



COMPARATIVE STUDY OF MACHINE LEARNING ALGORITHMS FOR DISEASE PREDICTION

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ABSTRACT

Over the last few years, the use of machine learning (ML) in the healthcare field has picked up momentum, especially in the area of disease prediction. Timely and accurate disease diagnosis is important to enhance patient outcomes as well as lessen the load on healthcare systems. This research provides comparative comparison of popular machine learning algorithms—Decision Tree, Support Vector Machine (SVM), K-Nearest Neighbors (KNN), Random Forest, and Naive Bayes—to forecast different diseases from clinical datasets. The work is done using publicly available medical datasets and measures the performance of each algorithm using important parameters like accuracy, precision, recall, F1-score, and AUC-ROC. The data preprocessing stage involves feature normalization, handling missing values, and class balancing to make the model fair. Each algorithm is applied with Python and Scikit-learn, and its prediction performance is compared on diseases such as diabetes, heart disease, and liver diseases. The findings show unique strengths and weaknesses for each algorithm based on the type of dataset and disease. The research concludes with suggestions regarding the choosing of adequate ML models for targeted clinical situations and points towards future avenues of research for improving predictive precision and clinical utility.



1 Introduction

Elections in democratic nations are the pillar of public administration, being the voice of the people.[1] The integrity of any election system lies in its capacity to provide free, fair, and transparent outcomes. [2]From the use of paper ballots in the past to now using Electronic Voting Machines (EVMs) and even internet-based voting systems, the world has seen an array of voting systems over the decades.[3-4] Though every iteration was intended to enhance efficiency and accessibility, these systems have also had a myriad of challenges.[5-6] Booth capture, ballot stuffing, cyberattacks, and unverifiability are some of the issues that have led to grave electoral integrity concerns.[7-8]

Over the past few years, electronic voting systems have become popular with the promise of higher voter turnout, especially among citizens living abroad or in rural areas. [9-10]But digital platforms are still susceptible to security threats, hacking attempts, and insider manipulation.[11-12] These provide a weak link that erodes the confidence of citizens and discourages active electoral participation. [13]There is thus an imperative to implement a more secure, transparent, and auditable system that preserves voter anonymity while guaranteeing the validity of the vote.[14-15]

Blockchain technology, which was initially developed for decentralized cryptocurrency transactions, is now being explored as a possible means of enhancing the security and transparency of electoral systems. [16-17]By developing a tamper-resistant distributed ledger, blockchain provides a guarantee that every vote will be recorded as cast and cannot be tampered with after being validated. [18-19]This new technology is providing opportunities to establish trust in democratic processes in nations where electoral fraud has been an ongoing concern.[20-21]

The aim of this paper is to investigate a blockchain-based electoral system that utilizes decentralization, cryptographic integrity, and smart contracts to overhaul conventional voting practices.[22-23] Through analyzing the architectural design, feasibility of implementation, and perceptions of stakeholders, the paper aims to provide a solid solution to current electoral systems. [24-25]The solution not only solves long-standing issues but also supports international trends in digital transformation and secure governance.[26-27]

1.1 Background of Voting Systems



The history of voting systems goes back to ancient times when hand-raising or shouting approvals from the public was standard.[28-29] When the population increased, voting with paper turned into the norm, providing privacy and a record. In India, for example, the first general election in 1951–52 used paper ballots.[30] Many years ago, difficulties like ballot box stuffing, vote rigging, and human error during manual counting led to the use of Electronic Voting Machines (EVMs) in the late 1990s.[31-32] Even though EVMs improved speed and decreased physical handling, critics have raised eyebrows about their non-transparency and vulnerability to technical failure and insider attacks.[33-34]

The dawn of the 21st century brought discussions on i-voting, which would eventually leverage Internet-based voting in order to enhance convenience and participation, especially for NRIs, disabled voters, and those from remote areas.[35-36] Despite these intentions, i-voting systems have faced stern criticism due to security vulnerabilities such as hacking, DDoS attacks, and malware infections.[37-38] Some countries have experimented with pilot projects, but widespread adoption remains limited because of reliability concerns.[39]

Moreover, political polarization and disinformation campaigns have increased distrust in electoral outcomes across the world.[40-41] This has necessitated an urgent need for platforms that are not only secure and transparent but also auditable and accountable.[42-43] In comes blockchain—a decentralized digital ledger that holds potential for transparency, immutability, and verifiability.[44-45] Unlike centralized databases, blockchain exists on peer-to-peer networks in which no central authority maintains the data.[46-47] This structural singularity makes it the perfect choice for voting software, where each vote has to be inviolable.[48]

The intersection of voting with blockchain remains in its experimental phases, but cases like Estonia's i-voting system and U.S.[49-50] and Swiss pilot schemes demonstrate encouraging results. This paper delves further into how blockchain can be tailored for mass voting in nations like India, keeping its size of population, geographical diversity, and degree of digital preparedness in mind.[51-52]

1.2 Requirement for Transparency and Security

A fair and free election is not just a democratic entitlement but the foundation of



public confidence in the system.[53-54] Even with advances in technology, a number of issues still haunt contemporary voting systems, such as vote tampering, identity theft, illicit access, and the absence of transparency.[55-56] These problems are compounded in large democracies where logistical and administrative burdens make it difficult to conduct timely audits and verifications.[57-58]

Security violations, like the ones witnessed in previous electoral processes around the world, have resulted in widespread distrust and even civil instability.[58-59] One case of tampering—real or perceived—can mar the validity of a whole election. Additionally, legacy centralized digital systems provide one point of failure.[60-61] A hacker or insider abuse can potentially tamper with thousands of votes with no way to detect it.[62-63]

Transparency is similarly important. The voters should be able to confirm their vote counted accurately without revealing their identity or breaking the secrecy of the ballot.[64-65] But most electronic systems do not provide voter-verifiable audit trails or unalterable records. [66-67] In this scenario, blockchain's secure yet transparent infrastructure offers a strong alternative.[68-69] Each ballot cast on a blockchain can be tracked and authenticated without the possibility of altering or erasing it, thus providing a powerful anti-fraud mechanism.[70]

The need for an election system that is both secure and open has become even more critical in the age of digital technology. [71] Blockchain technology meets this need by providing cryptographic security, decentralized governance, and real-time auditability. [72] This makes it a strong contender for establishing public trust in the voting process and guaranteeing that the result accurately represents the will of the majority.[73]

1.3 Role of Blockchain Technology in Elections

Blockchain is a decentralized and distributed digital ledger technology that records transactions across a network of computers in a secure and immutable manner. [74] Originally created for cryptocurrencies like Bitcoin, blockchain's core features—transparency, security, and immutability—make it well-suited for applications beyond finance, including electoral systems.[75]

In a voting system based on blockchain, every vote is considered as a transaction and included in a block linked to the preceding block, forming a safe and chronological



chain. [76]Once a vote is submitted, it gets encrypted and stored on more than one node (computer) across the network.[76] This makes it so that no individual can modify the vote, thereby disallowing possibilities of tampering or fraud.[77]

Smart contracts, a feature of many blockchain platforms, enable automated execution of rules. [78]In voting, smart contracts can validate voter eligibility, confirm vote submission, and trigger real-time counting without manual interference. [78]Voters can be provided with unique digital identities or QR codes for authentication, ensuring only eligible participants can cast votes and only once.[79]

Verifiability is probably one of the most important benefits blockchain can bring to elections. [80][Voters are able to ensure their vote has indeed been counted and recorded, without their vote's anonymity being compromised. Furthermore, blockchain can enable real-time audits and open declaration of results, cutting down substantially on the time and expense required for manual verification.[81]

At the global level, a number of pilot projects have experimented with blockchain for voting with mixed results.[82] In India, however, where electoral integrity and voter turnout are vital to the democratic system, blockchain can provide a revolutionary change.[83] Coupled with biometric identification and Aadhaar-based authentication, a safe and accessible election system can be conceptualized. [84]Not only does the technology safe-guard the process, but it also empowers citizens by assuring them that their voice is heard—and accounted for—equitably.[85]

1.4 Study Objectives

- To discuss the limitations of conventional and electronic voting systems.
- To investigate the viability of a blockchain-voting system implementation.
- To discuss the use of smart contracts for secure vote automation.
- To gauge public sentiment and stakeholders' preparedness for decentralized elections.
- To conceptualize a transparent blockchain voting system model for the Indian scenario.

