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A REVIEW ON FOOD QUALITY DETECTION

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Abstract

This paper proposes an automatic food quality evaluation system for sorting and grading of fresh food and old food detection. The food can affect in any form of spoil that may happen due to storage or chemical changes within the food. Here we are using this technique to detect freshness of fruit, milk, meat etc. As a solution we propose the system to ensure freshness in food. The main aim of this system is to replace the manual inspection system. This technique reducing the time, and increasing the efficiency and accuracy. The device consists of Raspberry pi and moisture sensor. Image processing is used to detect the freshness of fruits. An android application is developed to select the type of food to be checked. Based on the sensor outputs quality of the food can be detected.

Index Terms—Food Freshness; Moisture Sensor; Raspberry pi; Image Processing; Android application

I. INTRODUCTION

Nowadays people prefer quality over quantity. The food we consume gives us the ability to do daily activities and help improve our health in direct as well as indirect ways. The food items kept at room temperature undergo rapid bacterial growth and chemical changes in food. Taking unhealthy food leads to bad health, and can cause different food-borne diseases. People are ready to pay the price for quality. The customer uses manual inspection techniques. This process is very time-consuming and we cannot determine the actual quality of food.

Considering this situation we are developing a system that will be completely automated and will give the good and bad quality of foods separately. Our proposed system gives the freshness management in food. It is based on sensors and image processing. Biosensors play 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. The image processing method is use of algorithms to

perform image processing. In order to check fruit quality used color, shape, and texture to sort tomato, fruits according to their color (redness), size, shape, maturity and defects. The moisture sensor is used for detecting the freshness of meat and fish.

II. LITERATURE REVIEW

In [1] to identify the fruit species and prices, researcher proposes Fruits Classification using Deep Learning used for Industrial Fruit Classification System is used. It is used to help people decide whether fruit species are meeting their dietary requirements. This paper used 2 datasets for classification of fruits using deep learning. The first dataset consists of clear images of fruit, the second dataset contains fruit images that are difficult to classify.

The paper [2] describes the integration of a wireless sensor based on an inductive-capacitive resonant circuit for monitoring of the quality of dry, packaged food such as cereals, and fried and baked snacks. To monitor food quality, the sensor is placed inside the food. Its response is remotely detected through a coil connected to a sensor reader. As food quality degrades due to increasing humidity inside the package, the paper absorbs water vapor, changing the capacitor's capacitance and the sensor's resonant frequency. Depending upon the changes in the sensor's resonant frequency, taste quality of the packaged food can be determined. The simple design and inexpensive sensor ensure a low sensor cost, thus making this technology economical.

In [4] "Application of Image Processing in Fruit and vegetable Analysis: A Review" the image-processing techniques are very important for the analysis of agricultural operations. Fruit and vegetable classification is one of the major applications of image processing. This can be used in super markets to automatically detect the type of fruits or vegetables purchased by customers. The paper uses various methods used for addressing fruit and vegetable classification and detecting a fruit

diseases. Image processing approaches used for fruit disease detection, segmentation and classification..

In paper [7] “ E-Fresh – A Device to Detect Food Freshness” used biosensor and electrical sensors to check out the freshness of food. A system which may sight the freshness of food like milk , meat, and fruits. The devices hydrogen ion concentration , moisture sensor, and Gas sensor is used to check food freshness detector and tells whether or not to eat it or bin it. An android application is developed to select the type of food to be checked.

III. PROBLEM STATEMENT

We proposed a smart system to determine the freshness of food .To detect the freshness of meat and fish using moisture sensor and the freshness of fruits is detected by using image processing.This system is based on sensors and image processing. Based on the combination of the sensor outputs quality of the fish and meat should be detected.The image processing method uses an algorithms to perform freshness detection in fruits. To check fruit quality it used color, shape, and texture to sort tomato ,fruits according to their color , size, shape, maturity and defects. The moisture sensor is used for detecting the freshness of meat and fish.

IV. PROPOSED METHOD

The integrated electronic device with moisture sensor that can detect food freshness.The device consists of a raspberry pi and moisture sensor, image processing devices. Moisture sensor is used to detect freshness of meat,fish etc. The food to be checked is attached to the sensor and the user can input from Android mobile application. Take readings from sensor and decision is taken based on algorithm. Capture image of food in case of

V. CONCLUSION

This paper proposes an automatic food quality evaluation system for sorting and grading of fresh food and old food detection. This paper will guide all that how the fruit will be evaluated based on its shape, size and texture for which image processing will be used and the decision will be made that is the fruit is fresh or not. Here moisture sensor is used to detect fish and fish freshness. The diagrams can be used to refer to the use” depending upon the food freshness level. The output is shown on mobile screen.

architecture of the system.

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