International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor (2018): 7.426

# IoT based Smart Water Management with Sensors Agriculture Stick for Live Temperature and Moisture Monitoring

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**Abstract:** ***Internet of Things (IoT) technology has brought revolution to each and every field of common man's life by making everything smart and intelligent. IoT refers to a network of things which make a self-configuring network. The development of Intelligent Smart Farming IoT based devices is day by day turning the face of agriculture production by not only enhancing it but also making it cost-effective and reducing wastage. The aim of this work is to propose a Novel Smart IoT based Agriculture Stick assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment monitoring which will enable them to do smart farming and increase their overall yield and quality of products. The Agriculture stick being proposed via this paper is integrated with IoT Technology, Breadboard mixed with various sensors and live data obtained from different sensors. The second part this work to design as mart water distribution for plants, it is also work base on soil temperature as well as base on moisture of soil.***

## 1. Motivation

India ranks second worldwide in farm output. At present, farmer manually irrigates land at regular interval. This process sometimes consumes more water or sometimes the water reaches late due to which the crops get dried, we also identify the lack of below things need to develop a proposed system.

- No any automated system for water distribution for plants.
- Min or max water can reduce the productivity of agricultural farms.
- No system for prediction for plantations according to weather conditions, or failure of existing conditions.

**Dissertation Title:**
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**Problem Definition**
In this proposed research work to design and implement a system that can provide a smart water distribution for agriculture as well as sensor base agriculture stick for predicting the plantation scenario base on environmental conditions.

## 2. Scope of Work

1) IoT enables easy collection and management of tons of data collected from sensors and with integration of cloud computing services like Agriculture fields maps, cloud storage etc., data can be accessed live from anywhere and everywhere enabling live monitoring and end to end connectivity among all the parties concerned.
2) IoT is regarded as key component for Smart Farming as with accurate sensors and smart equipment's, farmers can increase the food production by 70% till year 2050 as depicted by experts.
3) With IoT productions costs can be reduced to a remarkable level which will in turn increase profitability and sustainability.
4) With IoT, efficiency level would be increased in terms of usage of Soil, Water, Fertilizers, Pesticides etc.
5) With IoT, various factors would also lead to the protection of environment.

## 3. Objectives

The work is also incorporated with GSM technology so that it will work as a link between microcontroller and farmer. By using GSM technology, information regarding emergency situation may be send to the farmer so that they may take necessary action in unavoidable situations.

- To implement a smart water management system for agricultural environments.
- To implement a smart stick for predict the crop plantations possibilities base on current environment using IoT.
- Implement a automated policy base approach for water distribution as well as for plantations.
- To implement this system using cloud database services.
- To validate the proposed system accuracy with real parameters.

**Road Map**
Basically proposed system has divided into two different phases, training and testing.

**Training**

- Collect data from internet like synthetic data as well as real time environmental audit data.
- Apply data mining approaches like data preprocessing, data cleaning, data acquisition, outlier detection and data conversion.
- Once complete these phases data has save into the database called as background knowledge, which is used at the time of time testing.

**Testing**

- First system creates the IoT-based system environment where we used minimum 3 to 4 sensors as analog devices like temperature sensor, humidity sensor, moisture sensor etc.
- Then we have connected all sensors to Raspberry Pi, and collect data from sensor suing batch processing approach.
- All collected has store into global database using connection oriented architecture.
- In testing we read all testing as well as training data simultaneously.

- Apply Fuzzy classifier and predict the possibility using decision making system.
- For water distribution it distribute the water using motor and on off automatically base on given train policy.
- Finally provide the analysis accuracy with True positive and false negative of system.

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