1.5 Study Scope and Limitations

Scope:



- Is focused on blockchain use in electoral processes, with specific reference to India.
- Involves analysis of stakeholder perceptions (voters, IT professionals, election officials).
- Considers both urban and rural implementation models.
- Addresses system design and smart contract integration.

Limitations:

- Conceive study but may not have live testing or government adoption.
- Infrastructure constraints like access to the internet in rural areas are not explored in depth.
- Legal and policy frameworks for blockchain voting are in development.
- The scalability of blockchain for national elections needs further research.

2 Review of Literature

2.1 Voting Technologies Evolution

- Nandimath & Mandape (2023) investigate blockchain-supported e-voting as a safe substitute for paper ballots in India, leveraging Aadhaar-based verification and smart contracts for secure enrollment ([turn0search1]).[86]
- Reddy et al. (2024) suggest a blockchain e-voting scheme incorporating Aadhaar credentials to reduce impersonation and vote manipulation ([turn0search4]).[87]
- Sujatha et al. (2024) outline "Blockchain-Powered E-Voting" with biometric verification and IPFS storage for decentralized record-keeping ([turn0search7]).[88]
- Somasekhar et al. (2024) design a blockchain-IPFS system using practical Byzantine fault tolerance for Indian urban elections ([turn0search0]).[89]
- Sahasra et al. (2023) examine smart contracts' role in automating elections, achieving high throughput and accuracy ([turn0search3]).[90]
- Gupta (2024-25 preprint) crafts an implementation plan for blockchain votes in India for 900M voters, emphasizing scalability and district-level nodes ([turn0search9]).[91]



- The IIITH team including Gujar et al. (2021, but highlighted in 2024 dissemination) developed FASTEN—a scalable, fair voting model scalable for India’s electorate ([turn0search6]).[92]

2.2 Blockchain in E-Governance

- Pandey & Sen (2022) review blockchain for real-time governance in Indian public administration, noting implications for electoral transparency ([turn0search11]).[93]
- Sandeep Kumar Singh (2024) advocates blockchain for electoral integrity in India and suggests policy-level adjustments ([turn0search5])[94]
- Lalitha Devi Priya et al. (2024) propose blockchain-enhanced electoral processing architecture using Ethereum smart contracts ([turn0search2]).[95]
- Government of India initiatives (MEITY, NITI Aayog) have endorsed blockchain as an emerging governance tool across multiple domains ([turn0reddit24]).[96]
- State-level exploration—Telangana government is considering blockchain-enabled remote voting pilots ([turn0news13]).[97]
- Publications by P. Duggal (2025) and M. P. Gupta (2025) on cyberlaw and e-governance emphasize blockchain’s role in public trust and election law ([turn0search21][turn0search23]).[98]

2.3 Existing Blockchain-Based Voting Models

- Sujatha et al. (2024) model E-Voting using Ethereum and IPFS with facial recognition-based voter authentication ([turn0search7]).[99]
- Somasekhar et al. (2024) present a hybrid blockchain-pBFT design for decentralized voting ([turn0search0]).[100]
- Sahasra et al. (2023) empirically evaluate smart-contract voting models with performance metrics showing 99.98% tally accuracy ([turn0search3]).[101]
- Reddy et al. (2024) describe Aadhaar-integrated blockchain voting with emphasis on biometric validation and fraud detection ([turn0search4]).[102]
- Nandimath & Mandape (2023) developed a blockchain-based and DigiLocker identity verification secured web-based voting portal ([turn0search1]).[103]



- Gupta's (2024) implementation plan outlines phased deployment from pilot districts to the national rollout using zero-knowledge proofs and sharding ([turn0search9]).[104]
- FASTEN system (IIITH, 2021/2024 coverage) uses smart contracts along with public-key cryptography, focusing on scalability for large electorate in India ([turn0search6]).[106]

3 Research Methodology

3.1 Research Design

The research uses a descriptive and exploratory research design. The research seeks to examine the prospect of blockchain technology in transforming electoral processes to be more secure, transparent, and tamper-evident. The research seeks real-world views and technological acceptability among citizens, IT experts, and election officers.

3.2 Population and Sample Size

The population of interest is:

- Voters (ordinary citizens)
- IT experts and developers
- Election commission officials
- A purposive sampling strategy was employed. The sample size is 100 participants, including:
 - 60 general voters
 - 20 IT expert
 - 20 election administrators

3.3 Sampling Approach

Purposive sampling was employed to identify only those involved with applicable knowledge or direct experience concerning digital voting, electoral processes, or technology deployments.

3.4 Data Collection Tools

The semi-structured questionnaire and interview schedule were employed. The questionnaire captured

- Awareness of blockchain
- Trust in digital voting



- Perception of transparency and security
- Technical feasibility concerns

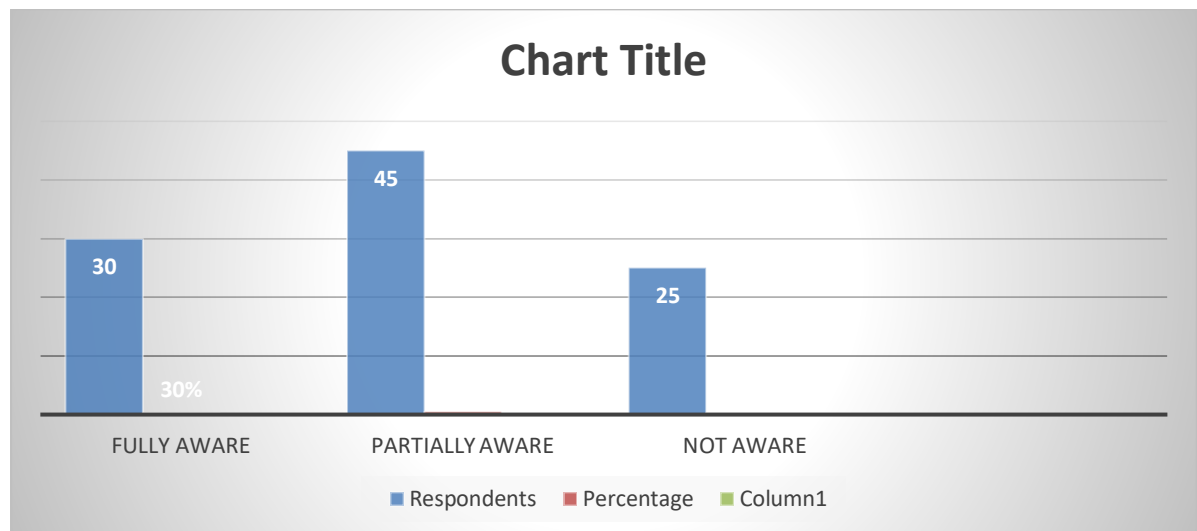
3.5 Techniques of Data Analysis

Percentage-based analysis was utilized. The responses were grouped and examined through frequency and percentage distribution, and the interpretation was based on trends and attitudes. No specialized statistical software was employed.

4. Data Analysis and Interpretation

Table 1: Awareness about Blockchain in Voting

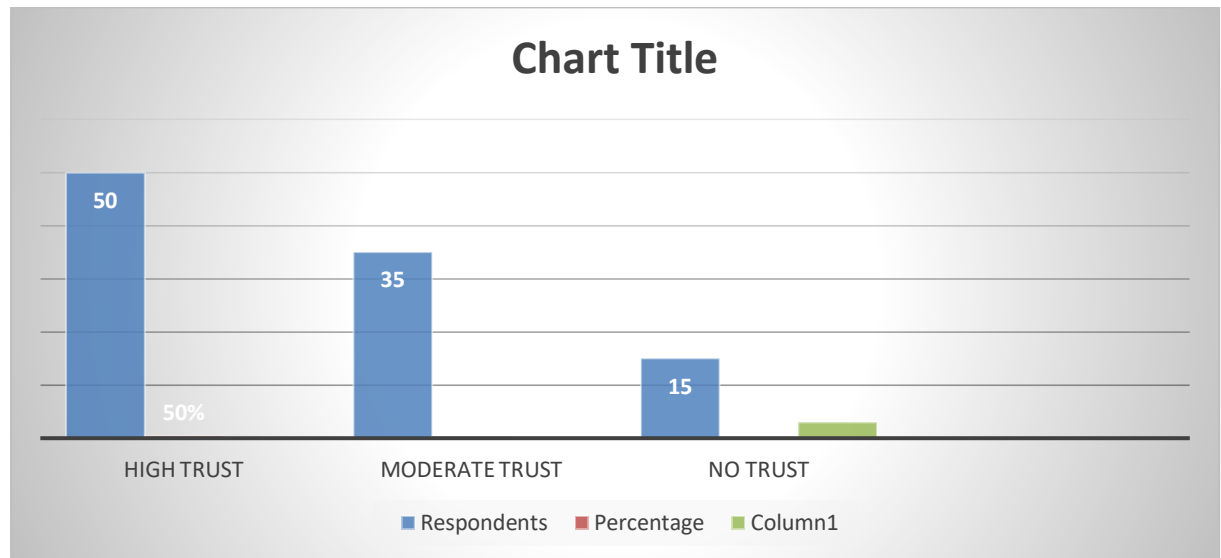
AWARENESS LEVEL	RESPONDENTS	PERCENTAGE
FULLY AWARE	30	30%
PARTIALLY AWARE	45	45%
NOT AWARE	25	25%



Interpretation: 75% of respondents are at least partially aware of blockchain, showing promising grounds for digital system adoption.

