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An innovative IoT based system for precision farming

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Highlights

- Design and development of IoT based system that monitor the soil and air parameters.
- Design and development of smartphone application that collects the field data.
- Development of steel probe to collect soil samples at root zone level.
- Validate the system with a case study under farming crops and evaluate the accuracy.
- Compare our system to existing systems and evaluate the performance.

Abstract

Acquiring real-time agricultural information for monitoring the crops and their yield predictions are challenging tasks. The real-time data can be used as input to the crop monitoring and yield modeling. However, recording the real-time information for modeling and monitoring of crops is puzzling using existing platforms. The paper describes the design and development of a system that monitors parameters like soil moisture, temperature, air humidity, and temperature at the agro-field level in real-time. The system has been developed using open-source platforms. The developed system consists of three components viz. Arduino-based IoT device, smartphone application, and a web server. The IoT-based device measured the parameters immediately transferred to a cloud server to analyze the information through web-based technology. An adjustable steel probe has also been designed