IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 4, April 2025
Impact Factor: 7.67

A Review on IoT Based Solar Power Automatic Multi-Tasking Agriculture Robot

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Abstract: *Basically, the agricultural sector provides the strongest support to the Indian economy and about 70% of the population depends on it for a living. Traditional agricultural practices are labor-intensive, time-consuming, and costly due to the expensive machinery involved in seed sowing, spraying water with pesticides, etc. This project addresses these issues with the solar-powered automated multitasking agricultural robot that will propel efficiency and reduce human effort in farming operations. The proposed system integrates all work into an affordable and user-friendly robotic platform. The salient features include a dual spray system for pesticides using a single heavy-duty DC pump, a fertilizer hopper for periodical dispensing, and with four 4-inch wheels with free shafting to allow smooth movement. A button-enabled electronic control unit operates the machine either manually or automatically through a servo tester. The solar panel is of 12W in size, sustaining energy to charge a 12V, 1AH battery, thus enabling uninterrupted operational capability even in remote agricultural fields.*

A NodeMCU microcontroller is also included in the system for stronger automation and remote monitoring. The system features the integration of a soil moisture sensor that monitors soil conditions to determine whether the soil is dry or wet, Soil parameters are shown on the blynk app. This feature ensures optimal water usage by automating irrigation processes, thereby reducing water wastage and increasing crop yield. This system aims to improve agricultural productivity, reduce labor costs and endorse sustainable agricultural practices by integrating automation, renewable energy, and precision agriculture techniques. Such an innovative approach not only improves efficiency but ensures the accessibility of precision farming to small and medium-scale farmers for their long-term benefit in the agricultural sector.

Keywords: Robotics for multitasking, DC Pump, solar power system, agriculture robot

DOI: 10.48175/IJARSCT-25180