

COLD STORAGE MANAGEMENT SYSTEM FOR FARMERS USING IOT (INTERNET OF THINGS) TECHNOLOGY

PROJECT REFERENCE NO.: 40S_BE_1424

COLLEGE : HKBK COLLEGE OF ENGINEERING, BENGALURU
BRANCH : DEPARTMENT INFORMATION SCIENCE AND ENGINEERING
GUIDE : PROF. SYED MUSTAFA .A MR. SHARAVANA .K
STUDENTS : MR. DEEPAK V.
MS. MEGHA TATTI
MS. PRITHVI G. HARDIKAR
MR. SYED SAQLAIN AHMED

Keywords: IOT, CSMS, Sensors, Crop yield

Introduction:

The main idea of this concept is to overcome the time complexity and lack of detailed observation which is faced in preserving the crop yield using cold storage management system to stock up the food products or agricultural yields for a longer period.

In this proposal we implement a framework for cold storage management system based on IoT (Internet of Things) technology by using heterogeneous IoT devices. This is used to preserve the various parameters of yield such as (degeneration time, temperature parameter, etc.) for longer period.

This information system also analyzes the data to report abnormal environmental status and jeopardizes during the storing process. So, the cold storage management systems can be innovative and operated with low cost and in short time interval, hence enhancing the crop obtainability all through the year.

Objectives:

1. To prevent the quality loss of crop yields in order to help the farmers.
2. To monitor the maintenance of the crop yields and reduce the time management for FAO (Food and Agricultural Organization).
3. Cold chain management system will increase crop availability throughout the seasons.
4. To Increase the heterogeneity of yield and easily available to farmers at low cost in the field of agriculture.
5. To enhance the revenue of both farmers and the government.
6. Farmer can use the low cost technology to preserve their yields.
7. The farmer and organization can review the status of crop yield and time span of the food products is extended for a longer period.

Methodology:

1. Qualitative vs. Quantitative approach

The methodology of CSMS used to preserve the quality parameter of crop such as (decay time, temperature parameter, sensor parameter etc.) for longer period, hence enhancing the crop availability throughout the year. CSMS helps to facilitate the farmers to sell and cultivate the quality of yield whenever customer requirement encountered. The quantitative approach used will improve the crop storage capacity for the farmers as well as FAO (Food and Agriculture Organization) at larger scale.

2. Descriptive vs. Analytic approach

The methodology of CSMS uses analytical approach as it has the facts and information already available.

We analyze the current status of crops and take appropriate measures to prevent crop loss. In the descriptive approach, the behavior of crops is evaluated by surveying in different agencies, FAO (Food and Agriculture Organization) and food storage yards.

The classification of sensors:

- Electro stat sensor
- Electromagnetic sensor.

The electromagnetic sensor used as a methodology to identify kinds of sensor to solve, control, measure, and storage system.

Types of sensors used –

- Cold Storage Management System _Temperature Sensor
- Cold Storage Management System _Humidity Sensor
- Cold Storage Management System _Light Dependent Resistor(LDR)
- Cold Storage Management System _Comparator circuit(Smoke sensor)

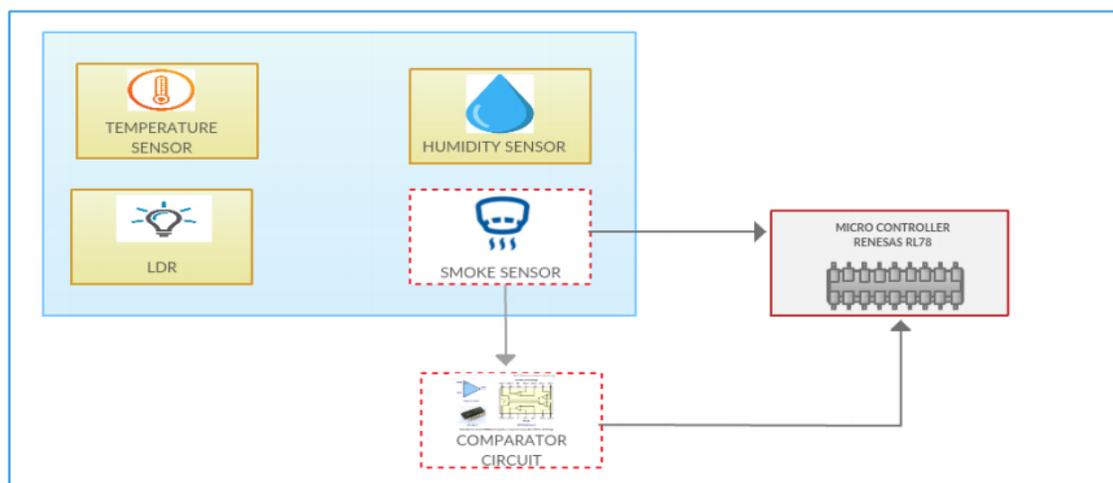


Fig 1: CSMS Sensor Model

3. Applied vs. Fundamental approach

The methodology of CSMS is the action based on research conducted at various food sectors. Applied research aims at finding a solution for immediate problem faced by different agricultural organizations and food sectors. CSMS model solves economical problems faced by farmers due to harvest loss by preserving the quality of food products in cold storage for a longer time.

