Machine Learning and IoT Applications in Agriculture

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Abstract: *Agriculture is an industry that has historically relied on traditional methods for crop production, but with the advent of new technologies, it is now possible to integrate machine learning and Internet of Things (IoT) applications to improve agricultural practices. Machine learning algorithms and IoT devices can be used to analyze data collected from agricultural fields to optimize crop yield, reduce resource consumption, and improve farm management. In this review paper, we explore the various applications of machine learning and IoT in agriculture, specifically focusing on their use in crop monitoring, disease detection, and water management. We examine the challenges associated with implementing these technologies in agriculture, including issues related to data collection, privacy, and security. Finally, we discuss the potential benefits of integrating machine learning and IoT in agriculture and identify future research directions that can help advance this field. Overall, this review highlights the potential of machine learning and IoT technologies to revolutionize agriculture and improve food security in the years to come.*
The Internet of Things (IoT) network must be integrated with sensors in order for "smart agriculture" to be a reality. At many layers of the IoT system architecture, machine learning (ML) techniques are incorporated to increase usefulness and capabilities. For agricultural systems to properly integrate with information technology, intelligent agricultural systems must be established, and all types of information created by agricultural systems must be integrated and analysed. The agriculture sector might undergo a transformation thanks to the fusion of machine learning (ML) and internet of things (IoT) technology. Precision agriculture and more economical resource usage are made possible by using IoT sensors to collect data on a variety of factors, including soil moisture, temperature, and nutrient levels. Then, using these data, ML algorithms may be used to forecast outcomes and improve decision-making. For example, they can forecast agricultural yields, spot disease or insect infestations, and suggest the best dates for planting and harvesting.

Keywords: Soil NPK Sensor, Soil Moisture Sensor, Random Forest

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