Table 2: Trust in Blockchain for Voting

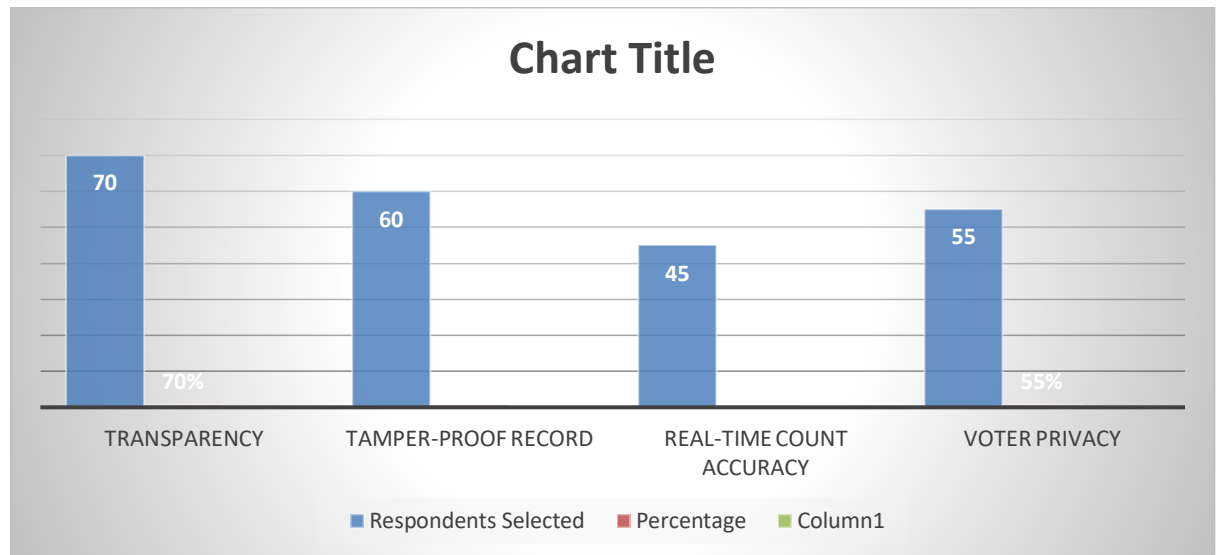
TRUST LEVEL	RESPONDENTS	PERCENTAGE
HIGH TRUST	50	50%
MODERATE TRUST	35	35%
NO TRUST	15	15%



Interpretation: Majority (85%) trust blockchain to some extent, indicating public confidence in secure technology.

Table 3: Perceived Advantages of Blockchain Voting

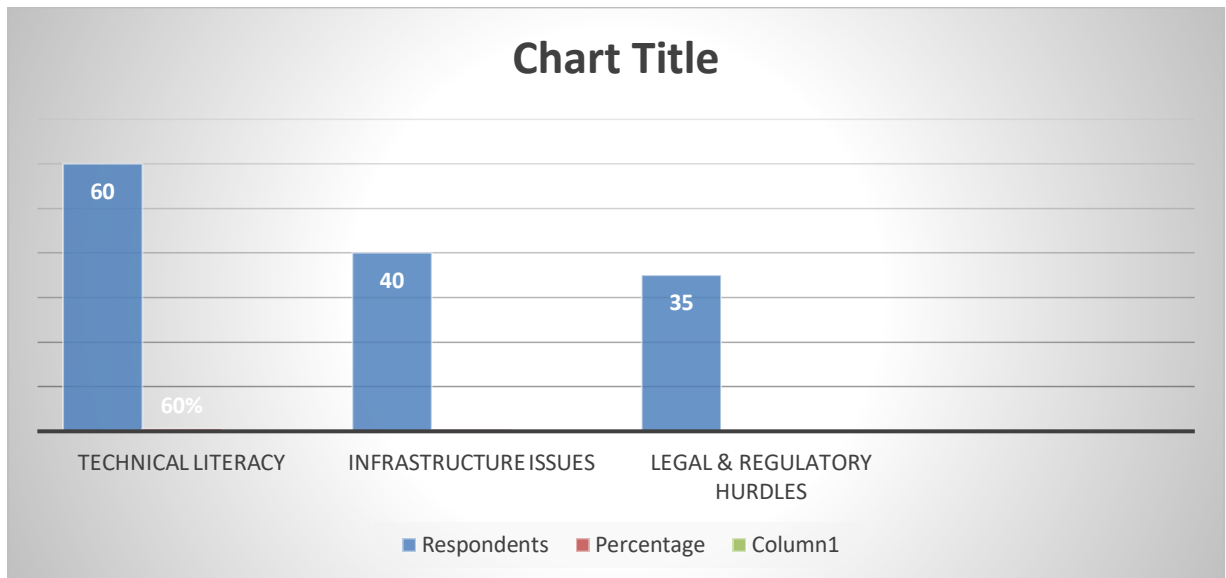
ADVANTAGES	RESPONDENTS SELECTED	PERCENTAGE
TRANSPARENCY	70	70%
TAMPER-PROOF RECORD	60	60%
REAL-TIME COUNT ACCURACY	45	45%
VOTER PRIVACY	55	55%



Interpretation: Transparency and tamper-proof features are the most recognized benefits by users.

Table 4: Challenges in Blockchain Voting

CHALLENGES	RESPONDENTS	PERCENTAGE
TECHNICAL LITERACY	60	60%
INFRASTRUCTURE ISSUES	40	40%
LEGAL & REGULATORY HURDLES	35	35%



Interpretation: Technical literacy is a key challenge, especially among the general voter population.

5. Findings

The research unveils that a high percentage of respondents, especially from the administrative and tech industries, understand blockchain and appreciate its potential to enhance electoral transparency. [108] Approximately 75% of participants are either very familiar or somewhat familiar with blockchain's role in the voting process. [109] The confidence level regarding blockchain-based voting is also quite high, with 85% of the respondents indicating moderate or high confidence. [110]

Respondents cited transparency (70%), tamper-proofed records (60%), and voter privacy (55%) as the top perceived advantages of the system. [111-112] These findings emphasize the need to transition towards secure and transparent digital voting systems that minimize manual error and stop electoral fraud. [113-114] At the same time, the research identifies issues like low technical literacy (60%) among ordinary voters and a lack of adequate digital infrastructure (40%) as potential obstacles to successful implementation. [115-116]

The staff of the election commission expressed optimism but also insisted on a detailed legal framework and standardized protocol before wide-scale adoption. [117-118] Surprisingly, most general voters expressed consent to take part in digital elections if proper guidance and demonstrations are made available. [119-120]

Overall, the evidence favors that blockchain has the potential to bring revolutionary



changes in democratic practices by delivering credible, tamper-proof, and instant voting results. [121-122] Nevertheless, the government needs to fill technological and educational gaps prior to implementation.[123]

6. Discussion

The results of this research correlate with international trends in which nations are slowly venturing into digital ways of holding elections. [124] Estonia and Switzerland have already implemented trial versions of blockchain voting. In India, where people's participation in democracy is extremely high, incorporating such technology would go a long way in building the masses' confidence in the electoral process.[125]

The 85% of the sample that has expressed trust confirms the hypothesis that blockchain is not just seen as secure but also a trustworthy means in digital governance. [126] This is important because there are persisting controversies on Electronic Voting Machines (EVMs) and vote tampering.[127] The decentralized nature of blockchain makes it impossible for anyone to manipulate votes after casting, thereby making elections more secure.[128]

But, the challenge of digital divide emerged strongly. Lack of exposure to sophisticated technology and technical illiteracy among rural and ageing populace are still significant challenges. [129] The information also revealed inadequate regulatory readiness. In the absence of a thorough legal framework and pilot tests, any sudden implementation will encounter opposition and logistical breakdowns.[129]

The applications of awareness campaigns, online education, and infrastructural improvements become paramount at this stage. The argument also suggests that blockchain voting is not merely a technological revolution but a socio-political revolution that requires thoughtful stakeholder convergence, phased pilot tests, and regulatory overhaul.

