A Prototype Model of Plastic Rice and Synthetic Egg Detection

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Abstract: In our daily life there are so many unhygienic and contaminated things for our health. Most of our things our contaminated. Even the food, which we eat, is adulterated. To ensure food safety it should be monitored at every stage of supply chain. It serves the purpose of preventive consumer health protection by maintaining the required standard ambient conditions needed to preserve the quality of food. The proposed solution analyzes and sense the colures, weights and presence of plastic level as these parameters affect nutritional values of food items and makes the analysis results accessible to the user via a mobile communication. In this paper ARM processor is used to detect the plastic rice and synthetic egg. This feature is used to classify plastic rice and synthetic egg.

Index Terms- **health protection, plasticrice, synthetic egg and ARM processor.**

I. INTRODUCTION

The objective of this paper is to study some of the common food adulterants present in different food stuffs. Adulteration in food is normally present in its most crude form; prohibited substances are either added or partly substituted. Normally the contamination/adulteration in food is done either for financial gain or due to carelessness and lack in proper hygienic condition of processing, storing, transportation and marketing. This ultimately results that the consumer is either cheated or often become victim of diseases. Such types of adulteration are quite common in developing countries or backward countries. It is equally important for the consumer to know the common adulterants and their effect on health. The increasing number of food producers and the outstanding amount of import foodstuffs enables the producers to mislead and cheat consumers.

To differentiate those who take advantage of legal rules from the ones who commit food adulteration is very difficult. The consciousness of consumers would be crucial. Ignorance and unfair market behavior may endanger consumer health and misleading can lead to poisoning. So we need simple screening, tests for their detection. In the past few decades, adulteration of food has become one of the serious problems.

The proposed solution analyzes and sense the colures, weights and presence of plastic level as these parameters affect nutritional values of food items and makes the analysis results accessible to the user via a mobile communication. In this project ARM processor is used to detect the plastic rice and synthetic egg. Mode Switch feature is also used to select the process whether u want to find a plastic rice or synthetic egg. Buzzer is used to whether the plastic content is mixed it gives the sound. Indication LED which helps the plastic are indicated in red color and the plastic less are indicated in green color. Plastic materials are identified with the help plastic sensor here we used the capacitive sensor.

II. PROPOSED SYSTEM

A. BLACK DIAGRAM

The functional and working model of plastic rice and synthetic egg detection system block diagram was shown in below figure 1. ARM processor is used to detect the plastic rice and synthetic egg. Mode Switch feature is also used to select the process whether u want to find a plastic rice or synthetic egg. Buzzer is used to whether the plastic content is mixed it gives the sound.

Indication LED which helps the plastic is indicated in red color and the plastic less are indicated in green color. Plastic materials are identified with the help of plastic sensor. This is plug and play GSM Modem with a simple to interface serial interface. It uses the highly popular SIM900a module for all its operations. Use it to a SMS, make and receive calls, as well as DATA transfer application and do other GSM operations by controlling through simple AT commands from microcontrollers and computers.

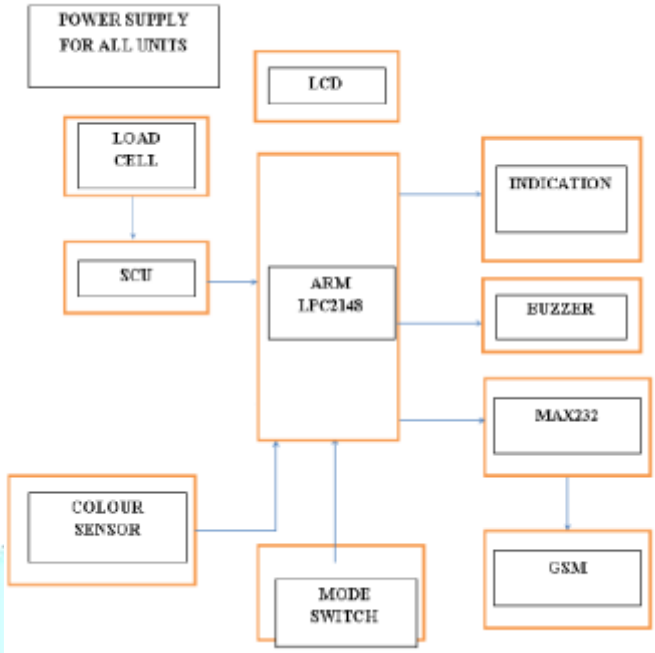

Fig.1 Functional block diagram of Plastic Rice and Synthetic Egg detection system

LCDs have materials which combine the properties of both liquids and crystals. Rather than having a melting point, they have a temperature range within which the molecules are almost as mobile as they would be in a liquid, but are grouped together in an ordered form similar to a crystal.

TCS230 Color Sensor Daughterboard is a complete color detector, including a TAOS TCS230 RGB sensor chip, white LEDs, collimator lens, and standoffs to set the optimum sensing distance. It plugs directly into the BASIC Stamp-2pe Motherboard and will also interface to any BASIC Stamp module or Propeller board using the optional DB-Expander SIP Converter.

B. BASIC COMPONENTS

Our system components are described below,

1. Power Supply: Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit.

2. GSM: GSM is a digital mobile telephony system that is widely used in Europe and other parts in the world. GSM uses a variation of TDMA and is most widely used of the three digital wireless telephony technologies (TDMA, GSM and CDMA).

3. LCD DISPLAY: LCDs have materials which combine the properties of both liquids and crystals. Rather than having a melting point, they have a temperature range within which the molecules are almost as mobile as they would be in a liquid, but are grouped together in an ordered form similar to a crystal.

