IOT BASED ON FOOD QUALITY DETECTION WITH BIO SENSOR TECHNOLOHY

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Abstract: Due to presence of harmful chemicals and microorganisms in food, food contamination will be caused which causes illness to the people. The proposed scheme addresses the chemical contamination of foods, as opposed to microbiological contamination, which can be found under food borne illness. Food poisoning occurs by harmful bacteria on food. Food poisoning can be caused by eating contaminated food with bacteria viruses, chemicals or poisonous metals such as lead or cadmium etc. and including chicken, meat, sea food, eggs, cooked rice, ham, salami, milk and all dairy foods. Bacteria and viruses are the most common cause of food poisoning. Symptoms of food poisoning include Nausea, vomiting, stomach pain feeling weak, fever etc. In order to monitor the food poisoning, the new implementation has been made by using IoT. The monitoring system is based on many embedded sensors like thermostat, odour sensor, biosensor, pH sensor which depend on the out coming electric signals or digital value of the quality factors. In proposed system the biosensor plays a vital role to detect the bacterial contamination in food sample. Based on the combination of the sensor output, quality of the food should be detected which is reported to the health center through IOT.

Keywords*: Food quality, biosensor, nutrients, IOT*

I. INTRODUCTION

The food contamination means presence of harmful chemical and microorganisms in food, which can cause illness to the people. The impact of chemical contaminations on people health and well-being is often apparent only after many years of processing. Chemical contaminations present in food are often unaffected by thermal processing.

The quality of food is much more important. The food should be free from bacterial contamination. Food quality plays a major role for the people. The illness for the people can be caused by the following
Contaminations.

A. Agrochemical: Agrochemical which is used to increase the yield of the agriculture production. Mostly ammonia and nitrogen based chemical are present.

B. Processing contaminations: This is present in the raw material but they formed when processing of food since when the cooking the chemical present in the raw material react with one another in heat.

C. Emerging food contamination: Many food contaminations have been known for decades, the formation and presence of certain chemical in foods has been discover recently.

Food Freshness is a key factor for public safety. Management and monitoring of food quality are important food stage and transition. Food safety issue is a vital concern as shown in the Hazard and Critical Control Point (HACCP) by the U.S. Food and Drug Administration (FDA). There are up to 81 millions of American each year suffering from food-borne illness and 9100 cases of fatality. The waste of food due to spoilage is also a major concern for not only business owners but also many countries.

The latest commercial iPhone application, meals snap, can assist users to record and recognize food images. Automatic food intake assessment that avoids the inaccuracy in manual recording and food estimation deserves more research effort for obesity management.

Food poisoning comes from harmful bacteria on food. Food poisoning can be caused by eating contaminated food (with bacteria and viruses) chemicals or poisonous metals such as lead or cadmium, etc and including chicken, meat, sea food, eggs, cooked rice, ham, salami, milk and all dairy foods. Bacteria and viruses are the most common cause of food poisoning.

Food poisonings also called food borne illness is illness caused by eating contaminated food. Infection organisms including bacteria viruses and parasites or their toxins are the most common causes of food poisoning. The symptoms of food poisoning are

• Nausea

• Vomiting

• Stomach pains

• Diarrhea

• Feeling weak

• Fever or chills/sweating

• Headache

 It is important to remember that the same food handling practices are used to prevent all food poisoning diseases. Each year, millions of people in the United states get sick from contaminated food. Symptoms of food poisoning include upset above disease.

 In order to monitor a new implementation has been made by using IoT.This monitoring is based on many embedded sensors like thermostat, odour sensor, biosensor, pH sensor which depend on the out coming electric signals or digital value of the quality factors. In this the biosensor plays a vital role to detect the bacterial contamination in food sample.

II. OBJECTIVE OF THE STUDY

1 .The main objective of this project is to detect the food bacterial contamination.