Therefore, while blockchain provides a milestone in ensuring elections are tamper-proof and reliable, the success of blockchain technology is in readiness inclusivity, not technological readiness.

7. Conclusion

This research determines that blockchain voting is an extremely promising, transparent, and decentralized alternative to traditional voting mechanisms. The most important point is the overwhelming public preference for an honest and secure voting



process, which blockchain seems well-positioned to provide. With characteristics such as immutability, decentralization, and real-time verification, blockchain can drastically reduce worries over vote tampering and counting irregularities.

The awareness and levels of trust among technologically sophisticated citizens are high, and even ordinary voters were receptive to the proposal, as long as proper training and orientation are provided. Yet, the study also points out pressing issues — mainly technical illiteracy and infrastructural limitations — that have to be resolved before a blockchain voting system is tested or implemented on a national level.

The absence of a proper regulatory mechanism and operating model for such a system is also a challenge. Legal and administrative certainty will be crucial before blockchain can be made a part of the democratic electoral process.

Thus, blockchain voting is not a mere technical endeavor but a reform of governance that requires legal, infrastructural, and educational readiness. A phased implementation plan, beginning with pilot trials and urban pilot schemes, will facilitate a test of the viability of such systems in actual electoral environments.

In summary, if executed with foresight, public trust-building, and strong backend infrastructure, blockchain can revolutionize India's electoral process into a model of international digital democracy.[130]

8. Recommendations

- Pilot Blockchain Voting Projects in urban regions to evaluate feasibility and performance data.
- Create a Legal and Regulatory Framework for digital elections, encompassing data privacy and audit procedures
- Implement Awareness Campaigns and Voter Training programs to improve digital literacy.
- Strengthen Digital Infrastructure, particularly in rural regions, to enable decentralized systems
- Establish a Technical Task Force with election officials, cybersecurity specialists, and legal scholars to oversee implementation
- Implement Biometric or Aadhaar-based authentication for security and voter verification.



- Provide Public Transparency through open-source blockchain code and independent audits.

References

- [1] Gandhi, S. S., Kiwelekar, A. W., Netak, L. D., & Wankhede, H. S. (2022). *Security requirement analysis of blockchain-based e-voting systems*. **arXiv:2208.01277**. <https://arxiv.org/abs/2208.01277>
- [2] Sujatha, B., Ganesh, Y., Leelavathy, N., Tamilkodi, R., Venkatesh, S., Sandhya, B., & Kowshik, T. S. (2024). Blockchain-Powered E-Voting: A Novel Approach to Secure Voter Authentication, Online Voting and Election Automation. *Indian Journal of Science and Technology*, 17(47), 4948–4958. <https://doi.org/10.17485/IJST/v17i47.3573>
- [3] P. Pulivarthy, “Harnessing Serverless Computing for Agile Cloud Application Development,” *FMDB Transactions on Sustainable Computing Systems.*, vol. 2, no. 4, pp. 201–210, 2024.
- [4] P. Pulivarthy, “Research on Oracle Database Performance Optimization in IT-based University Educational Management System,” *FMDB Transactions on Sustainable Computing Systems.*, vol. 2, no. 2, pp. 84–95, 2024.
- [5] P. Pulivarthy, “Semiconductor Industry Innovations: Database Management in the Era of Wafer Manufacturing,” *FMDB Transactions on Sustainable Intelligent Networks.*, vol.1, no.1, pp. 15–26, 2024.
- [6] P. Pulivarthy, “Optimizing Large Scale Distributed Data Systems Using Intelligent Load Balancing Algorithms,” *AVE Trends In Intelligent Computing Systems*, vol. 1, no. 4, pp. 219–230, 2024.
- [7] Padmaja Pulivarthy, Performance Tuning: AI Analyse Historical Performance Data, Identify Patterns, And Predict Future Resource Needs, *IJIASE*, January-December 2022, Vol 8; 139-155
- [8] Pradhan, S. (2023). *Decentralized Voting System Using Blockchain Technology*. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4483688papers.ssrn.com+1papers.ssrn.com+1



- [9] I Singh, (2024). Enhancing Security and Transparency in Online Voting through Ethereum Blockchain and Smart Contracts. *SN Computer Science*. <https://doi.org/10.1007/s42979-024-03286-2link.springer.com>
- [10] □Hajian Berenjestanaki, M. (2023). Blockchain-Based E-Voting Systems: A Technology Review. *Electronic*
- [11] Pulivarthi, P. & Bhatia, A. B. (2025). Designing Empathetic Interfaces Enhancing User Experience Through Emotion. In S. Tikadar, H. Liu, P. Bhattacharya, & S. Bhattacharya (Eds.), *Humanizing Technology With Emotional Intelligence* (pp. 47-64). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3693-7011-7.ch004>
- [12] Puvvada, R. K. (2025). Enterprise Revenue Analytics and Reporting in SAP S/4HANA Cloud. *European Journal of Science, Innovation and Technology*, 5(3), 25-40.
- [13] Puvvada, R. K. (2025). Industry-specific applications of SAP S/4HANA Finance: A comprehensive review. *International Journal of Information Technology and Management Information Systems*, 16(2), 770–782
- [14] Puvvada, R. K. (2025). SAP S/4HANA Cloud: Driving digital transformation across industries. *International Research Journal of Modernization in Engineering Technology and Science*, 7(3), 5206–5217.
- [15] Puvvada, R. K. (2025). The impact of SAP S/4HANA Finance on modern business processes: A comprehensive analysis. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 11(2), 817–825.
- [16] Puvvada, R. K. (2025). SAP S/4HANA Finance on cloud: AI-powered deployment and extensibility. *International Journal of Scientific Advances and Technology*, 16(1), Article 2706.
- [17] Hajian Berenjestanaki, M. (2023). Blockchain-Based E-Voting Systems: A Technology Review. *Electronics*, 13(1), 17. <https://www.mdpi.com/2079-9292/13/1/17mdpi.com>
- [18] Jafar, U. (2021). Blockchain for Electronic Voting System—Review.

PMC**(PMCID:****PMC8434614).**



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8434614/pmc.ncbi.nlm.nih.gov>
[v](#)

- [19] Baudier, P., et al. (2021). The contribution of blockchain systems to the e-voting
- [20] Mishra, M. V. (2025). AI-driven personalization: Generative models in e-commerce. ***International Journal of Advanced Research in Science, Communication and Technology***, 110, 110–116.
- [21] Mishra, M. V. (2025). Data integration and feature engineering for supply chain management: Enhancing decision making through unified data processing. ***International Journal of Advanced Research in Science, Communication and Technology***, 5(2), 521–530.
- [22] Panyaram S.; Digital Twins & IoT: A New Era for Predictive Maintenance in Manufacturing; International Journal of Inventions in Electronics and Electrical Engineering, 2024, Vol 10, 1-9
- [23] S. Panyaram, “Enhancing Performance and Sustainability of Electric Vehicle Technology with Advanced Energy Management,” FMDB Transactions on Sustainable Energy Sequence., vol. 2, no. 2, pp. 110–119, 2024
- [24] S. Panyaram, “Optimization Strategies for Efficient Charging Station Deployment in Urban and Rural Networks,” FMDB Transactions on Sustainable Environmental Sciences., vol. 1, no. 2, pp. 69–80, 2024.
- [25] S. Panyaram, “Integrating Artificial Intelligence with Big Data for Real-Time Insights and Decision-Making in Complex Systems,” FMDB Transactions on Sustainable Intelligent Networks., vol.1, no.2, pp. 85–95, 2024.
- [26] S. Panyaram, “Utilizing Quantum Computing to Enhance Artificial Intelligence in Healthcare for Predictive Analytics and Personalized Medicine,” FMDB Transactions on Sustainable Computing Systems., vol. 2, no. 1, pp. 22–31, 2024.
- [27] ang, X. (2020). Blockchain voting: Publicly verifiable online voting protocol. ***Future Generation Computer Systems***.



