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Artificial Intelligence's Broad Impact: Exploring Capabilities, Applications, and Emerging Frontiers while Addressing Challenges for a Smarter Future

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Abstract: Artificial intelligence (AI) is revolutionizing diverse sectors by transforming business models, automating decision-making, and providing unprecedented insights. This paper explores the extensive capabilities and applications of AI, including its integration with technologies like blockchain for enhanced security and the use of machine learning algorithms for continuous system improvement. We delve into AI's significant impact on healthcare, where it improves patient care, expedites diagnoses, and streamlines administrative tasks. Furthermore, the critical role of AI in information technologies and cybersecurity is examined, highlighting its ability to detect threats, automate security operations, and enhance overall cyber defences. The paper also addresses the ethical and social implications of AI deployment, such as data privacy and algorithmic bias, emphasizing the need for transparent and accountable AI systems. Finally, the application of AI in industrial automation, particularly in the food industry, is discussed, showcasing its contributions to operational efficiency, waste reduction, and sustainable practices. Despite its transformative potential, the paper acknowledges the challenges associated with AI implementation, including data security, ethical considerations, and the need for continuous system maintenance.

Keywords: Artificial Intelligence (AI), Machine Learning, Blockchain, Healthcare, Cybersecurity, Ethical Implications, Industrial Automation.

I. INTRODUCTION

The new digital universe continues to evolve at increasingly rapid rates, propelled by the accelerated innovation and merging of future technologies such as artificial intelligence (AI), cybersecurity, blockchain, mobile platforms, and industrial automation. Modernizations are very interlinked, with developments in one area often pushing innovation in others, resulting in complex technological ecosystems impacting many industries simultaneously [1]. This growing interdependence requires a general understanding of how such technologies affect and interact with each other across industries. Their convergence offers new solutions to existing limitations, resulting in revolutionary changes in healthcare, communication, business processes, and security systems [2]. While these technologies revolutionize the way industry functions, they also pose new security issues that require advanced governance mechanisms and agile cybersecurity strategies in an increasingly interconnected world [3]. Though they promise to revolutionize processes and systems, these technologies remain in their nascent stages, languishing behind immature frameworks and non-standardized practices. This paper attempts to trace the collective evolution of these emerging technologies, their collective influence across sectors, and their evolving role in addressing the increasingly complex challenges of the digital era.

II. ARTIFICIAL INTELLIGENCE: CAPABILITIES, APPLICATIONS, AND SECURITY CONCERNS

We now have the era of revolution in knowledge of all sorts in artificial intelligence, which transforms business models and life cycle operational modes, namely making use of models and algorithms, computational computers to analyze massive data sets, and evaluating, which of course, automate decision making and offers insights not available previously [4]. However, the power of AI is a big deal, which includes, for instance, machine and natural language processing, computer vision, and robotics, and each subfield provides a bit of technology to amplify the overall power of AI. Utilize Machine learning algorithms, such as Deep learning and reinforcement learning, for computer systems that can learn without prior knowledge, so that the system can gain performance over time and be capable of learning to cope with environmental changes [2]. The incorporation of AI with the other technologies, such as blockchain, ensures the Security

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as well as verification of the stakeholder for the data, encrypts the data and deals of data sharing, which bring into existence the decentralized intelligent system and gives efficiency, automated decision-making, collaborative decision making, scalability [1]. AI will help automate low-level tasks, optimize resource usage, and create custom products/services for personal packs on health, finance, and trade. Such cyber threat alert systems rely heavily on AI systems for real-time detection of response mechanisms, observing no surprises in the allocated security user data and patterns of manifestations not consistent with the behavior [4]. Figure 1 shows the AI-driven cycle.

It will result in most of the AI automation that will replace them, and an extraordinary amount of data has to be processed to make decisions, as due to the significant degrees, there was a decline in efficiency, productivity, and innovation in almost every sector [5]. On the other hand, to the extent that the AI can also create as much harm as it resolves, this brings the demand for stricter regulatory and enforcement measures that somehow address legal issues of accountability and transparency, ethical issues of discrimination, and security issues [11]. The limit to publish AI-generated devices within corporate Infosec has decreased dramatically for this end user and professional. In light of most security practitioners nowadays relying largely on artificial intelligence to enhance cybersecurity, a balance needs to be maintained between securing as much as possible from its security advantages and threat resistance, even with moral implications [4].

