

# A LITERATURE REVIEW ON TECHNIQUES TO DETECTS FOOD FRESHNESS

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## Abstract:

Any good food we consume gives us nourishment and offers energy to us. It provides us the ability to do our day-to-day activities and helps in the improvement our heath in direct and indirect way. The nourishing food and fresh diet plan is the most efficient way to hold ourselves fit and energetic .

**Keywords — Food Freshness,pHSensor,MoistureSensor,Gas Sensor; Arduino Uno.**

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## I. INTRODUCTION

The human intervention method includes checking freshness of fruits and food items manually with the aid of human force by means of the color shades and checks it by smell. However, the checking of food item is very costly, lengthy process, and less efficient due to human intervention.

A Food Sniffer is a device that is developed to detect the freshness of food item, it checks the freshness of like meat, poultry products, fish, etc. This device is used for checking freshness of meat.

There is no development for dairy products. The food we take may affect our health in any form of contamination which causes due to physical of chemical changes. There are many microbial which may lead in food spoilage and may lead in several food borne diseases like food poisoning etc. It is important to expand a gadget that could assist humans to become aware of the freshness of food stuff. Our device

may give rises in good first-class result in managing of food stuff also give based on the aggregation of the sensor output will be identified.

## II. LITERATURE SURVEY

Food choice is like an all alternative human behavior is complicated and is affected by many interconnected factors. Understanding those factors associated with nursing is crucial, since it has created important factor for population dietary modification. Variety of models looking to point out the potential effects of such influences are planned within the survey.

One amongst these models tries to reason the factors those associated with the food (structural/biological properties, nutrient content), to the person creating the selection (perception of sensory attributes, psychological factors) or to the external economic and social setting at intervals that alternative is formed (price, convenience, brand, social/regional) (Shepherd 2001).

Several studies aimed to explore vital factors in food alternative and located various results in line with the tactic used, the merchandise thought of or the people interviewed.

A huge survey was conducted throughout Europe [1] to work out necessary factors in impacting European shopper food selection. The reporters showed that the first issue was quality/freshness followed by style, healthy diet, money, family inclination and eventually, habits. [1] Other study including 171 U.S. and 205 Irish shoppers concluded that brand and freshness were the foremost highlighted attributes once asked however they determined if a nutrient is of top quality (George, 1993) amongst the customers asked, thirty-fifth of the U.S. and thirty-eighth of Irish people customers highlighted freshness. During 1999, freshness was the third most vital reason for choosing a primary market, simply behind, “high quality food items” and a “hygiene and organized store” (FMI, 1999) many other surveys were conducted to see the factors effecting food items selection amongst the population[2].

A research done by the AGV (1981) in ninety-nine cities of European country revealed that freshness was the foremost vital issue once buying fruits and vegetables. Fifty-six pc of the two, 265 customers World Health Organization was interviewed within the streets reportable that their purchases done by them were addicted to this criterion.

During a research by Ragwort et al. (2004) in Kingdom of Belgium, around two hundred customers stated the significance of various factors effecting the acquisition and intake of minimally processed food items. Freshness was the foremost vital issue each at the time of buying and using up, followed by tagged period date and style. Find (1989), United Nations agency shoppers reports of a U.S. research on shopper attitudes towards recent fruits and groceries expressed that ninety-six of the respondents cited awareness and freshness as vital choice criteria. Additionally, rumors mentioned the significance of look and condition, whereas sixty-six used nutritious price and sixty-three used worth as a guide. In this paper we make an extensive survey on various

techniques to detect food freshness. The following sections will discuss each technique in detail.

### **2.1. Meat Freshness identification system using gas sensor Array and sensor in conjunction with neural network pattern Recognition [1].**

In [1] freshness level in the meat is important to determine the quality of meat. To overcome this problem the sensor system has been designed to check the freshness of the meat. The system consists of Raspberry PI connected with gas and colour sensors to match with the human vision to detect freshness of poultry product. Pattern recognition with neural network is used to identify the freshness of stuff. This will input the odour which can be identified by gas sensor with the array of MQ-136, MQ-137, and TGS-2620 sensor. The freshness is checked based on three levels like fresh meat, half-rotten meat and rotten meat. The usage of the sensors will help us in determining its distinct pattern. The identification of meat freshness will be with 80%. So that we can say stuff is fresh, the vary in pattern says its half -rotten and rotten meat. These two types are not consumable. Thus from this we can define has system is succeed in identifying or checking the freshness of poultry products.