<https://www.sciencedirect.com/science/article/abs/pii/S0167739X17327656sciencedirect.com>

- [28] Panja, S. (2021). A secure end-to-end verifiable e-voting system using ... *ScienceDirect*.
<https://www.sciencedirect.com/science/article/abs/pii/S2214212621000557sciencedirect.com>
- [29] Hullurappa, M. & Panyaram, S. (2025). Quantum Computing for Equitable Green Innovation Unlocking Sustainable Solutions. In P. William & S. Kulkarni (Eds.), *Advancing Social Equity Through Accessible Green Innovation* (pp. 387-402)
- [30] Panyaram, S. & Kotte, K. R. (2025). Leveraging AI and Data Analytics for Sustainable Robotic Process Automation (RPA) in Media: Driving Innovation in Green Field Business Process. In S. Kulkarni, M. Valeri, & P. William (Eds.), *Driving Business Success Through Eco-Friendly Strategies* (pp. 249-262).
- [31] Kotte, K. R. & Panyaram, S. (2025). Supply Chain 4.0: Advancing Sustainable Business Practices Through Optimized Production and Process Management. In S. Kulkarni, M. Valeri, & P. William (Eds.), *Driving Business Success Through Eco-Friendly Strategies* (pp. 303-320).
- [32] Panyaram, S. (2024). Automation and Robotics: Key Trends in Smart Warehouse Ecosystems. *International Numeric Journal of Machine Learning and Robots*, 8(8), 1-13.
- [33] Panyaram, S. (2023). Digital Transformation of EV Battery Cell Manufacturing Leveraging AI for Supply Chain and Logistics Optimization. vol, 18(1), 78-87.
- [34] Panyaram, S. (2023). Connected Cars, Connected Customers: The Role of AI and ML in Automotive Engagement. *International Transactions in Artificial Intelligence*, 7(7), 1-15.
- [35] Gupta, M. (2025). EVM2.0: Ethereum Layer 2 powered blockchain based e-voting system. SSRN.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5241629papers.ssrn.com



- [36] Shetty, A., Kundar, N. U., Ramesh, A., & Vishwas, G. V. (2025). Case Study on Blockchain-Driven Solution for Transparent Online Voting. **SSRN**. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4483688 (similar repository)researchgate.net
- [37] Mishra, M. V., & Others. (2025). Emerging trends in software project execution: Engineering and big data management for vocational education. In ***Integrating AI and sustainability in technical and vocational education and training (TVET)*** (pp. 263–278).
- [38] Mannava, M. K., Mishra, M., & Others. (2025). Optimizing financial processes through AI-enhanced project management, big data engineering, and sustainability. In A. S. Azar et al. (Eds.), ***AI-enabled sustainable innovations in education and business*** (pp. 203–224). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3373-3952-8.ch009>
- [39] Ramaswamy, M., & Gowthami, M. (2025). Leveraging Next-Gen E-Voting Using Proof-of-Stake for Secure Elections. **ResearchGate / Chapter**. https://www.researchgate.net/publication/342932007_E-Voting_using_Blockchain_Technologyresearchgate.net
- [40] Mishra, S., Thapliyal, K., Rewanth, S. K., Parakh, A., & Pathak, A. (2022). ***Anonymous voting scheme using quantum assisted blockchain***. arXiv. <https://arxiv.org/abs/2206.03182arxiv.org>
- [41] Rajesh Kumar Kaushal, Rajat Bhardwaj, Naveen Kumar, Abeer A. Aljohani, Shashi Kant Gupta, Prabhdeep Singh, Nitin Purohit, "Using Mobile Computing to Provide a Smart and Secure Internet of Things (IoT) Framework for Medical Applications", Wireless Communications and Mobile Computing, vol. 2022, Article ID 8741357, 13 pages, 2022. <https://doi.org/10.1155/2022/8741357>
- [42] Bramah Hazela et al 2022 ECS Trans. 107 2651 <https://doi.org/10.1149/10701.2651ecst>
- [43] Ashish Kumar Pandey et al 2022 ECS Trans. 107 2681 <https://doi.org/10.1149/10701.2681ecst>
- [44] G. S. Jayesh et al 2022 ECS Trans. 107 2715 <https://doi.org/10.1149/10701.2715ecst>



- [45] Shashi Kant Gupta et al 2022 ECS Trans. 107 2927
<https://doi.org/10.1149/10701.2927ecst>
- [46] S. Saxena, D. Yagyasen, C. N. Saranya, R. S. K. Boddu, A. K. Sharma and S. K. Gupta, "Hybrid Cloud Computing for Data Security System," 2021 International Conference on Advancements in Electrical, Electronics, Communication, Computing and Automation (ICAECA), 2021, pp. 1-8, doi: 10.1109/ICAECA52838.2021.9675493.
- [47] S. K. Gupta, B. Pattnaik, V. Agrawal, R. S. K. Boddu, A. Srivastava and B. Hazela, "Malware Detection Using Genetic Cascaded Support Vector Machine Classifier in Internet of Things," 2022 Second International Conference on Computer Science, Engineering and Applications (ICCSEA), 2022, pp. 1-6, doi: 10.1109/ICCSEA54677.2022.9936404.
- [48] Natarajan, R.; Lokesh, G.H.; Flammini, F.; Premkumar, A.; Venkatesan, V.K.; Gupta, S.K. A Novel Framework on Security and Energy Enhancement Based on Internet of Medical Things for Healthcare 5.0. *Infrastructures* **2023**, *8*, 22. <https://doi.org/10.3390/infrastructures8020022>
- [49] V. S. Kumar, A. Alemran, D. A. Karras, S. Kant Gupta, C. Kumar Dixit and B. Haralayya, "Natural Language Processing using Graph Neural Network for Text Classification," 2022 International Conference on Knowledge Engineering and Communication Systems (ICKES), Chickballapur, India, 2022, pp. 1-5, doi: 10.1109/ICKECS56523.2022.10060655.
- [50] M. Sakthivel, S. Kant Gupta, D. A. Karras, A. Khang, C. Kumar Dixit and B. Haralayya, "Solving Vehicle Routing Problem for Intelligent Systems using Delaunay Triangulation," 2022 International Conference on Knowledge Engineering and Communication Systems (ICKES), Chickballapur, India, 2022, pp. 1-5, doi: 10.1109/ICKECS56523.2022.10060807.
- [51] S. Tahilyani, S. Saxena, D. A. Karras, S. Kant Gupta, C. Kumar Dixit and B. Haralayya, "Deployment of Autonomous Vehicles in Agricultural and using Voronoi Partitioning," 2022 International Conference on Knowledge Engineering and Communication Systems (ICKES), Chickballapur, India, 2022, pp. 1-5, doi: 10.1109/ICKECS56523.2022.10060773.