4. Conceptual vs. Empirical approach

The methodology of CSMS uses empirical approach as it is based on the observation done by evaluating yields in CSMS. This enhances the crop availability throughout the year. This approach aims at preserving the quality of food products and meets the economical requirements.

5. Client and Server Architecture

In CSMS Client-Server architecture, laptop is used as server and Android device being used as client. We use client-server architecture as another methodology. Client sends the request to server. Server contains all the required information regarding the crop yield in the CSMS compartment. The server sends requested information to the client/ farmer to access, review and monitor the agricultural products.

Result and Conclusion:

The system mainly consists of monitoring nodes, router nodes, the control centre node and the Management Centre (PC), web service. The warehouses or cold storages fresh food areas generally are divided into several small scale units, which are close to each other. Monitoring nodes consisting of sensors are the leaf nodes of the network, mainly responsible to collect data such as light, temperature, humidity and other environmental factors that help prevent foodstuffs and food grains from perishing or decaying.

All these nodes pass vital environmental information obtained from different sensors to a Central node via wireless communication. The Central node is responsible for passing the information to Management node. The Central node is replicated using Android application based cell phone and the Management node is replicated using Laptop, which makes it perfect client-server architecture.

Scope of Future work:

Going further, most of the units can be embedded within the controller such as android application, with change in technology thereby improving the detection system. Can be implemented in Real time environmental conditions within cold storage, hence life of food products is extended for a longer period Can be made Easy accessibility for the cold storage using IOT and All the information are stored in database using MySql.

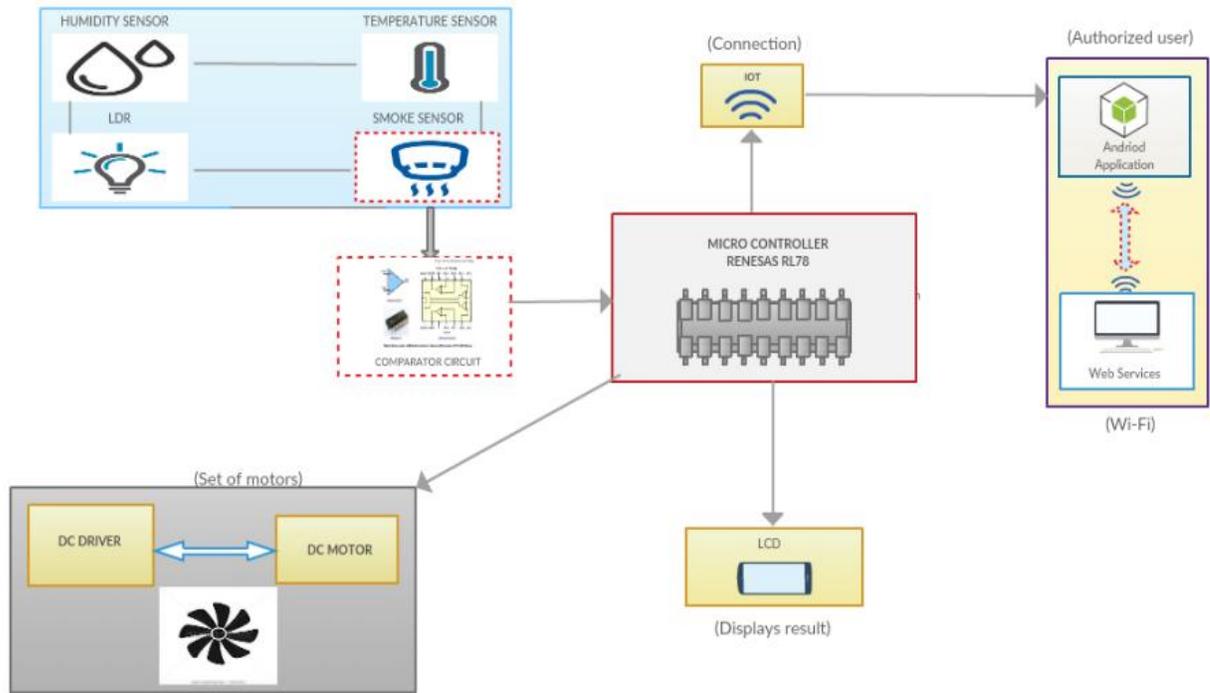


Fig 2: Overall system diagram