2. Testing the quality of the food internally as well as externally by using the IOT and   ARDUINO
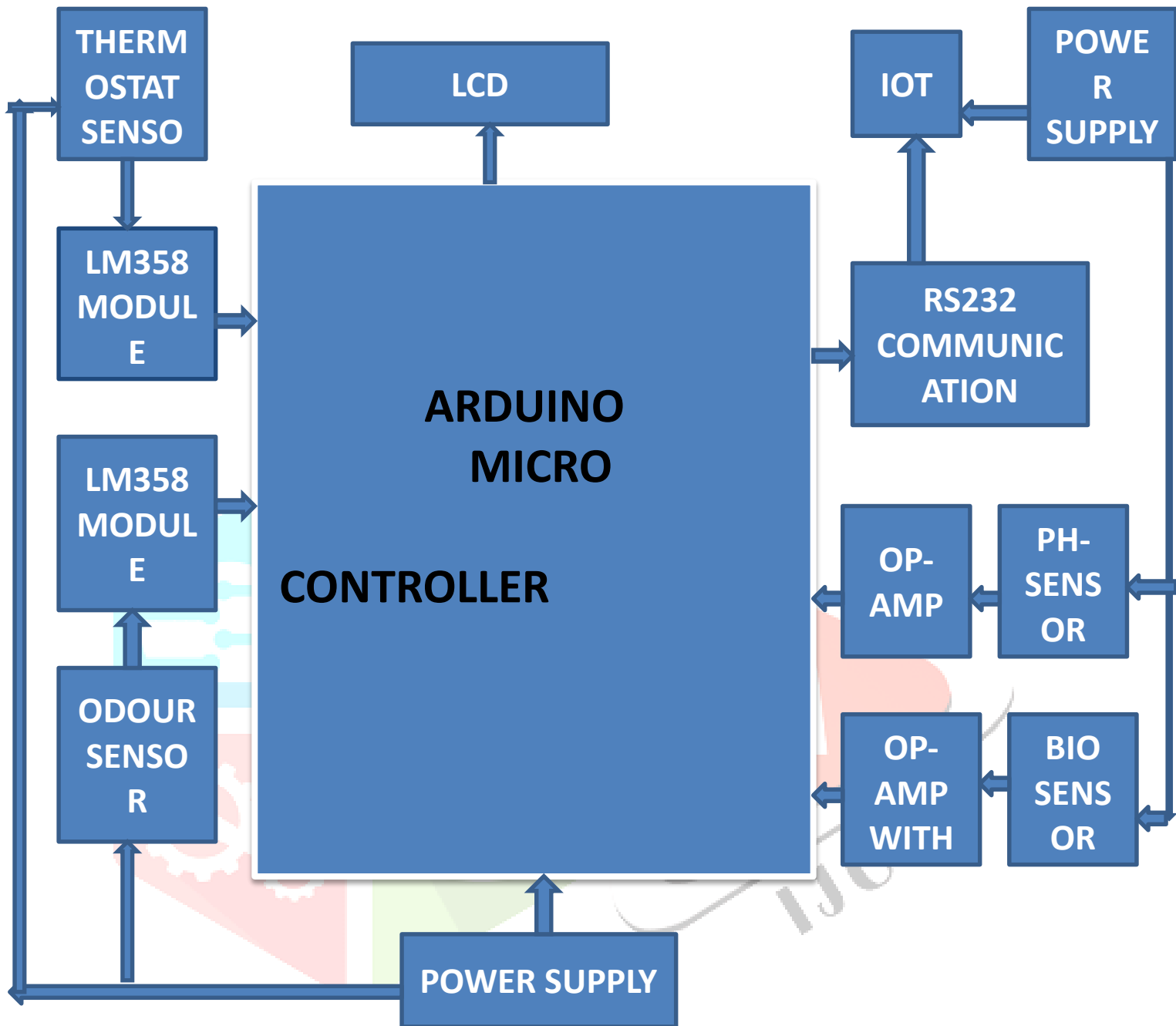
III. PROPOSED SYSTEM
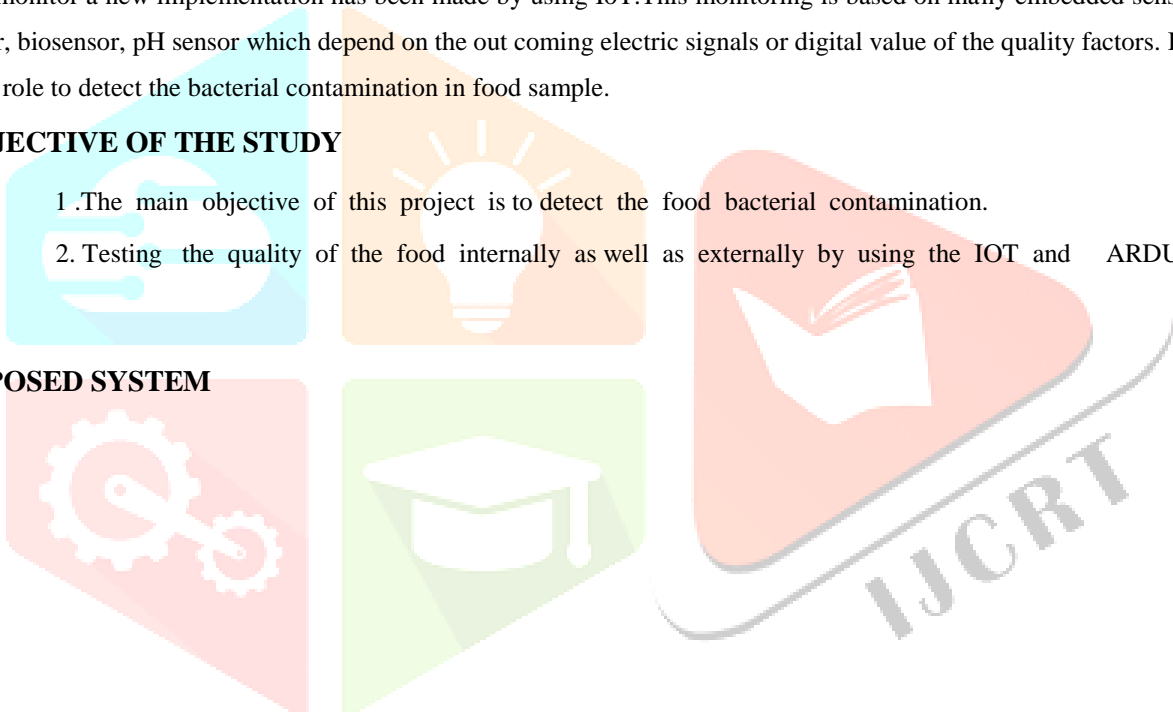
2.1 BLOCK DIAGRAM