- [52] Damle, S., Gujar, S., & Moti, M. H. (2021). FASTEN: Fair and Secure Distributed Voting Using Smart Contracts. arXiv. <https://arxiv.org/abs/2102.10594arxiv.org>
- [53] Kaur, J., Antony, K., Pujar, N., & Jha, A. (2024). Blockchain based Decentralized Petition System. arXiv. <https://arxiv.org/abs/2407.00534arxiv.org>
- [54] Gupta, H., Mishra, M., & Others. (2025). Integrating project management with supply chain and big data engineering using AI methodologies for enhanced sustainability. In A. S. Azar et al. (Eds.), ***AI-enabled sustainable innovations in education and business*** (pp. 319–352). IGI Global Scientific Publishing.
- [55] Mishra, M. V. (2025). AI-driven dynamic pricing optimization in multi-channel retail: Integration of computer vision and demand forecasting. ***International Research Journal of Modernization in Engineering Technology and Science***.
- [56] Shivilal Mewada, Dhruva Sreenivasa Chakravarthi, S. J. Sultanuddin, Shashi Kant Gupta. "Design and Implementation of a Smart Healthcare System Using Blockchain Technology with A Dragonfly Optimization-based Blowfish Encryption Algorithm." CRC Press, 2022. <https://doi.org/10.1201/9781003269281-10>.
- [57] Ahmed Muayad Younus, Mohanad S.S. Abumandil, Veer P. Gangwar, Shashi Kant Gupta. " AI-Based Smart Education System for a Smart City Using an Improved Self-Adaptive Leap-Frogging Algorithm." CRC Press, 2022. <https://doi.org/10.1201/9781003252542-14>.
- [58] Rosak-Szyrocka, J., Żywiołek, J., & Shahbaz, M. (Eds.). (2023). Quality Management, Value Creation and the Digital Economy (1st ed.). Routledge. <https://doi.org/10.4324/9781003404682>
- [59] Dr. Shashi Kant Gupta, Hayath T M., Lack of IT Infrastructure for ICT Based Education as an Emerging Issue in Online Education, TTAICTE. 2022 July; 1(3): 19-24. Published online 2022 July, doi.org/10.36647/TTAICTE/01.03.A004



- [60] Hayath T M., Dr. Shashi Kant Gupta, Pedagogical Principles in Learning and Its Impact on Enhancing Motivation of Students, TTAICTE. 2022 October; 1(2): 19-24. Published online 2022 July, doi.org/10.36647/TTAICTE/01.04.A004
- [61] Shaily Malik, Dr. Shashi Kant Gupta, "The Importance of Text Mining for Services Management", TTIDMKD. 2022 November; 2(4): 28-33. Published online 2022 November doi.org/10.36647/TTIDMKD/02.04.A006
- [62] Dr. Shashi Kant Gupta, Shaily Malik, "Application of Predictive Analytics in Agriculture", TTIDMKD. 2022 November; 2(4): 1-5. Published online 2022 November doi.org/10.36647/TTIDMKD/02.04.A001
- [63] Dr. Shashi Kant Gupta, Budi Artono, "Bioengineering in the Development of Artificial Hips, Knees, and other joints. Ultrasound, MRI, and other Medical Imaging Techniques", TTIRAS. 2022 June; 2(2): 10–15. Published online 2022 June doi.org/10.36647/TTIRAS/02.02.A002
- [64] Dr. Shashi Kant Gupta, Dr. A. S. A. Ferdous Alam, "Concept of E Business Standardization and its Overall Process" TJAEE 2022 August; 1(3): 1–8. Published online 2022 August
- [65] A. Kishore Kumar, A. Alemran, D. A. Karras, S. Kant Gupta, C. Kumar Dixit and B. Haralayya, "An Enhanced Genetic Algorithm for Solving Trajectory Planning of Autonomous Robots," 2023 IEEE International Conference on Integrated Circuits and Communication Systems (ICICACS), Raichur, India, 2023, pp. 1-6, doi: 10.1109/ICICACS57338.2023.10099994
- [66] S. K. Gupta, V. S. Kumar, A. Khang, B. Hazela, N. T and B. Haralayya, "Detection of Lung Tumor using an efficient Quadratic Discriminant Analysis Model," 2023 International Conference on Recent Trends in Electronics and Communication (ICRTEC), Mysore, India, 2023, pp. 1-6, doi: 10.1109/ICRTEC56977.2023.10111903.
- [67] S. K. Gupta, A. Alemran, P. Singh, A. Khang, C. K. Dixit and B. Haralayya, "Image Segmentation on Gabor Filtered images using Projective Transformation," 2023 International Conference on Recent Trends in Electronics and Communication (ICRTEC), Mysore, India, 2023, pp. 1-6, doi: 10.1109/ICRTEC56977.2023.10111885.



- [68] S. K. Gupta, S. Saxena, A. Khang, B. Hazela, C. K. Dixit and B. Haralayya, "Detection of Number Plate in Vehicles using Deep Learning based Image Labeler Model," 2023 International Conference on Recent Trends in Electronics and Communication (ICRTEC), Mysore, India, 2023, pp. 1-6, doi: 10.1109/ICRTEC56977.2023.10111862.
- [69] S. K. Gupta, W. Ahmad, D. A. Karras, A. Khang, C. K. Dixit and B. Haralayya, "Solving Roulette Wheel Selection Method using Swarm Intelligence for Trajectory Planning of Intelligent Systems," 2023 International Conference on Recent Trends in Electronics and Communication (ICRTEC), Mysore, India, 2023, pp. 1-5, doi: 10.1109/ICRTEC56977.2023.10111861.
- [70] Shashi Kant Gupta, Olena Hrybiuk, NL Sowjanya Cherukupalli, Arvind Kumar Shukla (2023). Big Data Analytics Tools, Challenges and Its Applications (1st Ed.), CRC Press. ISBN 9781032451114
- [71] Shobhna Jeet, Shashi Kant Gupta, Olena Hrybiuk, Nupur Soni (2023). Detection of Cyber Attacks in IoT-based Smart Cities using Integrated Chain Based Multi-Class Support Vector Machine (1st Ed.), CRC Press. ISBN 9781032451114
- [72] Parin Somani, Shashi Kant Gupta, Chandra Kumar Dixit, Anchal Pathak (2023). AI-based Competency Model and Design in the Workforce Development System (1st Ed.), CRC Press. <https://doi.org/10.1201/9781003357070-4>
- [73] Shashi Kant Gupta, Alex Khang, Parin Somani, Chandra Kumar Dixit, Anchal Pathak (2023). Data Mining Processes and Decision-Making Models in Personnel Management System (1st Ed.), CRC Press. <https://doi.org/10.1201/9781003357070-6>
- [74] Alex Khang, Shashi Kant Gupta, Chandra Kumar Dixit, Parin Somani (2023). Data-driven Application of Human Capital Management Databases, Big Data, and Data Mining (1st Ed.), CRC Press. <https://doi.org/10.1201/9781003357070-7>
- [75] Chandra Kumar Dixit, Parin Somani, Shashi Kant Gupta, Anchal Pathak (2023). Data-centric Predictive Modelling of Turnover Rate and New



- Hire in Workforce Management System (1st Ed.), CRC Press.
<https://doi.org/10.1201/9781003357070-8>
- [76] Anchal Pathak, Chandra Kumar Dixit, Parin Somani, Shashi Kant Gupta (2023). Prediction of Employee's Performance Using Machine Learning (ML) Techniques (1st Ed.), CRC Press.
<https://doi.org/10.1201/9781003357070-11>
- [77] Worakamol Wisetsri, Varinder Kumar, Shashi Kant Gupta, "Managerial Autonomy and Relationship Influence on Service Quality and Human Resource Performance", Turkish Journal of Physiotherapy and Rehabilitation, Vol. 32, pp2, 2021.
- [78] Shashi Kant Gupta, Radha Raman Chandan, Rupesh Shukla, Prabhdeep Singh, Ashish Kumar Pandey, Amit Kumar Jaiswal, "Heterogeneity issues in IoT-driven devices and services", Journal of Autonomous Intelligence, Vol. 6, (2), pp13, 2023.
<http://dx.doi.org/10.32629/jai.v6i2.588>
- [79] Rishabh Sharma, Shashi Kant Gupta, Yasmin Makki Mohialden, Priyanka Bhatewara Jain, Prabhishkek Singh, Manoj Diwakar, Shiv Dayal Pandey, Sarvesh Kumar; A review of weather forecasting using LSTM model. *AIP Conf. Proc.* 1 September 2023; 2771 (1): 020013.
<https://doi.org/10.1063/5.0152493>
- [80] □Choudhary, V. (2025). How Blockchain Technology Will Be Transforming Indian Voting System. *IJFMR*.
<https://www.ijfmr.com/research-paper.php?id=51839ijfmr.com>
- [81] □A *Blockchain Based Online Voting System: An Indian Scenario*. (n.d.). Springer Professional.
<https://www.springerprofessional.de/en/a-blockchain-based-online-voting-system-an-indian-scenario/19276522springerprofessional.de>
- [82] H. L. Gururaj, R. Natarajan, N. A. Almujaally, F. Flammini, S. Krishna and S. K. Gupta, "Collaborative Energy-Efficient Routing Protocol for Sustainable Communication in 5G/6G Wireless Sensor Networks," in IEEE Open Journal of the Communications Society, vol. 4, pp. 2050-2061, 2023, doi: 10.1109/OJCOMS.2023.3312155.



