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(57) Abstract :

The present's invention related to the IOT based monitoring of an item which purchased in the super market. Barcode scanner inbuilt with IR sensor (1) used to sense the Item and retrieve the information about it. Node MCU microcontroller (2) calculate the items and transmit theses information via ESP8266 to the think speak channel. This Think Speak channel results line graph as the understandable format to help the owner of that super market. Bar code reader powered by Lithium-Ion battery (4) and communicated via Wi-Fi Modem (3) to the owner. Then the number of Items purchased by the customer or sold per day or sold at particular time period can be able to monitor with its whole information and get billed via Barcode reader and possible to save the database remotely. The concept of IOT technology make this as successful manner.

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Abstract:

The present's invention related to the IOT based monitoring of an item which purchased in the super market. Barcode scanner inbuilt with IR sensor (1) used to sense the Item and retrieve the information about it. Node MCU microcontroller (2) calculate the items and transmit theses information via ESP8266 to the think speak channel. This Think Speak channel results line graph as the understandable format to help the owner of that super market. Bar code reader powered by Lithium-Ion battery (4) and communicated via Wi-Fi Modem (3) to the owner. Then the number of Items purchased by the customer or sold per day or sold at particular time period can be able to monitor with its whole information and get billed via Barcode reader and possible to save the database remotely. The concept of IOT technology make this as successful manner.

Complete Specification

- A lithium-ion battery is a new battery technology that uses lithium ions as an input constituent of its electrochemistry.
- Throughout a liberation cycle, lithium atoms in the anode are ionized and alienated from their electrons.
 - The lithium ions shift from the anode and pass through the electrolyte awaiting reach the cathode, where they recombine with their electrons and electrically neutralize.
 - The lithium ions are little enough to be able to shift through a micro-permeable partition between the anode and cathode.
 - In part because of lithium's small size (third only to hydrogen and helium), Li-ion batteries are competent in having a very high voltage and charge storage per unit mass and unit volume.
-
- The total cumulative voltage is 9v and the capacity of the current rating is 2Ah.
 - Lithium-ion battery interfaces with node MCU microcontroller (2) and IR sensor (1)
5. Ac to Dc converter
- The system will be working based on that Lithium-ion battery (4) whenever the battery is down at that same time battery is charged through the charger Module which is designed by using a rectifier circuit.

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FORM 2

THE PATENTS ACT,

1970 (39 of 1970)

&

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COMPLETE SPECIFICATION

(See Section 10; rule 13)

TITLE OF THE INVENTION

**IOT BASED PURCHASED ITEM MONITORING IN SUPER MARKET
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The following specification particularly describes the invention and the manner in which it is to be performed.

IOT BASED PURCHASED ITEM MONITORING IN SUPER MARKET

FIELD OF THE INVENTION

The present invention relates to the field of IOT based purchased item in Super Market. More specifically, the present invention related to purchasing item monitoring device for measuring the accounts of super Market using internet of things.

PRIOR ARTS

At 2012, CN103856747A, BEIHAI BANGGE ELECTRONIC TECHNOLOGY Co Ltd published 'Supermarket monitoring system' working under image processing technology via real time Cameras. This invention provides a supermarket monitoring system. The supermarket monitoring system includes a controller, a decoder, a camera, an image processor, a monitor, an electric pan-tilt, a time-delay video recorder, a screen wall and a console; monitoring points are arranged on goods shelves, cashier counters as well as entrances and exits; each monitoring point is configured with monitoring equipment; and therefore, disputes with customers can be handled better. The supermarket monitoring system is advantageous in advanced performance and functions, operational simplicity, practicability and beautiful appearance. At 2011, Beijing Qichuang Zhuoyue Science & Technology Co., Ltd. The patent CN202261392U published 'Supermarket monitoring system based on architecture of internet of things' working under public wireless data transmission network. This utility model provides a supermarket monitoring system based on the architecture of the internet of things. The system has the following advantages and positive effects that: a sensor is used for acquiring the remaining quantity information of different commodities on each shelf in the supermarket, then transmitting the information to a wireless transmission unit and then utilizing a public wireless data transmission network to transmit