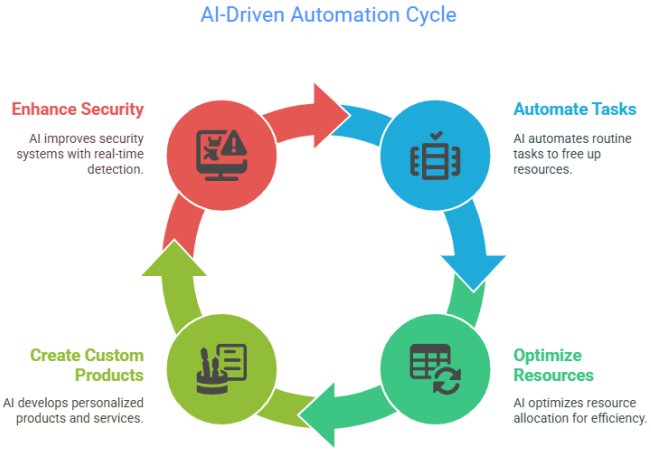

Fig. 1 AI-Driven Automation Cycle

III. AI IN TECHNOLOGIES

Artificial Intelligence and Machine learning (AI/ML) have significantly impacted patient care, medical innovation, and operational efficiency within the medical industry, bringing entirely new options [6]. Today, big data can be expedited and processed with high accuracy and speed due to AI algorithms that augment operational capability and resilience to sickness procedures [27], [28]. AI has predictive ability to be proactive for timely potable and prohibitions, and it also has the capability to monitor patient outcomes and alert people on high risk [29]. In parallel to this, AI can also get involved with tasks that are truly bureaucratic, such as setting up appointments and billing, freeing healthcare professionals to see to their patients. Thanks to AI technology, people are about to have control of their body and their health, a healthy and active life, before having their lives in line to take care of [26, 36]. AI in Applied Medical Imaging and Diagnosis Is Done According to Virtual Patient Care, Drug Discovery, and Patient Engagement [24], [29]. [21]. In parallel, AI can also identify the sources of huge data-riches, the health care industry, and an emerging molecular target, and offer a more feasible drug candidate option [24] [13].

The AP system can examine large amounts of patient data, including physiological signs and test results. It has the ability to predict a prospective medical risk and decide whether the long-term prognosis under the individual patient profiling & suggest the correct treatment of [12]. AI can provide customized personalized therapy recommendations for the sick and improve the precision of the diagnosis through image analysis and forecast analysis [24], [13]. AI techniques are appropriate primarily for recognizing, for instance, cancer and heart disease [31, 33]. AI may enhance the therapy patients' success rate, the accuracy of onsite [not wanting] communication, and the quality of care therapy [32, 34]. The ability for detection of disease has become more intense with the help of AI and contract learning used by health professionals at the service and disease detection level [24]. Therefore, AI in medical diagnosis pushes one level of efficiency in delivering, gives the speed of patient encounters, and with a successful implementation, it brings the concept of hospitals to grow their service to the population. Figure 2 shows healthcare based on AI.

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IV. AI IN INFORMATION TECHNOLOGIES AND CYBERSECURITY

Algorithms AI can even process information from multiple places, like network traffic logs, system logs, and user habits, and find out the trend or peculiarity of an illegal service [7].

