FOOD SPOILAGE DETECTION SYSTEM

REPORT

Team Members :

Akhila A

Akshaya Krishna R

Amrutha U

Lakshmi M G

1. OBJECTIVE

The objective of the food spoilage detection system is to provide freshness or spoilage status of food items by continuously monitoring the food item. The system mainly uses sensors to detect the spoilage and alert through buzzer.

The main aim of the project is to ensure that the food we consume is safe and identifying early signs of spoilage .

The mechanism of the food spoilage detection system is by detecting gases like methane , ethylene , carbon dioxide which is released by spoiled food items.

So in brief the key objective of the system are

- Indication systems
- User alerts
- Spoilage detection

2. COMPONENTS

➢ **Mq-4 gas sensor:**

- This sensor is basically used for sensing gases like Methane, LPG, Carbon dioxide at varying concentrations .
- The sensor have high sensitivity to Volatile Organic Compounds (VOCs) .
- In this project the sensor is primarily used to detect Methane Gas.

➢ **Arduino uno:**

- This component is the brain of the system.
- Arduino processes the data received from the MQ-4 sensor and interprets the gas concentration levels.

- It then determines whether these levels indicate the food is fresh or spoiled based on the data processed.
- Arduino powers user interfaces like LEDs and buzzers to indicate spoilage or alerts.

➢ **LEDs:**

- LEDs provide a visual indication of food spoilage, alerting users to take action.
- Here 2 LEDs are used, green and red.
- If the food is spoiled red led will glow and if the green led glows the status of the food is safe.

➢ **Buzzer:**

- It is audio signaling device which operates on low voltage.
- Buzzers can function as an alarm, alerting users to take immediate action.

➢ **Breadboard:**

- Breadboards provide a central location for connecting sensors, Arduino , LEDs and other components.
- Breadboards allow for easy reconfiguration and reuse of components, reducing electronic waste and saving resources.

➢ **Jumper Wires:**

- Jumper wire connect components , sensors and modules on the breadboard forming a functional circuit.
- Jumper wires help with debugging by allowing easy isolation and testing of individual components.

3. WORKING:

In the hardware prototype it is designed such that the Mq4 gas sensor would sense the gas released by the spoiled food and detect it immediately and inform the users. Here we have taken Tomato for example. From the design the White LED will glow when the sensor senses fresh food and if it senses spoiled food it may detect the gas and Red led will glow along with beep sound from the buzzer.

4. CONCLUSION:

In conclusion the development of our food spoilage detection system using gas sensor has been a remarkable journey.

Through meticulous design we have successfully created a versatile and efficient food spoilage detector for simple, low-cost food spoilage detection.

The key takeaway from the project is the understanding of gas sensor technology, Arduino uno programming, implementing the system offers hands-on experience in troubleshooting sensor-based application implementation of the project provided a blend of technical learning and practical experience.