Figure 4.1 Block diagram

Temperature, odour and pH value of the food item computed by thermostat, odour sensor and pH sensor respectively. The sensors only tell the external quality factors of the food item to know the freshness of the food sample. Any terminal bacteria and foreign body contanmination are detected by bio sensor the cumulated result of those sensor tell the freshness and quality of the food. Thus the sensors reader sends the received signal to the Arduino ATMega 328 that performs the further process like sending the information to the location management. Thus with this the safety of the food can be ensured by monitoring the food quality.

2.2. EXPERIMENTAL SETUP

The process can be well explained with the block diagram that intimates the details of the food quality is sensors tag to the sensor reader through the food quality.. This is then processed in Arduino ATMega 328 that has 14 digital input and output pins and also serial communication ports.

A thermostat is an instrument runs at full capacity till the particular temperature is reached, Then will turn off thermostat and show the accurate temperature of the food item. The temperature of food is on important factor to identity freshness of the food .Temperature may vary for different food varieties. Odour is a keypoint in food quality management, based on the nature of the odour like pleasant and unpleasantness it tell the quality of the food. Odour sensor senses the chemical smell like alcohol, amines in the beverages. pH sensor can be called as passive device to detect the hydrogen ion activity in the solution. Biosensor can detect the bacterial contamination in the food item. It receives the signal which is reflected from the bacterial and fungus in the food sample like beverages. Biosensor particularly intended for food quality control to check the invisible micro-organisms in the food material. Which uses the different types of transducers it produces the current which is proportional to the analyte a chemical compound it indicates presence of micro-organisms.

In order to monitor the food poisoning, the new implementation has been made by using IoT. The monitoring system is based on many embedded sensors like thermostat, odour sensor, biosensor, pH sensor which depend on the out coming electric signals or digital value of the quality factors. In this the biosensor plays a vital role to detect the bacterial contamination in food sample. Based on the combination of the sensor outputs quality of the food should be detected which is reported to the health center through IoT

IV. RESULT

Thus on working with is project the positives are able to attain from it. Thus this shows the process of success rate for the further development and the future real time implementation.
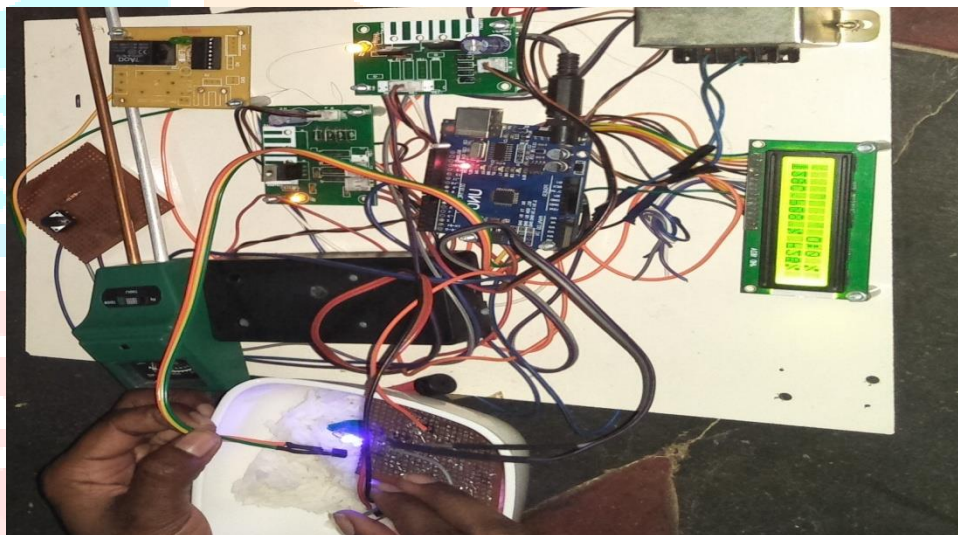