### **2.2 Freshness Evaluation of Three Kinds of Meats Based On Electronic Nose [2].**

In paper [2] the study will define the use of electronic setup to predict or detect the freshness of the poultry products like pork, beef, mutton, etc. The freshness is measured in three levels. They are fresh, sub fresh and putrid. By sensory evaluation, and with the help of electronic device, we discriminant factor analysis. The component analysis shows the electronic device could identify the samples with different storage. There are three types of meat sample chosen and stored for seven days. The discriminant factor shows the electronic device could differentiate and able to identify the freshness of the food item. If the freshness value lays fewer than 89.5%, 84.2%, 94.7% for pork, beef and mutton then we can say that the sample is fresh.

### 2.3 Detection of Freshness of Fruits Using Electrical Method [3].

In paper [3] moisture content of the fruit is an important quality factor to detect the freshness of the fruit. Technique content of fruit has effective influence on the density of fruit. Electrical methodology is employed to notice the freshness of fruit. This work will let time to the freshness of the variety of fruits with the electrical based approach. Checking the wet content of fruits is clear higher the wet contents within the fruit offers higher within the quality of fruit. Wet content of all form of fruit has 80-95% of its whole weight. This means that fruit is content more if larger wet content in larger amount. Additionally, wet loss throughout day's cause loss in its weight. Electrical technique is easier than that of normal technique to notice the freshness of fruits.

### 2.4. Fruit Freshness Detection Using RASPBERRY PI [4].

This paper [4] sheds light on the advancements made in the agricultural industry. Digital image processing techniques are now widely used for the maturity estimation of fruits. This work aimed to study and analyze the various algorithms and feature extraction techniques that are now used for the extracting features from the captured digital images. Thus, it is important for the suppliers to label the quality of fruits. In this paper, we are inspecting the quality of fruits based on size, shape and color and also by its weight. All of these algorithms are implemented using RASPBERRY PI development board which will become an independent and cost effective system. All the interfacing of the components will be carried out and it will make a cost effective embedded system prototype for the determination of size, shape and color of the fruit. Same system can be utilized for other fruits conjointly. Advantages and disadvantages of various classifiers have been classified. It was observed that for achieving high accuracy a compromise had to be made with high computational complexity.

### 2.5. IoT Based Milk Monitoring System for Detection of Milk Adulteration [5].

Sustenance security in provincial and concrete zones is a particularly vast, because it nearly influences the soundness of nationals. In paper [5] late examinations find that crude milk contains horrific life forms that might induce contamination if eaten up which might build the speed of infections and break down the non-public satisfaction. Thus, creating apparatuses for constant and shrewd detection is needed for quality checking and to decide on affordable and opportune alternative. The work aimed to present some aspects concerning milk quality and amount estimation. The web of Things (IoT) primarily based system permits users to understand the groupings of gases in crude milk incessantly. Because of the milk is unbroken for many days, the enlargement of bacterium can get enlarged that bacteria in undesirable smell, vogue and harmful substances. Hence, there's a necessity for observation system to get and confirm the spoilage of milk and switch out into a healthy product. Consequently, the toxic substances in milk area unit known before to take care of a strategic distance from entanglements within the underlying stage for a good last item. In this projected system, microorganism activity is set victimization gas detector, high quality milk ought to do not have any salinity, conjointly salinity of the milk is measured by employing a salinity detector and also level of the milk are going to be measured by employing a level detector. Additionally, should have their card for accessing the milk diaries.

### 2.6. IOT Based Detection of Microbial Activities in Raw Milk [6].

In our day today life the food freshness is decreasing due to adulterating the food stuff by mixing low quality adulterant for original food stuffs. This will leads to several health issues when human beings consumes this food. It has been affected in rural and urban areas. Many of the results have been show that the stored milk contains some amount of microbes like bacteria. From this we understood that there is a need to develop some monitoring or controlling system to keep tracking or checking the freshness of the raw milk. In the paper [6] there are sensor units,

which has to be connected to Arduino Uno board and all the inputs are given to application with the help of Bluetooth module. Based on fat and liters the amount of microbial activity is calculated. From the mobile application the result update is given to users.

### III. CONCLUSION

Poisoning of the food item is the major source of numberless diseases to chop back and avoid unhealthiness we tend to use biosensors and electrical sensors to visualize the freshness of home food things like the diary, things consists of hardware device associated a mechanical man application of mobile device. The humanoid application is the main interface and should perform is the actions: one.

- 1.The user will use to figure out is the of the food checked.
- 2.User can see the results on liquid crystal display connected to device.

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