IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 6, April 2024

Iot Based Smart Irrigation System using Artificial Intelligence

Dr. G. Nanthakumar[1], Mr. K. Pazhanivel[2], Abinesh A[3], Ganesh K. R[4], Harish V[5], Nagendran S[6]
Professor, Department of Computer Science and Engineering[1]
Assistant Professor, Department of Computer Science and Engineering[2]
Student, Department of Computer Science and Engineering[3,4,5,6]
Anjalai Ammal Mahalingam Engineering College, Thiruvarur, Tamil Nadu, India

Abstract: *Sustainable agriculture depends on effective water management, and the Internet of Things (IoT) and artificial intelligence (AI) combine to offer a novel approach to irrigation process optimisation. In order to improve water utilization in agriculture, this research suggests a comprehensive system that includes buzzers, LCD displays, relays, water pumps, soil moisture sensors, AI algorithms, and water pumps. An AI algorithm at the centre of the system evaluates data collected in real time from field-installed soil moisture sensors. These sensors gather information on the soil's moisture content, which offers important insights into the real water needs of the crops. After analysing this data, the AI programme decides how best to schedule irrigation. The system's integration with a relay is intended to regulate when a water pump is activated. According to the suggestions of the AI algorithm, the relay provides accurate control over the irrigation operation, enabling on-demand watering. By avoiding over- irrigation and conserving water, this lowers the chance of waterlogging and associated problems. The system has an LCD display to improve user engagement and offer real-time feedback. Important details like irrigation status, soil moisture levels, and AI-driven suggestions are conveyed through the display. With the help of this function, farmers may monitor the system's performance and make well-informed judgements. Furthermore, a buzzer is incorporated to deliver auditory notifications in the event of crucial occurrences, such low soil moisture levels or system faults.This guarantees timely resolution of problems that might affect crop health and system performance as a whole. A number of benefits are provided by the suggested AI-driven water management system, including improved agricultural output, water conservation, and operational effectiveness. Water scarcity and resource optimisation in irrigated fields are addressed by the system, which offers a comprehensive precision agriculture solution by utilising the capabilities of IoT devices, soil moisture sensors, relays, water pumps, buzzers, and LCD displays*

Keywords: Artificial Intelligence, Internet of Things, Moisture Sensor and Water Conservation

REFERENCES

[1] Dr. Vivek Vaidya, Mr. Yash Chavan, Miss. Dineshwari Madavi,Mr. Utkarsh Meshram, Mr. Somesh Nandeshwar." Design and Development of IOT Based Smart Irrigation System." International Research Journal of Modernization in Engineering Technology and Science-e-ISSN:2582-5208,April-2023.
[2] Krishna Singh, Samyak Jain, Varun Andhra, Shilpi Sharma." IoT Based Approach for Smart Irrigation System Suited to Multiple Crop Cultivation." International Journal of Engineering Research and Technology. ISSN 0974-3154, Volume 12, Number 3 (2019), pp. 357-363.
[3] Khaled Obaideena, Bashria A.A. Yousef , Maryam Nooman AlMallahi , Yong Chai Tan Montaser Mahmouda, Hadi Jaber ,Mohamad Ramadanf. "An overview of smart irrigation systems using IoT", Energy Nexus 7 (2022)100124.
[4] N.Rahul,S.Sumathi,S.rajaprabu,j.Prawin Kumar,R.Varthish."IoT-Based smart irrigation System using artificial intelligence. "Index terms – Artificial intelligence,irrigation,Internet of Things and Water Consservation.published by International Journal for Research Trends and Innovation 2022.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 6, April 2024

[5] Ms.S.Shobana,B.SanjanaPandey,Padmashri.R,U.Triveni." Iot Based Smart Irrigation System Using Soil Moisture Sensor And Esp8266nodemcu" International Journal of Computer Science and Information Technology Research, Vol. 9, Issue 2, pp: (52-58), Month: April - June 2021.

[6] Gutiérrez, J., Medina, J.F.V., Garibay, A.N., Gándara, M.A.P.2014. Automated Irrigation System Using Wireless Sensor Network and GPRS Module. IEEE Transactions on Instrumentation and Measurement. 63(1), 1-11.

[7] Kait, L.K., Kai, C.Z., Khoshdelniat, R., Lim, S.M., Tat, E.H. 2007. Paddy Growth Monitoringwith Wireless Sensor Networks. International Conference on Intelligent and Advanced Systems, IEEE, 966-970.

[8] Patil, S.S., Thorat, S.A. 2016. Early detection of grapes diseases using machine learning and IoT. Second International Conference on Cognitive Computing and Information Processing(CCIP), IEEE, 1-5.

[9] Aitkenhead, M.J., Dalgetty, I.A., Mullins, C.E., McDonald, A.J.S., Strachan, N.J.C. 2003. Weed and crop discrimination using image analysis and artificial intelligence methods. Computers and Electronics in Agriculture, 39(3), 157–171.

[10] Al-Ghobari, H.M., Mohammad, F.S. 2011. Intelligent irrigation performance: evaluation and quantifying its ability for conserving water in arid region. Appl Water Sci. 1:73–8.