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IoT and Machine Learning Algorithm in Smart Agriculture

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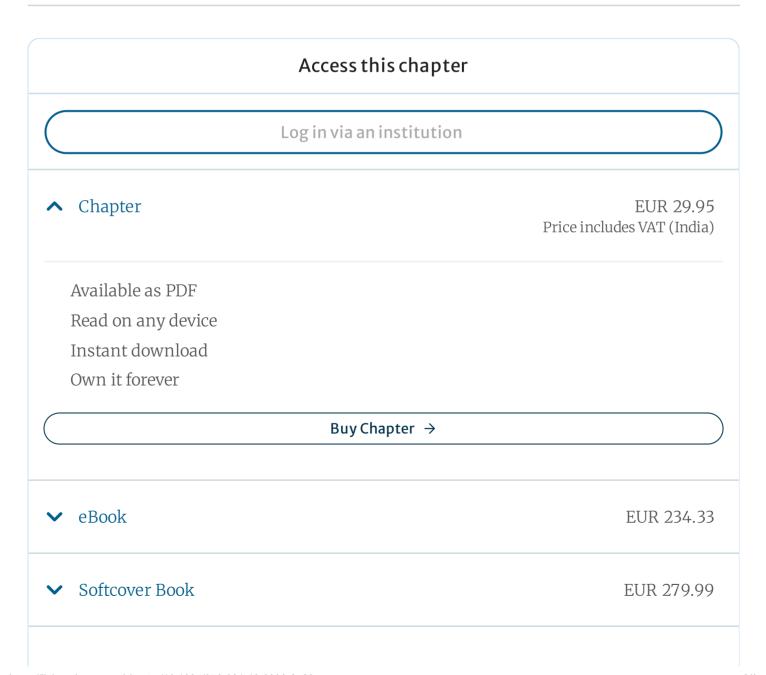
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Abstract

Internet of Things (IoT) refers to the interconnection of physical objects and controlling them using embedded technologies such as sensors, software for transferring data via Internet. These data are processed using various decision making algorithms. IoT devices and emerging technologies have been implemented in various sectors and major

transformation has occurred in the field of agriculture. In agriculture, farmers face numerous challenges which could be resolved using IoT technologies. IoT enabled smart farming results in improved crop productivity in agricultural field. This study explores the IoT architecture and components, IoT technologies and sensors, various applications in agricultural IoT and its benefits. Also, this study proposes that the use of Remote Monitoring System (RMS) in agriculture for collecting various data such as temperature of environment, humidity of environment, soil moisture, soil pH using different sensors along with decision tree algorithm improves decision making resulting in high yield of crops.

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References

1. Sahoo J, Barrett K (2021) Internet of things (IoT) application model for smart farming. In: Southeast IEEE conference, pp 1-2

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2. Reddy KSP, Mohana Roopa Y, Kovvada Rajeev LN, Nanda NS (2020) IoT based smart agriculture using machine learning. In: Proceedings of the second international

conference on inventive research in computing applications (ICIRCA-2020), pp 130–134. ISBN 978-1-7281-5374-2

Google Scholar

3. Candemir E, Sağır MM, Tahtalı A, Maral E, Taşkın S (2021) IoT based precision agriculture: Ema farming. In: IEEE conference

Google Scholar

4. Mondal MA, Rehena Z (2018) IoT based intelligent agriculture field monitoring system. In: 8th international conference on cloud computing, data science & engineering (confluence). IEEE, pp 625–629

Google Scholar

- 5. Bhuvaneshwari C, Saranyadevi G, Vani R, Manjunathan A (2017) Development of high yield farming using IoT based UAV. IOP Conf Ser Mater Sci Eng 1055:012007, 1–5. https://doi.org/10.1088/1757-899x/1055/1/012007
- 6. Shali A, Sangeerani Devi A, Kavitha D (2021) Agricultural farming survey using IoT. J Phys Conf Ser 1724:012047, 1–5. https://doi.org/10.1088/1742-6596/1724/1/012047
- 7. Patel KK, Patel SM (2016) Internet Of Things—IoT: definition, characteristics, architecture, enabling technologies, application & future challenges. Int J Eng Sci Comput 6(5):6122–6131. https://doi.org/10.4010/2016.1482
- 8. Malavade VN, Akulwar PK (2016) Role of IoT in Agriculture. In: National conference on "changing technology and rural development", pp 56–57