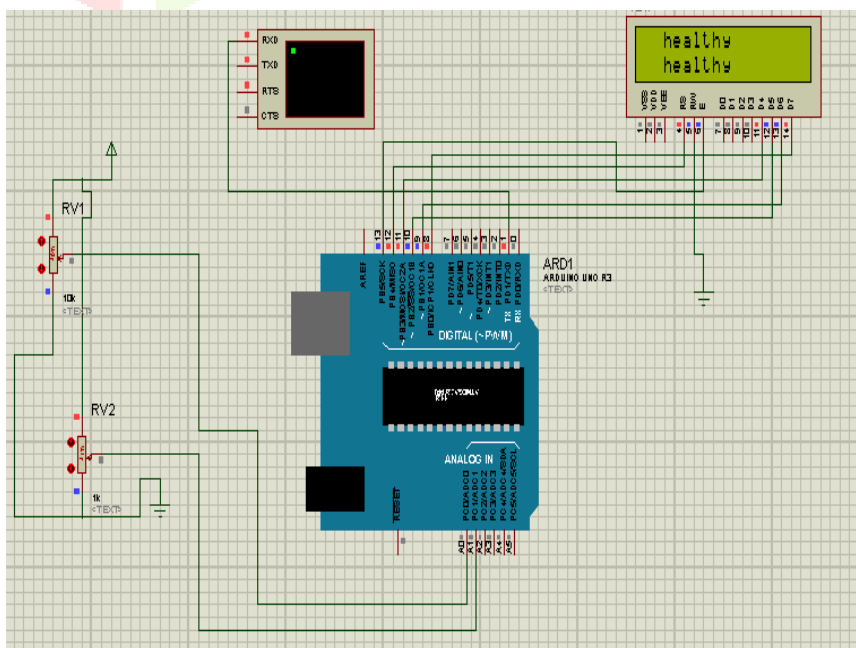Figure :2 Hardware output result

Figure 4.3 simulation output

Welcome Mr. EMP00002

Row#	value	receivedate	empid
13	G	3/1/2018 4:54:32 PM	109
12	FOOD_QUALITY_TEST	2/26/2018 5:40:56 PM	109
11	1057food_spoiled#	2/26/2018 5:39:42 PM	109
10	1057food_spoiled#	2/26/2018 5:39:34 PM	109
9	1057food_spoiled#	2/26/2018 5:39:26 PM	109
8	1057food_spoiled#	2/26/2018 5:39:17 PM	109
7	1057food_spoiled#	2/26/2018 5:39:09 PM	109
6	1057food_spoiled#	2/26/2018 5:39:01 PM	109
5	1057food_spoiled#	2/26/2018 5:38:53 PM	109
4	1057food_spoiled#	2/26/2018 5:38:45 PM	109
3	FOOD_QUALITY_TEST	2/26/2018 5:35:20 PM	109
2	FOOD_QUALITY_TEST	2/26/2018 5:32:16 PM	109
1	FOOD_QUALITY_TEST	2/13/2018 3:08:09 PM	109

Delete   Logout

Figure :4 IOT output

V. CONCLUSION

In this existing system the contaminants present in food quality monitored using multi sensor and micro controller but not any used networks. In the proposed system the contaminates present in the food is monitored using food quality monitor devices (Temperature, odour, pH, Bio sensor). The harmful temperature, smell, liquid or solid, bacteria gathered by the sensor's is transmitted through a web server and will provide information if it goes beyond the critical level. The sufficient amount of data collected is passed to the food quality data storage, where the data is analyzed by IOT software .Hence this project helps to reduce the food poison problems.

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