the information to a server, the server refreshes and stores the information of the goods in real time, and when a certain product is out of stock, the server will timely send the stock out information to alerter of corresponding tally men in the supermarket to remind the tally men that the goods have been sold out or are about to be sold out, thus completing timely replenishment on the shelves, ensuring all the commodities in the supermarket to circulate more smoothly and improving the shopping experience of the consumers; and a computer and mobile communication equipment of a control terminal are also connected with the server via the network, display and look up various data information, which is stored in the server, in the supermarket and can send corresponding commands to the alerter in the supermarket at any time so as to dispatch the staff behaviors in the supermarket in a unified manner.

At 2009, CN201600744U Chinese inventors published and registered the utility model 'Television monitoring system of checkout counter' working under the concept of main frame to sub frame conversion. This utility model discloses a television monitoring system of a checkout counter, which is characterized by comprising monitors, a video character adder, data acquisition boxes, a cash-counting machine and a card reader, the data acquisition boxes are connected with the cash-counting machine and the card reader, and the video character adder is respectively connected with one monitor, the data acquisition boxes and the other monitor. Display modes of the television monitoring system of the checkout counter includes that a, the monitors display integral interaction pictures of shop assistants and customers, b, the monitors display close-up images of customers, c, the monitors display data of the cash-counting machine, numbers of operators and suspicious currency prompt information, and d, the monitors display bankbooks or card numbers of the customers. The television monitoring system of a checkout counter can perform conversion between main frames and sub frames or sub frames movement or two-frame display. The pluralities of data acquisition boxes are connected with a host through an RS485 communication line. The television monitoring

system has a picture-in-picture function, and also has functions of the cash-counting machine and a card number and video character adding function. At 2015, The Patent US10121121B1 titled Smart shelves from Amazon Technologies Inc. discloses tracking an inventory of items stored on a traditional shelf, including not only identifying the items but also determining their locations on the shelf, based on their respective weights .Interposer assemblies may be inserted between a traditional shelf and traditional supports for the shelf. Each of the interposer assemblies may be configured to generate signals corresponding to changes in loading on the traditional shelf, and information regarding the changes may be determined to identify items placed onto or removed from the traditional shelf, and locations at which the items were placed or from which the items were removed. The interposer assemblies may include one or more load cells, such as strain-gage load cells, and analog signals generated by the load cells may be processed to determine a mass of an item placed on the shelf or removed there from. The item, and a location corresponding to the item, may be determined based on the mass and according to standard equilibrium procedures. At 2017,The patent WO2017183038A1 filed by Wish elf Ltd. discloses a shelf monitor comprising an array of sensors deployed in proximity to a stocking shelf and so that the sensors face a region containing shelved goods. A CPU module is configured to receive outputs from the sensors and execute an algorithm to detect a change event in the shelved goods and to train the detection algorithm. Shelf monitors can be used in multiple numbers; a master shelf among the shelf monitors serves to aggregate the data and local control of the system. A master controller can establish communication with a cloud server, allowing many additional features such as integrating the shelf monitoring system with inventory and point-of-sale database. At 2015, CN105539551A,the Patent filed by Shandong University of Science and Technology, under the title of “Smart supermarket shopping cart based on RFID and smart payment method”. The smart supermarket shopping cart comprises a cart body; a

handle is arranged on one side of the cart body and is provided with a smart display device; a camera is arranged below the handle; an RFID reader is arranged below the camera; and the cart body is divided by a partition plate into a left region and a right region, wherein the left region is a large piece storage region, and the right region is a food goods examination and storage region. By means of supermarket position display, goods information query, optimal path planning and other operation, an APP can also be downloaded to a mobile phone, and the online consuming and offline goods obtaining function is achieved; the RFID reader and the camera are arranged, and therefore high monitoring theft prevention capacity is achieved; and the smart shopping cart is partitioned, raw and fresh food can be isolated from other commodities, the commodities can be automatically packaged in a shopping bag, and time is saved.

