IOT Based Smart Food Monitoring System

*Prathmesh S.Kulkarni , *Pradip P.Khurd, **Suraj S.Shinde

*B Tech Student, **Asst. Professor
Electrical Engineering
Sahakar Maharshi Shankarrao Mohite Patil Institute of Technology and Research Shankarnagar Akluj, India.

ABSTRACT

In present scenario, the work done is in terms of the sensed value that has been recorded and a detailed analysis has been performed but automated controlled alternatives are not present. The proposed solution analyzes temperature, humidity and light, as these parameters affect the nutritional value of foods such as fruit and vegetables, and makes the analysis results available to users via mobile applications. The web server is used to store real time data values and to analyze the results. User is alerted via messages along with locations of the shipment whenever an emergency occurs in this solution; heterogeneous sensors for various domains are employed for sensing the condition of food.

INTRODUCTION

Food is the main source of energy for living things; therefore, food quality and safety have become the most sought after things throughout human history.

The food we consume can affect in any form of contamination that may occur due to storage or chemical changes within the food. Food contamination can occur in the production process, but also most of the inefficient food handling due to unsuitable environment the conditions under which food is transported and stored, there are many factors that cause food poisoning; usually changes in temperature and humidity are important factors. Therefore, a monitoring system that can measure temperature and humidity fluctuations during transportation and storage is very important. Almost everyone today is getting effected by the food they consume, it's not only about the junk food, but all the packed foods, vegetables, products consumed and are used in everyday life because they do not offer quality as the temperature, humidity and oxygen levels vary from time to time. Most consumers only pay attention to the information on the packaging, i.e. The amount of ingredients used and their nutritional value, but forget that they are blindly risking their health by ignoring the environmental conditions to which the packaging is exposed. Every product making firm just want to attract more and more costumers towards them their main motive is to sell the product anyhow like by adding more flavors, coloring chemicals and preservatives to increase the taste and appearance but they forget that these money making tactics are actually affecting the consumers health. The Purpose of project a control and monitoring systems is to keep an eye on particular thing or activity and to make sure that it stays in the desired manner. Monitoring can be done with the help of various electronic sensors. In addition, these recorded values can be used for control purposes. The data obtained from the sensor can be compared with the target value. If the sensor reading is found to be not at the desired level, the control circuit will act to manipulate the set activity to maintain it in the desired manner. Intelligent food monitoring systems aim to monitor and control food ingredients and prevent spoilage from weather or climate change. IoT frame work to facilitate food monitoring for food protection to avoid contamination by environmental conditions during storage and transportation.

PROBLEM FORMULATION

1. The food safety it should be monitored at every stage of supply chain.

2. To monitor the gas levels coming out of the food, when the food is about to get spoiled.

3. Information obtained through monitoring and observation should be analyzed and presented to decision makers in an appropriate form.

Thus, Integration of the sensors with remote web server for data logging and a software application which allows distribution of data log as well alert messages is the need of the hour for Presentation Action in hygiene of Food.

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PROPOSED SOLUTION

A system for analyzing the environmental conditions in which food is stored and transported has been proposed. The proposed solution takes into account the parameters of temperature, humidity and environmental light, as these parameters affect the nutritional value of the food. These parameter values are then compared with standard values, which serve as threshold values for each parameter. Additional analysis of data values and users can be notified when changes in parameter values above the threshold are recorded. The web server is used to store data values and analysis results in real-time. The customer, i.e. the inventory manager, is notified by message along with the delivery location when an emergency occurs. Android mobile applications are used to facilitate interaction with users due to the wide spread of Android devices.

BLOCK DIAGRAM
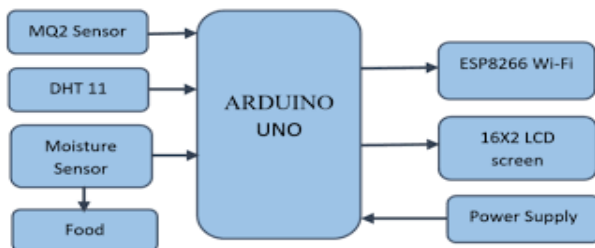
Block Diagram of Food Monitoring System

We have wireless sensor modules to monitor important environmental parameters such as temperature, humidity, light, humidity, etc. We have a DHT-11 sensor that detects humidity and temperature in the mall and sends it to Arduino. Arduino converts this analog value to a digital value compared to the threshold. If the parameter is above or below the threshold value, the actuator turns on and adjusts the temperature. Alarm sounds to turn on. We have gas sensors that send messages to their owners. We have an IR sensor unit which is used to monitor availability. If the stock is smaller, the information will be detected and sent to the seller. (Automatic ordering system). We have GSM for communication with sellers and owners. We have an EPS-8266 (Wi-Fi) module which uploads all measured data to the cloud. We use the Thing Speak Cloud, which is available to students for free. Who collects the submitted data and evaluates it? We can provide daily/weekly/monthly data analysis reports. We have an LCD screen that shows the status of each sensor.

HARDWARE REQUIREMENT

- Arduino mega
- DHT-11 Sensor
- Ch4 Sensor
- Light Sensor
- Light Fan
- Buzzer
- Humidity sensor
- 16*2 LCD
- GSM800
- ESP-8266 Wi-Fi module

SOFTWARE REQUIREMENT

- Embedded C
- Arduino Sketch

ADVANTAGES

1. Keep fruit and vegetables longer.
2. Pay attention to cleanliness and a clean environment.
3. Store data in the cloud for future analysis.
4. Reduce trading losses.
5 Increase commercial profits.

APPLICATION

1. Can use this system in fruit and vegetable shop.
2. Can use this system in farm.
3. Can use this system in flower shop.

FUTURE WORK

An application should be created that not only sends messages to the user, but can also process the raw data values received from the sensors. The transmission of warning messages in the form of emoticons to convey different degrees of food spoilage so that messages can be understood by different users remains to be investigated.

CONCLUSION

An IoT-based online surveillance approach integrated with smart logistics can meet key needs to reduce food waste, improve transportation efficiency, and track food contamination. However, there are several challenges for the technology to function reliably in the dense and dynamic real-world logistics operating environment. Further progress is needed to obtain data collected under real conditions, e.g. B. the presence of a faulty module or unequal mobile communication to extract effective information. Real world logistics operations have other complexities that make flexible mapping a challenge, leading research and solutions to many of these problems Food poisoning is the source of countless diseases, to reduce and prevent disease, we use biosensors and electrical sensors to determine Household Fresh food such as milk, fruit and meat to dispense the device for more items by adding new sensors and using existing sensors.

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