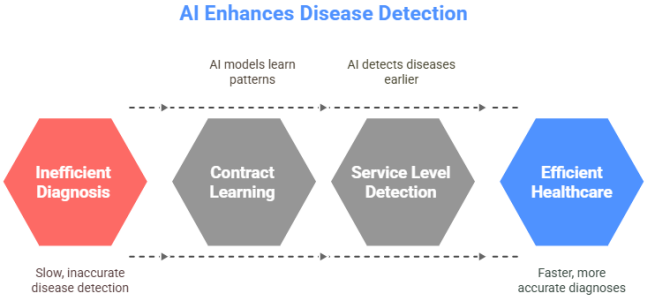

Fig. 2 AI-based healthcare

These algorithms can be used to find predicted attack paradigms and also the newest and most dangerous threats [9]. The traditional methods give you an integrated noise–actional alerts, which induce analyst fatigue and rapid response. In addition, AI is even becoming the most efficient in handling cybersecurity management systems, making it easy and smooth to operate [7, 8]. AI-automating drives more convenience, simplifies complexities, and releases resources for other components of a cybersecurity management lifecycle by automating much of security work [12]. To fill this gap, cybersecurity arrangements can now be tied to even more AI. The demand is challenging threat detection and sharp analytics in cyber threats to protect people and businesses from future threats [13]. In addition, AI is turning security processes and threats for improvement, as it uses detection and response through a better security posture [14].

AI is accelerating and effectively changing the world of Cybersecurity in terms of Routing detection, Prevention, and Response To cyber threats [15, 35]. It is believed that AI-based techniques in general, AI, particularly machine learning and deep learning, have completely enhanced the likelihood of early rupture predictive advantage by Advanced persistent unhealthy [9, 37]. AI acts as the first rank of the autonomous cybersecurity protocols beyond human capabilities when network security breaches happen even for a second [6, 39]. Artificial intelligence (AI), deep learning, and knowledge retrieval technologies can be applied to fight cyber criminals. [16, 38]AI and Security, also known as Cyber-AI, have been emerging since the late 80 's with Anomaly Detection Systems and 90 's Intrusion Detection Systems. Artificial intelligence enables security functions and predictive analysis with the aid of automation, allowing Cybersecurity personnel to focus on more business-oriented projects [17, 40, 42]. AI systems are well labeled and no deliberately screw upon mistakes they when executing them tasks at such a very manner that each and every single menace implicates could be given with just the best possible advice that is [19, 41, 43]. AI is capable of being utilized in order to detect brand new malware variants and to create a signature that it hits [18, 44, 46].

V. AI IN MOBILE SYSTEMS

The users' attitude towards the Security and privacy of mobile applications is also directly connected [20]. The applications in AI education have the possibility to grant the locus of control to students in their learning through formative practices, and offer proactive, relevant support. However, enabling the use of AI in education engenders concerns about privacy, with the data privacy of the student, above all, being very vulnerable [16]. In Healthcare, AI-based technological solutions are used to assist medical diagnosis, treatment planning, and patient tracking to improve healthcare delivery and outcomes [21, 48]. Although AI has many benefits, the main negative consequences of the ethical and social impact of AI are. Data privacy and algorithmic bias are other important challenges [22]. The use of AI in educational settings

Such raises many critical questions of an ethical nature, like privacy of data and algorithmic bias [23] [28]. To deal with these challenges properly, it will be required to have an involvement and deployment of transparent, accountable AI Systems [9, 47]. Educational establishments and teachers must confront the identical immorality of AI and ensure that students are bathed in knowledge of it [24].

By applying artificial intelligence tools, food manufacturers can boost their operations with environmentally sustainable procedures that safeguard food quality. AI systems need precise data protection systems because they process both sensitive consumer data and operation-related data at the same time [25]. Before deploying new systems, the food and nutritional industries need to resolve their data protection hurdles by eliminating ethical problems and discrimination [26, 48].

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These domains need implementation guidelines to manage responsible AI deployment since they deal with both data protection issues and ethical concerns of AI deployment environments. Cybersecurity serves as a fundamental requirement for modern technology because it ensures the protection of computer systems, networks, and data from theft attempts and attack methods [27]. Artificial intelligence paired with blockchain technology operates as an innovative system to create new security structures when organizations achieve their protection preparedness [17, 26]. Integrating AI and Internet of Things technology between electronic systems enhances the operational efficiency of industrial automation systems and production achievement levels [16, 30]. Danger zones in critical infrastructure necessitate secure industrial automation system operations since they represent the only way to manage disturbances. AI detection systems operate in real-time to monitor extensive data collections for security threat identification [27]. Figure 3 shows the different ethical considerations of AI in education.

