

## **Disposable colorimetric geometric barcode sensor for food quality monitoring**

( Link: <https://ieeexplore.ieee.org/document/7994325> )

### **Summary**

Food quality inspection plays a vital role for detecting rotten foods. Current food quality detecting methods, for instance, electromagnetic interrogation, gas chromatography, chemical sensing etc. are not cost effective and efficient. Therefore, in this research, the researchers proposed a new approach of biodegradable and disposable colorimetric geometric fabricated barcode sensors which can be easily placed in the upper part of food or over raw chicken. Then using smartphones, the barcode can be scanned and after scanning, the system automatically extracts color information compared with a dataset and shows then the analytics whether the food can be consumed or it is time for discard. This new approach is extremely low in cost and environment friendly which can be a game changer for detecting food quality.

### **Methodology**

- First of all, the barcode scanner is set on the upper part of the food.
- Then using a smartphone camera, barcode can be easily scanned like a QR code scanner.
- Then in the barcode sensing part, the entire process is done using image processing and photos clicked by smartphone are sent to MATLAB which uses Principle component analysis (PCA). It also works as an RGB recognition method.
- After analyzing the colors of the food, it provides a clear analytical overview of whether the food can be consumed or this is spoiled food.

### **Findings**

The findings of this paper is that after observing different states of chicken in refrigerators and room temperature, the sensor can easily detect the color of spoiled areas using RGB recognition image processing technology.

### **Novelty**

The novelty of this paper is to innovate biodegradable and disposable colorimetric geometric fabricated barcode sensors which is eco friendly and cost effective at the same time while using smartphones.

### **Analysis**

At the time of analysis, 1st group of samples were kept under 20° C, 2nd group under 5° C and 3rd group of samples were kept both under 5° C and 20° C and changed temperature at an interval of 24 hours. After 5 days of observation, the analytics shows the detection of spoilage food.

**Research Gap**

In this research, the authors didn't give an idea of how much accuracy rate is provided by the geometric barcode sensor.

**Problems Faced**

They didn't provide the accuracy rate of the barcode sensor.

**Future Work**

Using other IoT based devices and precisely describing the accuracy rate will be extremely helpful in the near future.