making processes, or poorly supervised automation. Vulnerable groups, such as migrants, linguistic minorities, economically disadvantaged populations, and those with inadequate digital literacy, are especially at risk. Therefore, unchecked reliance on algorithmic governance jeopardises the legitimacy and fairness of electoral processes, even though AI may increase administrative efficiency.

The Supreme Court of India has a significant chance to influence the constitutional future of electoral technology through the ongoing judicial examination of the Special Intensive Revision (SIR) cases in West Bengal. These proceedings raise more general concerns about procedural justice, accountability, transparency, and the boundaries of automated decision-making in democratic institutions. The Court can create strong safeguards that guarantee AI systems stay subservient to constitutional values rather than replacing them by interpreting Articles 14, 19, 21, and 324 of the Constitution in light of new technologies.

Several fundamental ideas should be included in a rights-based framework for electoral AI governance. The criteria, datasets, and techniques used in AI-assisted voter roll management must first be made public to promote transparency. Second, explainability should guarantee that people are given clear explanations for decisions that have an impact on their ability to vote. Third, accountability systems must unambiguously pinpoint the authorities in charge of algorithmic errors and offer impacted parties practical solutions. Fourth, all major decisions about adding or removing voters should still require human oversight. Lastly, independent audits should be carried out on a regular basis to find biases, evaluate accuracy, and confirm adherence to constitutional requirements.

India has the potential to become a global leader in democratic AI governance if these principles are institutionally and judicially acknowledged. The Indian judiciary can set an example for other democracies facing comparable difficulties by striking a balance between constitutional rights and technological innovation. The framework put forth in this paper aims to give judges, legislators, election officials, and civil society participants a workable road map for striking this balance.

On the other hand, inadequate precautions could have detrimental effects. When used without accountability and transparency, AI-driven voter roll management runs the risk of turning

electoral rolls from tools of democratic inclusion into covert exclusionary mechanisms. The public's confidence in elections and the democratic process itself may be weakened by such exclusions, which may be difficult to identify, contest, or correct.

Therefore, monitoring the real-world application of AI-based electoral management systems should be the main focus of future research, especially in the years after the 2026 elections. It will be crucial to conduct empirical research on algorithmic accuracy, voter exclusion cases, grievance redress mechanisms' efficacy, and adherence to legal and regulatory protections. Such studies will assist in determining whether India is successful in developing a constitutional model of electoral AI governance that upholds democracy or whether technological efficiency compromises electoral justice and democratic participation.