AI's new cybersecurity solutions can detect anomalies and predict threats because of their ability to perform efficient threat detection. Security-oriented automation ensures computer protection by transforming security operations into effective solutions [9]. The deployment of AI technology in cybersecurity protection achieved its benefits by installing automated systems that operate best with automated response protocols. The high performance quality of AI security threat management operations diminishes the job requirement of security employees to participate actively in their roles. AI depends on continuous system maintenance to operate successfully as a cyber threat protector because these systems lack full cybersecurity responsibilities [9]. Systematic ethical principles ensure the prevention of unintentional bias if properly established [27]. Modern attacks against vital information systems continue because existing cybersecurity initiatives require advanced development [6]. Organizations face major security threats to their systems because of Advanced Persistent Threats, according to references [29]. The system for AI-based APT incident detection and response relies on automatic threat identification as well as immediate big data evaluation according to reference [9]. Security assessments become stronger as organizations develop their data surveillance approaches linked with AI solutions for their operational frameworks.

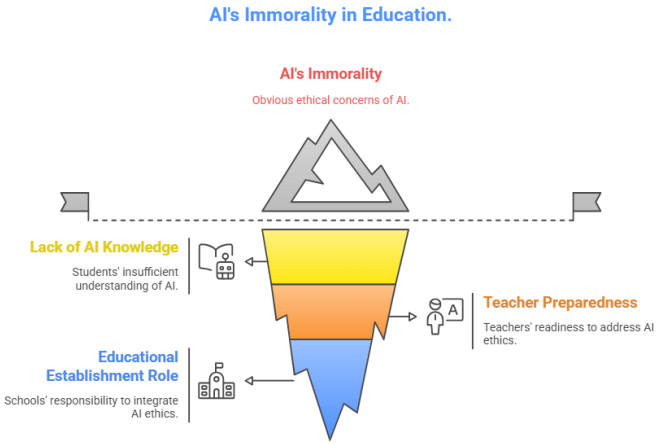

Fig. 3 Ethical concern of AI

VI. INDUSTRIAL AUTOMATION

The deployment of AI systems leads to different technical problems in manufacturing systems, as described by [14]. The combination of poor information quality and inadequate professional skills leads many business sectors to decrease their workforce [25]. After resolving implementation issues, the production industry demands artificial intelligence solutions for managing operational risks within its business operations [16]. To protect AI systems from hacking attempts, their data security standard must be highly exceptional [17]. Operational system users experience a critical problem since they do not know how their systems make decisions. The dependability levels of AI systems decrease because manufacturers admit performance unreliability through their official statements. Risk evaluations need to be performed completely by manufacturers before they can build effective AI systems. Producers encountered development challenges during manufacturing, which led to enhanced operational procedures and superior production activities. Using AI technology, industry producers can create improved operational methods that enhance their operational selection and operational delivery systems [29, 49]. Engineers interpret sensor information with artificial intelligence algorithms before making predictions about machine failures to design maintenance schedules that lower production interruptions [18, 10, 50].

AI-based technologies enhance manufacturing output speed, safety practices, and quality system capabilities [28, 12]. AI technology delivers an organization-wide revamp of food production processes that marries supply chain functions with customer-specific delivery systems according to purchase demands [15, 51].

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Technological installations relying on AI provide food manufacturing with two key features: improved production efficiency and enhanced protective operational methods that decrease waste throughout production systems. Business solutions emerge through supply chain analysis to achieve better operational standards that operate in accordance with designed algorithms [15, 10, 52]. The storage management of various food establishments depends on artificial intelligence systems, and these systems are also used for distribution functions [18, 45]. The majority of AI systems possess knowledge acquisition ability to develop software solutions for unexpected facility modifications in production and processing operations [10]. Food industry managers avoid workforce elimination while putting technology to work to enhance current worker performance [12]. The contemporary algorithms running in artificial intelligence platforms produce precise forecasting resolutions for supply system optimization and product delivery control schemes [10] [13].