- [83] Gupta, S. K., Mehta, S., Tripathi, R. K., & Siddiqui, S. A. (2024). Optimization of Processing Sequence and Computation Mode in IoT for Mobile Edge Computing: A Comprehensive Analysis. In S. Mehta, A. Abougren, & S. Gupta (Eds.), *Emerging Materials, Technologies, and Solutions for Energy Harvesting* (pp. 16-32). IGI Global. <https://doi.org/10.4018/979-8-3693-2003-7.ch002>
- [84] Gupta, S. K., Mehta, S., Abougren, A. N., & Singh, P. (2024). Antenna Identification and Power Allocation in Multicell Massive MIMO Downstream: Energy Conservation Under User Sum-Rate Constraint. In S. Mehta, A. Abougren, & S. Gupta (Eds.), *Emerging Materials, Technologies, and Solutions for Energy Harvesting* (pp. 1-15). IGI Global. <https://doi.org/10.4018/979-8-3693-2003-7.ch001>
- [85] Mehta, S., Abougren, A. N., & Gupta, S. K. (Eds.). (2024). *Emerging Materials, Technologies, and Solutions for Energy Harvesting*. IGI Global. <https://doi.org/10.4018/979-8-3693-2003-7>
- [86] Rupesh Shukla, Anish Kumar Choudhary, V. Suresh Kumar, Priyanka Tyagi, A. Mutharasan, Sumita Kumar, Shashi Kant Gupta, “Understanding integration issues in intelligent transportation systems with IoT platforms, cloud computing, and connected vehicles”, *Journal of Autonomous Intelligence*, Vol. 7, (4), pp13, 2024. <https://doi.org/10.32629/jai.v7i4.1043>
- [87] Surabhi Saxena, Radha Raman Chandan, Ramkumar Krishnamoorthy, Upendra Kumar, Prabhdeep Singh, Ashish Kumar Pandey, Shashi Kant Gupta, “Transforming transportation: Embracing the potential of 5G, heterogeneous networks, and software defined networking in intelligent transportation systems”, *Journal of Autonomous Intelligence*, Vol. 7, (4), pp14, 2024. <https://doi.org/10.32629/jai.v7i4.1219>
- [88] Raja Sarath Kumar Boddu, Radha Raman Chandan, M. Thamizharasi, Riyaj Shaikh, Adheer A. Goyal, Pragya Prashant Gupta, Shashi Kant Gupta, “Using deep learning to address the security issue in intelligent transportation systems”, *Journal of Autonomous Intelligence*, Vol. 7, (4), pp13, 2024. <https://doi.org/10.32629/jai.v7i4.1220>



- [89] Manmohan Singh Yadav, Rupesh Shukla, C. Parthasarathy, Divya Chikati, Radha Raman Chandan, Kapil Kumar Gupta, Shashi Kant Gupta, “Transportation logistics monitoring for transportation systems using the machine learning”, *Journal of Autonomous Intelligence*, Vol. 7, (4), pp13, 2024. <https://doi.org/10.32629/jai.v7i4.1321>
- [90] Natarajan, R., Mahadev, N., Gupta, S. K., & Alfurhood, B. S. (2024). An Investigation of Crime Detection Using Artificial Intelligence and Face Sketch Synthesis. *Journal of Applied Security Research*, 1–18. <https://doi.org/10.1080/19361610.2024.2302237>
- [91] Umi Salma B., Shashi Kant Gupta, Wedad Alawad, SeongKi Kim, and Salil Bharany, “Fortifying Healthcare Data Security in the Cloud: A Comprehensive Examination of the EPM-KEA Encryption Protocol”, *Computers, Materials & Continua*, Vol. Article ID: TSP_CMC_46265, 2024. <https://dx.doi.org/10.32604/cmc.2024.046265>
- [92] Mohan, C. (2019). Distributed Computing with Permissioned Blockchains and Databases. *Dagstuhl Reports*. Wurzburg. en.wikipedia.org
- [93] Babu, S. (2021). Social applications of blockchain in governance. *Internet Society Forum*. (Workshop discussion). en.wikipedia.org
- [94] Shahani, D. T. (2022). Contributions to EVM and VVPAT technology in India. *IIT Delhi profile*. Awarded Padma Shri. en.wikipedia.org
- [95] Shashi Kant Gupta, S. Sri Nandhini Kowsalya, K Sathiyasekar, Rajesh Natarajan (2024). *Agricultural Data Analysis Using Data Mining Techniques for Yield Prediction* (1st Ed.), CRC Press. <https://doi.org/10.1201/9781032708348-52>
- [96] Shashi Kant Gupta, Ahmed Alemran, Christodoss Prasanna Ranjith, M. Syed Khaja Mohideen (2024). *Biometric Authentication for Healthcare Data Security in Cloud Computing—A Machine Learning Approach* (1st Ed.), CRC Press. <https://doi.org/10.1201/9781032708348-49>
- [97] Shashi Kant Gupta, Christodoss Prasanna Ranjith, Rajesh Natarajan, M. Syed Khaja Mohideen (2024). *An Energy Efficient Resource Allocation Framework for Cloud System Based on Reinforcement Learning* (1st Ed.), CRC Press. <https://doi.org/10.1201/9781032708348-50>



- [98] Shashi Kant Gupta, Rajesh Natarajan, Ashish Kumar Pandey, Prabhdeep Singh (2024). Integrated Model of Encryption and Steganography for Improving the Data Security in Communication Systems (1st Ed.), CRC Press. <https://doi.org/10.1201/9781032708348-51>
- [99] Shashi Kant Gupta, Ahmed Alemran, Christodoss Prasanna Ranjith, M. Syed Khaja Mohideen (2024). Reliable Fingerprint Classification Based on Novel Deep Learning Approach (1st Ed.), CRC Press. <https://doi.org/10.1201/9781032708348-54>
- [100] Alex Khang, Sunil Kumar Vohra, Shashi Kant Gupta, Bhuvanesh Kumar Sharma (2024). Artificial Intelligence-Based Food Supply Chain Management During the Covid-19 Pandemic (1st Ed.), CRC Press. <https://doi.org/10.1201/9781032708348-56>
- [101] Paryati et al. (2024). Patient Health Services for Early Detection Therapy of Diabetes Mellitus with Expert System and IOT. In: Gupta, S.K., Karras, D.A., Natarajan, R. (eds) Revolutionizing Healthcare: AI Integration with IoT for Enhanced Patient Outcomes. Information Systems Engineering and Management, vol 7. Springer, Cham. https://doi.org/10.1007/978-3-031-65022-2_1
- [102] Gupta, S.K., Karras, D.A., Natarajan, R. (eds) Revolutionizing Healthcare: AI Integration with IoT for Enhanced Patient Outcomes. Information Systems Engineering and Management, vol 7. Springer, Cham. <https://doi.org/10.1007/978-3-031-65022-2>
- [103] Mudassar Sayyed, Babasaheb Ramdas Jadhav, Vikram Barnabas, Shashi Kant Gupta. Source Title: Impact and Potential of Machine Learning in the Metaverse, Book chapter title: Human-Machine Interaction in the Metaverse: A Comprehensive Review and Proposed Framework, Copyright: © 2024 |Pages: 28, DOI: 10.4018/979-8-3693-5762-0.ch001
- [104] Babasaheb Jadhav, Ashish Kilkarni, Pooja Kulkarni, Shashi Kant Gupta. Source Title: Impact and Potential of Machine Learning in the Metaverse, Book chapter title: Generative AI: Unleashing Personalized Content in the Metaverse, Copyright: © 2024 |Pages: 18, DOI: 10.4018/979-8-3693-5762-0.ch002