4. COLOR SENSOR TCS230: Color Sensor Daughterboard is a complete color detector, including a TAOS TCS230 RGB sensor chip, white LEDs, collimator lens, and standoffs to set the optimum sensing distance. It plugs directly into the BASIC Stamp-2pe Motherboard and will also interface to any BASIC Stamp module or Propeller board using the optional DB-Expander SIP Converter.

5. LOAD CELL: A load cell is a transducer that is used to create an electrical signal whose magnitude is directly proportional to the force being measured. The various types of load cells include hydraulic load cells, pneumatic load cells and strain gauge load cells.

6. ARMLPC2148: LPC2148 is the widely used IC from ARM-7 family as shown in fig.3.13. It is manufactured by Philips and it is pre-loaded with many inbuilt peripherals making it more efficient and a reliable option for the beginners as well as high end application developer. The NXP (founded by Philips) LPC2148 is an ARM7TDMI-S based high-performance 32-bit RISC Microcontroller with Thumb extensions 512KB on-chip Flash ROM with In-System Programming (ISP) and In-Application Programming (IAP), 32KB RAM, Vectored Interrupt Controller, Two 10bit ADCs with 14 channels, USB 2.0 Full Speed Device Controller, Two UARTs, one with full modem interface.

III. RESULTS

A. EGG TEST

1. Normal Egg Test: The normal egg was tested in our instrument and it's showed no warning indication as a result. Also GSM based warning information's are not received. This testing results shown in below diagram.

Figure 3.1 Display of normal egg in LED display

2. Synthetic Egg Test: The synthetic egg was tested in our instruments and it's showed the warning indication in the both display and buzzer. Also GSM based warning information's also received through registered mobile number. These process results are shown in below figures.

Figure 3.2 Synthetic Egg in Strain Gauge

Figure 3.3 Display of Synthetic Egg

After the display and buzzer indication, automatically we received the Text message like PLASTIC EGG as a message through registered mobile number. This result was shown in below figure.

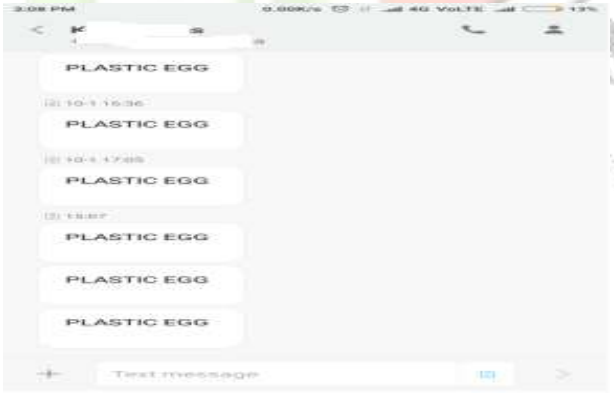

Figure 3.4 Message of Synthetic Egg through GSM

B. RICE TEST

1. Normal Rice Test: The normal rice was tested in our instruments and it's showed no warning indication. Also GSM based warning information's also not received. This test result shown in below.

Figure 3.5 Normal Rice Sensing and Display of normal rice indication in LED display

2. Red color Test: The Red color rice was tested in our instruments and it's showed no warning indication. Also GSM based warning information's also not received. These testing result shown in below diagram.

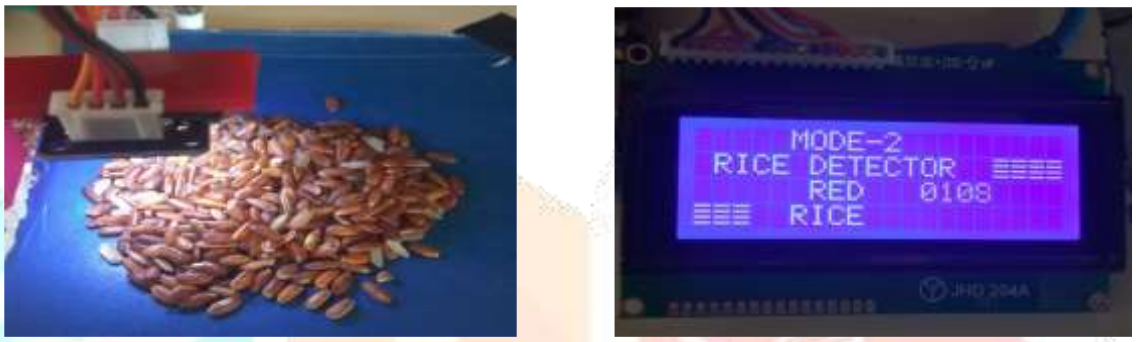

Figure 3.6 Red Rice Sensing and Display of normal rice indication in LED display

3. Plastic rice Test: The plastic rice was tested in our instruments and it's showed the warning indication in display and buzzer. Also GSM based warning information's also received through registered mobile number. This entire test results are shown in below figures.

Figure 3.7 Plastic Rice Sensing test and Display of Plastic Rice in LED display

Figure 3.9 Message of Plastic Rice through GSM

IV. CONCLUSION

The greatest threatening factor of our day to day life is health problem. The essential part is the food we intake. The recent trend is adding plastic to the rice and eggs, which is toxic to human life which causes cancer. We have studied and tested different parameters reactions involving in the process of detection of different adulterants in rice and egg. These experiments were performed for the purpose of detecting various adulterants present in rice and egg.

This experiment setup showed better results for detecting the synthetic egg and plastic rice.

Features:

- Better result
- Low cost and weight
- Easy to find the threads

V. FUTURE WORK

Our future scope is to develop a real model in all commercial market measurement needs. We also planned to implement this concept in conveyer based production companies.

Personal computer based scanning configuration also can include in further development.

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