VII. INTEGRATING INNOVATIONS

Artificial intelligence automation systems in food production created sustainable operational systems that delivered enhanced operational results [25]. Artificial intelligence allows food management companies to achieve operational excellence through tracking systems that monitor supply chains and execute complete product quality tests before development stages begin [15]. The processing of extensive datasets through AI leads organizations to precise forecasting, together with waste reduction, as it delivers leadership in supply chain operations. When AI systems identify production errors, the built-in safety protocols and quality control systems immediately activate their processes. Operating systems using advanced technologies work because AI systems merge IoT systems with drones and renewable energy assets under one controlled framework [12]. AI market condition processing enables organizations to create new products that fulfill present-day customer product development needs [15]. Organizations create improved protective safety and management systems by allowing AI to find patterns in their large food processing databases [23]. AI capabilities in food processing improve operational performance and supply chain supervision methods, as well as contaminant detection systems. [10, 24] The food industry employs AI to automate supply chain operations, thus enabling constant monitoring across production locations to delivery points for customers [5]. AI system integration offers food processing facilities two major operational advantages through operational efficiency and reduced waste volume, along with advanced decision-making capabilities.

VIII. CONCLUSION

Artificial intelligence stands as a pivotal force driving innovation and efficiency across numerous industries. Its capabilities, ranging from advanced data processing and predictive analytics to automation and personalized solutions, have profoundly impacted sectors such as healthcare, cybersecurity, and industrial automation. In healthcare, AI enhances diagnostic precision, optimizes treatment plans, and improves patient outcomes. Within cybersecurity, AI fortifies defenses by enabling real-time threat detection, automating response mechanisms, and identifying novel attack patterns. The food industry benefits from AI through improved production efficiency, sustainable practices, and enhanced supply chain management. However, the widespread adoption of AI also brings forth critical challenges related to data privacy, algorithmic bias, and ethical deployment. Addressing these concerns through robust regulatory frameworks, transparent AI systems, and continuous maintenance is crucial to harness AI's full potential responsibly. As AI continues to evolve, maintaining a balance between maximizing its benefits and mitigating its risks will be essential for fostering a future where AI serves as a powerful tool for progress and societal well-being.

REFERENCES

[1]. E. Vyhmeister, G. G. Castañé, P.-O. Östberg, and S. Thevenin, “A responsible AI framework: pipeline contextualization,” AI and Ethics, vol. 3, no. 1, p. 175, Apr. 2022, doi: 10.1007/s43681-022-00154-8.
[2]. B. Konda et al., "A Public Key Searchable Encryption Scheme Based on Blockchain Using Random Forest Method," International Journal Of Research In Electronics And Computer Engineering, 2024, 12(1), 77-83.
[3]. Yadulla, A. R. (2022). Building smarter firewalls: Using AI to strengthen network security protocols. Int J Comput Artif Intell, 3(2):109-112.
[4]. Q.-Q. Huo, J. Ruan, and Y. Cui, “‘Machine replacement’ or ‘job creation’: How does artificial intelligence impact employment patterns in China’s manufacturing industry?,” Frontiers in Artificial Intelligence, vol. 7, Mar. 2024, doi: 10.3389/frai.2024.1337264.
[5]. A. Omairi and Z. H. Ismail, “Towards Machine Learning for Error Compensation in Additive Manufacturing,” Applied Sciences, vol. 11, no. 5, p. 2375, Mar. 2021, doi: 10.3390/app11052375.
[6]. V. K. Kasula et al., "Enhancing Smart Contract Vulnerability Detection using Graph-Based Deep Learning Approaches," in 2024 International Conference on Integrated Intelligence and Communication Systems (ICIICS), 2024, (pp. 1-6). IEEE.
[7]. N. K. C. M et al., “Advanced Banking Solutions for Industry 5.0,” Advances in Business Information Systems and Analytics, pp. 1–24, Aug. 2024. doi:10.4018/979-8-3693-4187-2.ch001