OBJECT OF THE INVENTION

The primary object of the present invention is to introduce an IoT device for purchasing item to identify accounts data of supermarket.

Another object of the present invention is to develop an IOT based purchased item device to measure the accounts parameters in affordable price using ThingSpeak.

These and other objects and advantages of the present invention will become readily apparent from the following detailed description taken in conjunction with the accompanying drawings.

SUMMARY OF THE INVENTION

The present invention is an “IOT based purchased Item monitoring in the Supermarket” comprising Node MCU controller (2) wherein the said IR sensor (1) is included with the Tx and Rx signals are analyzed to identify Items, Wi-Fi Module (3)

broadcast the status of these analysis via Think speak channel. Node MCU controller (2) comprises Charge controller (6) and AC-DC convertor (5). It is an aspect of present invention wherein Node MCU controller (2) inbuilt with IOT element based on ESP8266 Module with the provisions of RTOS and functions at 80 MHz to 160 MHz variable clock frequency and has 128 KB RAM and 4MB of Flash memory to stock data and programs. IR sensor (1) with 5 Volt input is interfaced controller via output pin with D2 pin in the Node MCU controller (2). Node MCU has inbuilt IOT element based on ESP8266 Module and has 128 KB RAM & 4MB flash memory to stock data and programs. Any of the Item purchased got bill via Barcode reader at the same time the purchasing component detect via IR sensor. Then the Wi-Fi sensor produce radio signals to upload Think speak server and results line graph It is easily understood by owner of the Supermarket.

Working principle:

Using the principle behind the working of the IR Sensor (1), IR LED light passes through the purchased Item and it is detected using a photo detector. Op-Amp used a control circuit conveying the status to Node MCU controller (2). As per the status, signal sent to Wi-Fi modem which communicated the signal and it got monitored. Then the Node MCU controller (2) used to upload the sensor data to think speak Server via WIFI Modem (3) which has info graphic line graph to update Real Time count of purchased Items. Load terminal of this whole setup is connected with AC-to-DC converter (5) to produce constant 5

Volts and Node MCU controller (2) to stabilize with the help of charge controller (6). Finally Lithium Ion Battery (4) distribute the power source to the entire module through charge controller (6). This whole setup efficiently used to monitor the Items purchased in the super market.IOT technology make this true in the effective way.

BRIEF DESCRIPTION OF THE DRAWINGS

The other objects, features and advantages will occur to those skilled in the art from the following description of the preferred embodiment and the accompanying drawings in which:

Fig 1 illustrates the schematic view of the coin based IoT based purchased item monitoring in super market, according to an embodiment of the present invention.

Although the specific features of the present invention are shown in some drawings and not in others. This is done for convenience only as each feature may be combined with any or all of the other features in accordance with the present invention.

List of reference numerals used in detailed description and drawings:

1. IR sensor, 2. Node MCU microcontroller, 3. Wi-Fi modem, 4. Lithium Ion battery, 5. AC to DC Convertor, 6. Charge controller, 7. DC-DC converter.

DETAILED DESCRIPTION OF INVENTION

The various embodiments and the other advancements and features are illustrated with the reference to the non-limiting details in the following detailed description. Illustration of processing techniques of well-known components are omitted so as to not unnecessarily obscure the embodiments herein. The examples used herein are intended to facilitate an understanding of ways in which the embodiments herein may be practiced and to further

enable those of skill in the art to practice the embodiments herein. Accordingly, the examples should not be construed as limiting the scope of the embodiments herein.