9. Alreshidi E (2019) Smart sustainable agriculture (SSA) solution underpinned by internet of things (Iot) and artificial intelligence (AI). Int J Adv Comput Sci Appl (IJACSA) 10(5):93–102

Google Scholar

10. Ratnaparkhi S, Khan S, Arya C, Khapre S, Singh P, Diwakar M, Shankar A (2020) Smart agriculture sensors in IoT: a review. Mater Today Proc, 1–6

Google Scholar

- 11. Mishra KN, Kumar S, Nileshkumar R Patel (2021) Survey on internet of things and its application in agriculture. J Phys Conf Ser 1714:012025, 1–9. https://doi.org/10.1088/1742-6596/1714/1/012025
- 12. Patil KA, Kale NR (2016) A model for smart agriculture using IoT. In: International conference on global trends in signal processing, information computing and communication. IEEE, pp 543–545

Google Scholar

13. Khanna A, Kaur S (2019) Evolution of internet of things (IoT) and its significant impact in the field of precision agriculture. Comput Electron Agric, 218–231

Google Scholar

14. Muangprathuba J, Boonnam N, Kajornkasirat S, Lekbangpong N, Wanichsombat A, Nillaor P (2019) IoT and agriculture data analysis for smart farm. Comput Electron Agric, 467–474

- **15.** Vitali G, Francia M, Golfarelli M, Canavari M (2021) Crop management with the IoT: an interdisciplinary survey. J Agronomy 11(181):1–18. https://doi.org/10.3390/Agronomy11010181
- 16. Madushanki R, Halgamuge MN, Surangi Wirasagoda WAH, Syed A (2019) Adoption of the internet of things (IoT) in agriculture and smart farming towards urban greening: a review. Int J Adv Comput Sci Appl (IJACSA) 10(4):11–28

Google Scholar

- 17. Gómez-Chabla R, Real-Avilés K, Morán C, Grijalva P, Recalde T (2019) IoT applications in agriculture: a systematic literature review. Springer Nature Switzerland AG 2019, pp 68–76. https://doi.org/10.1007/978-3-030-10728-4_8
- 18. Zhao W, Lin S, Han J, Xu R, Hou L (2017) Design and implementation of smart irrigation system based on Lora. In: IEEE conference

Google Scholar

19. Mohanraj I, Kirthika A, Naren J (2016) Field monitoring and automation using IoT in agriculture domain. In: 6th international conference on advances in computing & communications, ICACC, pp 931–939

Google Scholar

20. Reddy KSP, Mohana Roopa Y, Kovvada Rajeev LN, Nandan NS (2020) IoT based smart agriculture using machine learning. In: Second international conference on inventive research in computing applications, pp 130–134

21. Dahane A, Benameur R, Kechar B, Benyamina A (2020) An IoT based smart farming system using machine learning. 978–1–7281–5628–6/20/\$31.00 ©, 2020

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22. Araby AA, Abd Elhameed MM, Magdy NM, Said LA, Abdelaal N, Abd Allah YT, Saeed Darweesh M, Fahim MA, Mostafa H (2019) Smart IoT monitoring system for agriculture with predictive analysis. In: 8th international conference on modern circuits and systems technologies (MOCAST)

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23. Sangeetha K, Santhosh A, Pradeeba SS, Selvamani T (2019) Paddy monitoring and management system. Int J Appl Eng Res 14(5):1045–1048. ISSN 0973-4562

Google Scholar

24. Maneesha A, Suresh C, Kiranmayee BV (2021) Prediction of rice plant diseases based on soil and weather conditions. In: Proceedings of international conference on advances in computer engineering and communication systems, learning and analytics in intelligent systems, vol 20, pp 155–165. https://doi.org/10.1007/978-981-15-9293-5_14

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