International Multidisciplinary Research Journal Reviews (IMRJR)
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[8]. Kumar, J. Rawat, N. Mohd, and S. Husain, "Opportunities of Artificial Intelligence and Machine Learning in the Food Industry," Journal of Food Quality, vol. 2021, p. 1, Jul. 2021, doi: 10.1155/2021/4535567.
[9]. Yenugula, M. (2024). Challenges With Accountability, Trust & System Security in Google Cloud Platform (GCP).
[10]. Kumar, D., Pawar, P., Gonaygunta, H., & Singh, S. (2023). Impact of federated learning on industrial iot-A Review. Int. J. Adv. Res. Comput. Commun. Eng, 13(1), 1-12.
[11]. Konda, B. (2024). Predictive Analysis for Employee Turnover Prevention Using Data-Driven Approach. International Journal of Science and Engineering Applications, 13(08), pp. 112-116.
[12]. V. A. N. Nicholas-Okpara, A. J. Ubaka, M. O. Adegboyega, I. A. Utazi, C. E. Chibudike, and H. O. Chibudike, "Advancements in Food Technology Using Artificial Intelligence- Deep Learning," Current Journal of Applied Science and Technology, p. 1, Jul. 2021, doi: 10.9734/cjast/2021/v40i1831439.
[13]. A. R. Yadulla et al., "A time-aware LSTM model for detecting criminal activities in blockchain transactions," International Journal of Communication and Information Technology, 2023, 4(2): 33-39.
[14]. S. Sharma, V. K. Gahlawat, K. Rahul, R. S. Mor, and M. Malik, "Sustainable Innovations in the Food Industry through Artificial Intelligence and Big Data Analytics," Logistics, vol. 5, no. 4, p. 66, Sep. 2021, doi: 10.3390/logistics5040066.
[15]. M. Yenugula et al., "Enhancing Mobile Data Security with Zero-Trust Architecture and Federated Learning: A Comprehensive Approach to Prevent Data Leakage on Smart Terminals," Journal of Recent Trends in Computer Science and Engineering (JRTCSE), 2023, 11(1), 52-64.
[16]. Addula, S. R., & Tyagi, A. K. (2024). Future of Computer Vision and Industrial Robotics in Smart Manufacturing. Artificial Intelligence-Enabled Digital Twin for Smart Manufacturing, 505-539.
[17]. Kasula, V. (2024). Leveraging Deep Learning Techniques for Enhancing Financial Security Systems: A Comprehensive Review of Methods, Applications, and Challenges. International Journal of Communication Networks and Information Security (IJCNIS), 16(5), 969–978.
[18]. V. A. A. Daniel et al., "Enhanced affinity propagation clustering with a modified extreme learning machine for segmentation and classification of hyperspectral imaging," e-Prime – Advances in Electrical Engineering, Electronics and Energy, vol. 9, p. 100704, 2024.
[19]. A. R. Yadulla et al., A. R., Kasula, V. K., Yenugula, M., & Konda, B. (2023). Enhancing Cybersecurity with AI: Implementing a Deep Learning-Based Intrusion Detection System Using Convolutional Neural Networks. European Journal of Advances in Engineering and Technology, 10(12), 89-98.
