

ADVANCED IMAGE PROCESSING AND VIDEO INTELLIGENCE APPLICATIONS



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Ravinder M.
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CHAPTER 11

A Machine Learning-based Approach for Smart Agriculture Monitoring and Decision Support

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Abstract: The field of machine learning is expanding and has a wide range of potential uses in agriculture. Machine learning is used to forecast pests and illnesses, decrease water usage, and increase crop yields, which is a topic of investigation for farmers and agricultural experts. Machine learning is capable of improving resource efficacy along with food production sustainability for farmers in the future. Numerous factors either directly or indirectly affect crop growth. Among these are the climate parameters. We can boost productivity by employing machine learning to monitor and regulate these parameters. In addition, there is a need for technological solutions to address a number of issues, including fire alerts, maintaining humidity levels and appropriate temperatures, and meeting the needs of sophisticated plants while monitoring unauthorized entry into agricultural areas. The significance of an appropriate and satisfactory supply of power cannot be understated. By using a NodeMCU Wi-Fi module, the technology offers a practical and effective solution to the issues identified in the Indian farming system. Various sensors such as those for temperature, fire, light, PIR, humidity, and soil moisture, have been utilized to monitor and regulate a variety of technological issues. Using IOT and machine learning, the projected system uses a Wi-Fi module to display real-time data that can be watched online from any location in the world. The farmer is automatically notified by this module about the need for water, site temperature, moisture and humidity, light, fire warning, and unwelcome occupancy or encroachment. Using the machine learning principle, an experiment was conducted with varying soil and plant levels. It was established that the sensor exhibited sufficient sensitivity to yield consistent results under varying water level situations for diverse combinations of plants and soil.

Keywords: Automatic farming, Blynk server, Humidity sensor, Machine learning, Node MCU, PIR sensor, Soil moisture sensor.

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