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An Excess Food Redistribution System using IoT

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Abstract – *A trusted and dynamic network helped and bolstered by the Internet of Things (IoT) is a key factor in nourishment squander decrease and the executives. This framework proposes an IoT based setting mindful system which can catch constant powerful prerequisites of the two merchants and buyers and perform ongoing match-production dependent on caught information. We portray our proposed reference system and the idea of keen nourishment sharing contain-are as empowering innovation in our structure. A model framework shows the practicality of a proposed approach utilizing a shrewd compartment with inserted sensors. The idea and an underlying model of a Smart Food Container was presented. Albeit current spotlight is on the overabundance nourishment these can be utilized to distinguish the best condition for non-abundance nourishment just as for different assets for gift. Weight, GPS, Air weight, Light and RFID perusers will be added to the Smart Container in the following period of the usage. Eventually these permits ongoing, dynamic, savvy and setting mindful match-production between the merchants/nourishment things and shoppers.*

Key Words: **Internet of Things (IOT), Sensors, Food Waste Management (FWM), Context, Context-awareness, Surplus Food, Smart Container.**

1. INTRODUCTION

This system proposed novel approach towards efficient food waste reduction via an IoT enabled dynamic and real-time match-making system which addresses the strengths and shortcomings identified in system. A Smart Food Container /Smart Container containing different sensors is designed to capture real-time context of food donations made available by the vendors to facilitate sharing with consumers. Although the concepts are proposed for the Food Wastage Management (FWM) domain, our approach can be adopted, customized or extended to manage other resources as well. This system summarizes the strengths and weaknesses of existing ICT based food wastage management systems describes the overall conceptual architecture of the proposed framework. We take a deep look into the concept of a Smart Container, a prototype and some results are presented as well. The proposed framework consists of four main components which are Virtual Marketplace, Data Management Engine, Recommendation Engine and Trust, Reputation and Fraud Detection and Prevention Engine. This system proposed an IoT based novel, real-time and dynamic framework to efficiently distribute excess food which would otherwise end up in waste lands. This framework addresses the weaknesses identified in the existing systems as well as maintain the strengths they have. The concept and an initial prototype of a Smart Food Container was introduced. Although current focus is on the excess food these can be used to identify the best environment for non-excess food as well as for other resources for donation. Weight, GPS, Air pressure, Light and RFID readers will be added to the Smart Container in the next phase of the implementation. Ultimately these allows real-time, dynamic, intelligent and context-aware match-making between the vendors/food items and consumers. In the future, drones (on land or flying) can also pick up such excess food from the Smart Food Containers and help deliver them to matched consumers.

1.1 Problem Definition

The purpose of this system is towards efficient food waste reduction via an IoT enabled dynamic and real-time match-making system which addresses the strengths and shortcomings identified in system. A Smart Food Container/ Smart Container containing different sensors is designed to capture real-time context of food donations made available by the vendors to facilitate sharing with consumers. Although the concepts are proposed for the Food Wastage Management (FWM) domain, our approach can be adopted, customized or extended to manage other resources as well.

1.2 Project Scope

As the nourishment uncertainty are expanding individuals manage undernourishment and unbound. So as to help individuals for nourishment and with the assistance IoT framework to make effectively accessibility of nourishment.

1.3 Advantages

- Reduced Food Waste
- Easy installation
- Better Food storage and Performance

1.4 Application

- Used in Charity and Trust
- Used in Home
- Used in Hospital
- Used in Organizations
- Used in Parties/Marriages

2. Methodologies of Problem Solving and Efficiency issues

The single problem can be solved by different solutions. This considers the performance parameters for each approach. Thus considers the efficiency issues:

2.1 Problem Solving Methods are concerned with efficient realization of functionality. This is an important characteristics of Problem Solving Methods and should be deal with it explicitly.

2.2 Problem Solving Methods achieve this efficiency by making assumptions about resources provided by their context (such as domain knowledge) and by assumptions about the precise definition of the task. It is important to make these assumptions explicit as it give the reason about Problem Solving Methods.

2.3 The process of constructing Problem Solving Methods is assumption-based. During this process assumptions are added that facilitate efficient operationalization of the desired functionality.

3. System Architecture

In this architecture shows, our application is to build a system to help the citizens to reduce food wastage via IoT technology. Smart Food Container is a container equipped with state of the art sensors which can automatically capture and transmit the context data of the food donations dropped into it. Food donations dropped into the Smart Food Container will be detected and the information shared on our Virtual Marketplace framework so that consumers can be notified and consume it can understand the context of the food available for donation. The idea is to automate the sharing of excess food via such containers users only need to drop their excess food into the container and the system does the rest. Our conceptual Smart Food Container contains a distance sensor and a light sensor to detect the opening of the box, a weight sensor to detect that a new item is dropped inside and to calculate the weight of the items inside, a RFID reader to read RFID tags, a temperature sensor to capture the temperature inside, humidity and air pressure sensor, a GPS sensor to locate the Smart Containers location, a camera to capture and identify the food items inside and a WIFI enabled Raspberry Pi (or Arduino), which captures data from the sensors and transmit to the distribution center via Internet.

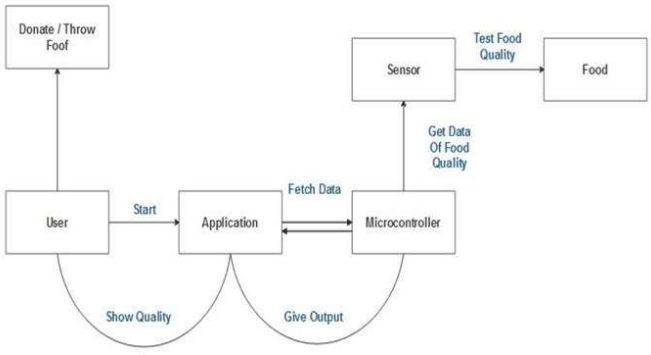

Fig: System Architecture Diagram

3.1 CC811 TVOC Sensor

It is check the Air Quality Breakout is a digital gas sensor solution that senses a wide range of Total Volatile Organic Compounds (TVOC). This sensor including Equivalent Carbon Dioxide (eCO2) and Metal Oxide (MOX) level. CC811 TVOC sensor detector providing Fast, Accurate, Reliable results.

3.2 Temperature sensor

It capture the temperature inside Humidity.

3.3 Node MCU

Node MCU is an Open source development board and firmware based in the widely used ESP8266 -12E Wi-Fi module. It allows you to program the ESP8266 -12E Wi-Fi module with the simple and powerful LUA programming language or Arduino IDE.

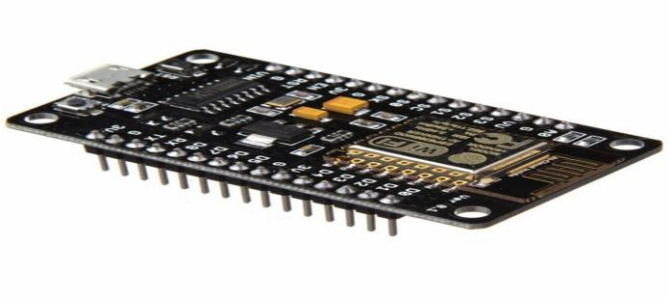

Fig -1: Node MCU ESP8266

4. CONCLUSION

Hence we are making a Smart system which allow to user to manage food and allow to avoid food wastage. Our proposed system is avoid the drawback to existing system and overcoming this drawback. Proper supply of food to needed people is been monitor.

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