[20]. Aluvalu, R., Sharma, T., Viswanadhula, U. M., Thirumalraj, A. D., Prasad Kantipudi, M. V. V., & Mudrakola, S. (2024). Komodo Dragon Mlipir Algorithm-based CNN Model for Detection of Illegal Tree Cutting in Smart IoT Forest Area. Recent Advances in Computer Science and Communications (Formerly: Recent Patents on Computer Science), 17(6), 1-12.
[21]. Y. Weng, J. Wu, T. Kelly, and W. Johnson, "Comprehensive Overview of Artificial Intelligence Applications in Modern Industries," Sep. 2024, doi: 10.20944/preprints202409.1638.v1.
[22]. P. P. Pawar et al., "An advanced Wasserstein-enabled generative adversarial network enabled attack detection for blockchain-assisted intelligent transportation system," in Proc. 2024 3rd Int. Conf. Artif. Intell. Internet Things (AIIoT), May 2024, pp. 1–6.
[23]. B. Konda et al., "Homomorphic encryption and federated attribute-based multi-factor access control for secure cloud services in integrated space-ground information networks," International Journal of Communication and Information Technology, 2022, 3(2): 33-40.
[24]. O. Murire, "Artificial Intelligence and Its Role in Shaping Organizational Work Practices and Culture," Administrative Sciences, vol. 14, no. 12, p. 316, Nov. 2024, doi: 10.3390/admsci14120316.
[25]. A. Taneja et al., "Artificial Intelligence: Implications for the Agri-Food Sector," Agronomy, vol. 13, no. 5, p. 1397, May 2023, doi: 10.3390/agronomy13051397.
[26]. M. Yenugula et al., "Enhancing Mobile Data Security with Zero-Trust Architecture and Federated Learning: A Comprehensive Approach to Prevent Data Leakage on Smart Terminals," Journal of Recent Trends in Computer Science and Engineering (JRTCSE), 2023, 11(1), 52-64.
[27]. S. Almotairi et al., "Personal data protection model in IOMT-blockchain on secured bit-count transmutation data encryption approach," Fusion: Practice and Applications, vol. 16, no. 1, pp. 152–170, 2024. doi:10.54216/fpa.160111
[28]. V. Sachithra and L. Subhashini, "How artificial intelligence uses to achieve the agriculture sustainability: Systematic review," Artificial Intelligence in Agriculture, vol. 8, p. 46, Apr. 2023, doi: 10.1016/j.aiia.2023.04.002.
[29]. C. Tumma et al., "Data Security and Privacy Protection in Artificial Intelligence Models: Challenges and Defense Mechanisms," Int. J. Sci. Res. Eng. Manag., vol. 7, no. 12, pp. 1–11, 2022.
[30]. V. K. Kasula et al., "Hybrid Short Comparable Encryption with Sliding Window Techniques for Enhanced Efficiency and Security," International Journal of Science and Research Archive, 2022, 5(01), 151-161.
[31]. F. Assimakopoulos, C. Vassilakis, D. Margaris, K. Kotis, and D. Spiliotopoulos, "Artificial Intelligence Tools for the Agriculture Value Chain: Status and Prospects," Electronics, vol. 13, no. 22, p. 4362, Nov. 2024, doi: 10.3390/electronics13224362.

