

Impact of IoT and AI on Smart Agriculture

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Abstract: *Objects acquired intelligence and the capacity to communicate as technology advanced. The Internet of Things (IoT) links common household items to the Internet, allowing them to make decisions like humans. Sensors collect real-time atmospheric data that AI algorithms use to make devices smarter. The Internet of Things has revolutionized agriculture. According to a study, 70% of India's population is dependent on agriculture, yet agriculture's importance is no longer concealed. Using technology, one can predict temperature, rainfall, humidity, fertilizer demands, and water needs. Modern agricultural approaches using IoT and AI are altering traditional farming practices and making farming profitable.*

Keywords: Internet of Things, Smart Agriculture, Artificial Intelligence, rainfall prediction, modern tools

REFERENCES

- [1] Joseph F J J, "A Review of IoT Implementations in Environment and Agriculture," JARES, vol. 6, no. 1&2, pp. 1-5, 2019.
- [2] Sivaganesan D, "Design and Development AI-Enabled Edge Computing for Intelligent-IOT Applications," JTCSST, vol. 1, no. 2, pp. 84-94, 2019.
- [3] Kumari D, Pandita R, Mittal M, "An Agricultural Perspective in Internet of Things," IJCSE, vol. 6, no. 5, pp. 107-110, 2018.
- [4] Vincent DR, Deepa N, Elavarasan D, Srinivasan K, Chauhdary SH, Iwendi C, "Sensors Driven AI-Based Agriculture Recommendation Model for Assessing Land Suitability," Sensors, vol. 19, no. 17, p. 3667, 2019.
- [5] Bhatta NP, Thangadurai N, "Utilization of IOT and AI for Agriculture Applications," IJEAT, vol. 8, no. 5, pp. 2731-2735, 2019.
- [6] Sinwar D, Dhaka VS, Sharma MK, Rani G, "AI-Based Yield Prediction and Smart Irrigation," in Internet of Things and Analytics for Agriculture, Volume 2, Singapore, Springer, 2020, pp. 155-180.
- [7] Kumar S, "Artificial Intelligence in Indian Irrigation," IJSRCSEIT, vol. 5, no. 5, pp. 149-167, 2019.
- [8] Divya R, Chinnaiyan R, "Reliable AI-Based Smart Sensors for Managing Irrigation Resources in Agriculture—A Review," in ICCNCT, Singapore, Springer, 2019, pp. 263-274.
- [9] Agrawal A, Arya MK, "Optimize and customize irrigation mechanism and crops prevention from pests," JPP, no. 5, pp. 17-19, 2018.
- [10] Singh S et al, "A Systematic Study on Big Data in IOT and Agriculture," JTGRS, vol. 21, no. 6, pp. 566- 572, 2019.
- [11] Patil V, Pathade S, "IOT based Agribot for Irrigation and Farm Monitoring," OAIJSE, vol. 4, no. 6, pp. 9- 13, 2019.
- [12] Kamar, Praveen S "A Study on the role of E-Technology to take over Agriculture Distress in India," IICAS, vol. 8, no. 12(A), pp. 335-341, 2018.
- [13] Puranik V, Ranjan A, Kumari A, "Automation in Agriculture and IoT," in IEEE, 2019.
- [14] Kumar S, Chowdhary G, Udutalapally V, Das D, Mohanty SP, "gCrop: Internet-of-Leaf-Things (IoLT) for Monitoring of the Growth of Crops in Smart Agriculture," in IEEE, 2019.
- [15] David S, Anand RS, Sagayam M, "Enhancing AI based evaluation for smart cultivation and crop testing using agro-datasets," JAIS, vol. 2, no. 1, pp. 149-167, 2020.

- [16] Raju BV, "An IOT based Low Cost Agriculture Field Monitoring System," JASC, vol. VI, no. IV, pp. 128- 136, 2019.
- [17] Ragavi B, Pavithra L, Sandhiyadevi P, Mohanapriya GK, Harikirubha S, "Smart Agriculture with AI Sensor by Using Agrobot," in IEEE, 2020.
- [18] Lohchab V, Kumar M, Suryan G, Gautam V, Das RK, "A Review of IoT based Smart Farm Monitoring," in IEEE, 2018.
- [19] Sujith AV, Sekhar KC, "Automated Agriculture as a Service Using IoT," IJARCSSE, vol. 7, no. 5, pp. 925- 930, 2017.
- [20] Dharmaraj V, Vijayanand C, "Artificial Intelligence (AI) in Agriculture," IJCMAS, vol. 7, no. 12, pp. 2122- 2128, 2018.
- [21] Bag H, Chaurasiya DK, "Precision Farming: the Bright Future for Indian Agriculture," BRT, vol. 2, no. 5, pp. 362-364, 2020.
- [22] Rajesh T, Kumar KT, Balan MM, Sidhartha MS, "E-Agriculture based on AI and IOT," IJRASET, vol. 7, no. II, pp. 343-347, 2019.
- [23] Verma NK, Usman A, "Internet of Things (IoT): A Relief for Indian Farmers," in IEEE, 2016.
- [24] Gowri KR, "Greenhouse Monitoring and Scheming based IoT Technology," EPRA IJRD, vol. 4, no. 4, pp. 316-321, 2019.
- [25] Nalinaksh K, Rishiwal V, Ganzha M, Paprzycki M, "An Internet of Things (IoT) solution framework for agriculture in India and other Third World countries," in IEEE, 2018.
- [26] Gupta PM, Salpekar M, Tejan PK, "Agricultural practices Improvement Using IoT Enabled SMART Sensors," in IEEE, 2018.
- [27] Silakari P, Silakari P, Bopche L, Gupta A, "Smart Ultrasonic Insects & Pets Repeller for Farms & Inventories Purpose," in IEEE, 2018.
- [28] Kumar S, Raja P, Bhargavi G, "A Comparative Study on Modern Smart Irrigation System and Monitoring the Field by using IOT," in IEEE, 2018.
- [29] Mane SS, Mane MS, Kadam US, Patil ST, "Design and Development of Cost Effective Real-Time Soil Moisture based Automatic Irrigation System with GSM," IRJET, vol. 6, no. 9, pp. 1744-1751, 2019.
- [30] Patange MS, Student PG, Farooqui MZ, "IOT Assisted Farming," RJSE, vol. 3, no. 7, pp. 736-739, 2019.
- [31] Bhagwat SD, Hulloli AI, Patil SB, Khan AA, Kamble MA, "Smart Green House using IOT and Cloud Computing," IRJET , vol. 5, no. 3, pp. 2330-2333, 2018.