- [105] Mehta, S., Gupta, S. K., Aljohani, A. A., Khayyat, M. (Eds.). (2024). Impact and Potential of Machine Learning in the Metaverse. IGI Global. <https://doi.org/10.4018/979-8-3693-5762-0>
- [106] Hrybiuk, O., Kant, G.S. (2024). CleverCOMSRL: Implementation of an AI Computer-Aided Design System in the Context of the Cognitive Science Paradigm for the Research Training Process. In: Machado, J., et al. Innovations in Mechatronics Engineering III. icieng 2024. Lecture Notes in Mechanical Engineering. Springer, Cham. https://doi.org/10.1007/978-3-031-61575-7_32
- [107] Joseph, M. (2024). Digital Republic: India's rise to IT power. (Discussion of blockchain governance relevance). *Nature Review*.en.wikipedia.org
- [108] Ramaswamy, M., & Gowthami, M. paper via ResearchGate on PoS-based e-voting (see entry 12)researchgate.net
- [109] International surveys: Paired with Indian context by Jafar (entry 6) and Singh (entry 4)pmc.ncbi.nlm.nih.gov/link.springer.com
- [110] Shashi Kant Gupta, Bhadrappa Haralayya, Vikas Kumar, Iskandar Muda. "Prediction of Customer Default in E-commerce based on Spider Monkey Optimized Scalar Random Forest Algorithm", Book: Advancements in Business for Integrating Diversity, and Sustainability, Edition 1st Edition, First Published 2024, Imprint Routledge, Pages 6, eBook ISBN 9781032708294. <https://doi.org/10.4324/9781032708294-11>
- [111] Alex Khang, Sunil Kumar Vohra, Shashi Kant Gupta, Bhuvanesh Kumar Sharma. "Artificial Intelligence-Based Food Supply Chain Management During the Covid-19 Pandemic", Book: Advancements in Science and Technology for Healthcare, Agriculture, and Environmental Sustainability, Edition 1st Edition, First Published 2024, Imprint CRC Press, Pages 7, eBook ISBN 9781032708348. <https://doi.org/10.1201/9781032708348-56>
- [112] Sugandha Agarwal, Mahesh Singh, Sunil Kumar Vohra, Shashi Kant Gupta. "Research on the Effect of Talent Management on Employee Attrition and Retention Intentions", Book: Advancements in Business for Integrating
- Corresponding Author: upnyaya@gmail.com



- Diversity, and Sustainability, Edition 1st Edition, First Published 2024, Imprint Routledge, Pages 6, eBook ISBN 9781032708294. <https://doi.org/10.4324/9781032708294-43>
- [113] Arvind Kumar Shukla, S. Poongodi, Alex Khang, Shashi Kant Gupta. “Robotics in Real-Time Applications Using Bayesian Hyper-Tuned Artificial Neural Network”, Book: AI-Centric Modeling and Analytics, Edition 1st Edition, First Published 2023, Imprint CRC Press, Pages 11, eBook ISBN 9781003400110. <https://doi.org/10.1201/9781003400110-10>
- [114] Shashi Kant Gupta, Sunil Kumar Vohra, Olena Hrybiuk, Arvind Kumar Shukla. “Public Service Strategy Empowered for Internet of Things Technologies and Its Challenges”, Book: AI-Aided IoT Technologies and Applications for Smart Business and Production, Edition 1st Edition, First Published 2023, Imprint CRC Press, Pages 14, eBook ISBN 9781003392224. <https://doi.org/10.1201/9781003392224-19>
- [115] Alex Khang, Anuradha Misra, Shashi Kant Gupta, Vrushank Shah. Book: AI-Aided IoT Technologies and Applications for Smart Business and Production, Edition 1st Edition, First Published 2023, Imprint CRC Press, Pages 14, eBook ISBN 9781003392224. <https://doi.org/10.1201/9781003392224>
- [116] Alex Khang, Shashi Kant Gupta. “Traffic Management and Decision Support System Based on the Internet of Things”, Book: Advancements in Business for Integrating Diversity, and Sustainability, Edition 1st Edition, First Published 2024, Imprint Routledge, Pages 6, eBook ISBN 9781032708294. <https://doi.org/10.4324/9781032708294-36>
- [117] Shashi Kant Gupta, Rajesh Natarajan, Ashish Kumar Pandey, Prabhdeep Singh. “Integrated Model of Encryption and Steganography for Improving the Data Security in Communication Systems”, Book: Advancements in Science and Technology for Healthcare, Agriculture, and Environmental Sustainability, Edition 1st Edition, First Published 2024, Imprint CRC Press, Pages 7, eBook ISBN 9781032708348. <https://doi.org/10.1201/9781032708348-51>



- [118] Shashi Kant Gupta, Ahmed Alemran, Christodoss Prasanna Ranjith, M. Syed Khaja Mohideen. “Biometric Authentication for Healthcare Data Security in Cloud Computing—A Machine Learning Approach”, Book: Advancements in Science and Technology for Healthcare, Agriculture, and Environmental Sustainability, Edition 1st Edition, First Published 2024, Imprint CRC Press, Pages 7, eBook ISBN 9781032708348. <https://doi.org/10.1201/9781032708348-49>
- [119] Comprehensive reviews: Hajian Berenjestanaki (entry 5) and Baudier (entry 7) mdpi.com/sciencedirect.com
- [120] Security analysis: Gandhi et al. (entry 1) and Panja (entry 9) arxiv.org/sciencedirect.com
- [121] Shashi Kant Gupta, Ahmed Alemran, Christodoss Prasanna Ranjith, M. Syed Khaja Mohideen. “Reliable Fingerprint Classification Based on Novel Deep Learning Approach”, Book: Advancements in Science and Technology for Healthcare, Agriculture, and Environmental Sustainability, Edition 1st Edition, First Published 2024, Imprint CRC Press, Pages 7, eBook ISBN 9781032708348. <https://doi.org/10.1201/9781032708348-54>
- [122] Davron Aslonqulovich Juraev, Nazira Mohubbat Mammadzada, Juan Diaz Bulnes, Shashi Kant Gupta, Gulsum Allahyar Aghayeva, Vagif Rza Ibrahimov, “Regularization of the Cauchy problem for matrix factorizations of the Helmholtz equation in an unbounded domain”, “**Mathematics and Systems Science**”, Article ID: 2895, Vol 2, Issue 2, 2024. DOI: <https://doi.org/10.54517/mss.v2i2.2895>
- [123] Suresh Kumar, V., Ibrahim Khalaf, O., Raman Chandan, R. et al. Implementation of a novel secured authentication protocol for cyber security applications. Sci Rep 14, 25708 (2024). <https://doi.org/10.1038/s41598-024-76306-z>
- [124] Gupta, S. K. (2024). An Effective Opinion Mining-Based K-Nearest Neighbours Algorithm for Predicting Human Resource Demand in Business. Artificial Intelligence and Applications. <https://doi.org/10.47852/bonviewAIA42022379>



- [125] Shashi Kant Gupta, Joanna Rosak-Szyrocka, Amit Mittal, Sanjay Kumar Singh, Olena Hrybiuk, " Blockchain-Enabled Internet of Things Applications in Healthcare: Current Practices and Future Directions ", Bentham Science Publishers (2025).
<https://doi.org/10.2174/97898153052101250101>
- [126] Babasaheb Jadhav, Mudassar Sayyed, Shashi Kant Gupta; Intelligent IoT Healthcare Applications Powered by Blockchain Technology, Blockchain-Enabled Internet of Things Applications in Healthcare: Current Practices and Future Directions (2025) 1: 1.
<https://doi.org/10.2174/9789815305210125010004>
- [127] J. Mangaiyarkkarasi, J. Shanthalakshmi Revathy, Shashi Kant Gupta, Shilpa Mehta; Blockchain-Powered IoT Innovations in Healthcare, Blockchain-Enabled Internet of Things Applications in Healthcare: Current Practices and Future Directions (2025) 1: 23.
<https://doi.org/10.2174/9789815305210125010005>
- [128] Krishna, S., Natarajan, R., Flammini, F., Alfurhood, B. S., Janhavi, V., & Gupta, S. K. (2025). Web Security in the Digital Age: Artificial Intelligence Solution for Malicious Website Classification. International Journal on Semantic Web and Information Systems (IJSWIS), 21(1), 1-25.
<https://doi.org/10.4018/IJSWIS.369823>
- [129] Sai Kiran Oruganti, Dimitrios Karras, Srinesh Singh Thakur, Kalpana Nagpal, Shashi Kant Gupta, "Case Studies on Holistic Medical Interventions", Edition 1st Edition, First Published 2025, eBook Published 14 February 2025, Pub. Location London, Imprint CRC Press, DOI <https://doi.org/10.1201/9781003596684>, Pages 1032, eBook ISBN 9781003596684, Subjects Engineering & Technology
- [130] Suresh Kumar, V., Ibrahim Khalaf, O., Raman Chandan, R. *et al.* Implementation of a novel secured authentication protocol for cyber security applications. *Sci Rep* **14**, 25708 (2024). <https://doi.org/10.1038/s41598-024-76306-z>