International Multidisciplinary Research Journal Reviews (IMRJR)
A Peer-reviewed journal
Volume 2, Issue 7, July 2025
DOI 10.17148/IMRJR.2025.020705

[32]. A. Gwagwa et al., "Road map for research on responsible artificial intelligence for development (AI4D) in African countries: The case study of agriculture," Patterns, vol. 2, no. 12. Elsevier BV, p. 100381, Dec. 01, 2021. doi: 10.1016/j.patter.2021.100381.
[33]. A. R. Yadulla et al., "A time-aware LSTM model for detecting criminal activities in blockchain transactions," International Journal of Communication and Information Technology, 2023, 4(2): 33-39.
[34]. P. P. Pawar et al., "SINN based federated learning model for intrusion detection with blockchain technology in digital forensic," in Proc. 2024 Int. Conf. Data Sci. Netw. Secur. (ICDSNS), Jul. 2024, pp. 01–07.
[35]. M. Yenugula et al., "Dynamic Data Breach Prevention in Mobile Storage Media Using DQN-Enhanced Context-Aware Access Control and Lattice Structures," International Journal Of Research In Electronics And Computer Engineering, 2022, 10(4), 127-136.
[36]. S. Ayyamgari et al., "Quantum Computing: Challenges and Future Directions," Int. J. Adv. Res. Sci. Commun. Technol., vol. 3, no. 3, pp. 1343–1347, 2023.
[37]. T. A. Victoire, A. Karunamurthy, S. Sandhiya, and S. Yuvaraj, "Leveraging Artificial Intelligence for Enhancing Agricultural Productivity and Sustainability," Quing International Journal of Innovative Research in Science and Engineering, vol. 2, no. 2, p. 141, Jun. 2023, doi: 10.54368/qijirse.2.2.0016.
[38]. R. Mathur, "Artificial Intelligence in Sustainable Agriculture," International Journal for Research in Applied Science and Engineering Technology, vol. 11, no. 6, p. 4047, Jun. 2023, doi: 10.22214/ijraset.2023.54360.
[39]. D. Kumar et al., "Smart agriculture in the era of big data: IoT-assisted pest forecasting and resource optimization for sustainable farming," Proc. 2024 Int. Conf. Integrated Intell. Commun. Syst. (ICIICS), Nov. 2024, p. 1.
[40]. V. K. Kasula et al., "Enhancing Smart Contract Vulnerability Detection using Graph-Based Deep Learning Approaches," in 2024 International Conference on Integrated Intelligence and Communication Systems (ICIICS), 2024, (pp. 1-6). IEEE.
[41]. B. Y. R. Thumma et al., "Cloud Security Challenges and Future Research Directions," Int. Res. J. Mod. Eng. Technol. Sci., vol. 4, no. 12, pp. 2157–2162, 2022.
[42]. Chahal et al., "Systematic analysis based on Conflux of machine learning and internet of things using bibliometric analysis," Journal of Intelligent Systems and Internet of Things, vol. 13, no. 1, pp. 196–224, 2024. doi:10.54216/jisiot.130115.
[43]. Jafar, N. Bibi, R. A. Naqvi, A. Sadeghi-Niaraki, and D. Jeong, "Revolutionizing agriculture with artificial intelligence: plant disease detection methods, applications, and their limitations," Frontiers in Plant Science, vol. 15, Mar. 2024, doi: 10.3389/fpls.2024.1356260.
[44]. B. Konda et al., "A Public Key Searchable Encryption Scheme Based on Blockchain Using Random Forest Method," International Journal Of Research In Electronics And Computer Engineering, 2024, 12(1), 77-83.
[45]. H. N. Ngugi, A. E. Ezugwu, A. A. Akinyelu, and L. Abualigah, "Revolutionizing crop disease detection with computational deep learning: a comprehensive review," Environmental Monitoring and Assessment, vol. 196, no. 3. Springer Science+Business Media, Feb. 24, 2024. doi: 10.1007/s10661-024-12454-z.
[46]. W. K. Alazzai, M. K. Obaid, B. Sh. Z. Abood, and L. Jasim, "Smart Agriculture Solutions: Harnessing AI and IoT for Crop Management," E3S Web of Conferences, vol. 477, p. 57, Jan. 2024, doi: 10.1051/e3sconf/202447700057.
[47]. T. Talaviya, D. Shah, N. Patel, H. Yagnik, and M. Shah, "Implementation of artificial intelligence in agriculture for optimisation of irrigation and application of pesticides and herbicides," Artificial Intelligence in Agriculture, vol. 4, p. 58, Jan. 2020, doi: 10.1016/j.aiia.2020.04.002.
[48]. S. E. Vadakkethil et al., "Mayfly optimization algorithm with bidirectional long-short term memory for intrusion detection system in Internet of Things," in Proc. 2024 3rd Int. Conf. Distributed Computing and Electrical Circuits and Electronics (ICDCECE), Apr. 2024, pp. 1–4.
[49]. T. Saheb and M. R. Dehghani, "Artificial intelligence for Sustainable Energy: A Contextual Topic Modeling and Content Analysis," arXiv (Cornell University), Jan. 2021, doi: 10.48550/arxiv.2110.00828.
[50]. R. I. M. Almoselhy and A. Usmani, "AI in Food Science: Exploring Core Elements, Challenges, and Future Directions," Open Access Journal of Microbiology & Biotechnology, vol. 9, no. 4, p. 1, Oct. 2024, doi: 10.23880/oajmb-16000313.
[51]. Muhammad, T., Aftab, A. B., Ibrahim, M., Ahsan, M. M., Muhu, M. M., Khan, S. I., & Alam, M. S. (2023). Transformer-based deep learning model for stock price prediction: A case study on Bangladesh stock market. International Journal of Computational Intelligence and Applications, 22(03), 2350013.
[52]. R. Azmeera et al., "Enhancing blockchain communication with named data networking: A novel node model and information transmission mechanism," J. Recent Trends Comput. Sci. Eng. (JRTCSE), vol. 10, no. 1, pp. 35–53, 2022.