1. IR sensor
2. Node MCU microcontroller
3. Wifi modem
4. lithium-Ion battery
5. AC to DC converter
6. Charge controller
7. DC-DC converter

1. IR sensor

- An infrared (IR) sensor is an electronic device that measures and detects infrared radiation in its purchasing component.
- IR sensor is a three-pin configuration. Each pin is 1. VCC 2.GND 3. Output signal
- The input voltage of the IR sensor is 5 volts.
- IR sensor output pin is interfaced with the D2 pin in the node MCU microcontroller(2)

2. Node MCU microcontroller

- Node MCU is a microcontroller which is inbuilt with IOT element based on ESP8266Module.
- Node Mcu is microprocessor provisions RTOS and functions at 80 MHz to 160 MHzvariable clock frequency.
- Node MCU has 128 KB RAM and 4MB of Flash memory to stock data and programs.
- The any of equipment purchasing the customer and get it bill via barcode scanner at that same time the purchasing component detect via IR sensor which is the output

value interface with node MCU Microcontroller and purchasing component calculating by using Node MCU Microcontroller.

3. Wi-Fi modem

- The Wi-Fi sensor data to the modem is to produce Radio signals which are connected to ESP8266 after its helpful to upload the thinkspeak Server.
- The sensor data information is transmitted via ESP8266 to the thinkspeak channel.
- The calculating information is transmitted via the ESP8266 to the Think Speak channel.
- These real-time sensor measuring data in the Think Speak channel give the output result as a line graph, it is easily understood by the owner.

4. Lithium-Ion battery

- A lithium-ion battery is a new battery technology that uses lithium ions as an input constituent of its electrochemistry.
- Throughout a liberation cycle, lithium atoms in the anode are ionized and alienated from their electrons.
- The lithium ions shift from the anode and pass through the electrolyte awaiting reach the cathode, where they recombine with their electrons and electrically neutralize.
- The lithium ions are little enough to be able to shift through a micro-permeable partition between the anode and cathode.
- In part because of lithium's small size (third only to hydrogen and helium), Li-ion batteries are competent in having a very high voltage and charge storage per unit mass and unit volume.

- The total cumulative voltage is 9v and the capacity of the current rating is 2Ah.
- Lithium-ion battery interfaces with node MCU microcontroller (2) and IR sensor (1)

5. Ac to Dc converter

- The system will be working based on that Lithium-ion battery (4) whenever the battery is down at that same time battery is charging through the charger Module which is designed by using a rectifier circuit.
- The rectifier circuit converts AC into DC via Step down transformer, capacitor filter circuit, and voltage regulator circuit.
- Total cumulative voltage from this converter is 12 volts.

6. Charge controller

- Charge controller is an electronic device that manages the power going into the battery bank from AC to DC converter modulus(5).
- AC to DC output (12v) value is one of the inputs in the charger controller and the lithium-ion battery (9v) is connecting to another input terminal.
- Last is the Load output terminal which is two different ways of connecting to LOAD
 1. Directly connected to Node MCU microcontroller(2) and IR sensors (1) connecting via DC-DC step-down converter (7) .
- Battery charge indicator circuit can also be used to monitor whether a Lithium-ion Battery (4) is charging or not.

7.DC-DC Step down converter

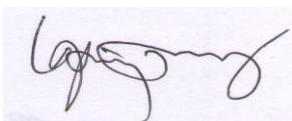
- DC-DC Step down converter IC7805 is a three-terminal linear voltage stabilizer integrated circuit with a constant output voltage of 5V which is used to interface with IR sensors.
- It can deliver up to 1.5 A of current.
- The Load output (9 volts) terminal is connected as another input to the first pin in IC 7805 and the third pin is the output pin which is producing constant 5 volts.

CLAIMS

We claim,

1. 'IOT based purchased Item monitoring in the Super Market' device testing setup comprises Node MCU controller (2) wherein it holds IR sensor (1) to broadcast the identified signal via think speak channel.
2. 'IOT based purchased Item monitoring in the Supermarket' device as claimed in Claim 1, where in Node MCU controller (2) comprises, Think Speak Server via WIFI Modem (3) which has been communicated to wireless private network Through the technology of IOT.
3. 'IOT based sleep apnea detection by using inter heartbeat period for healthcare' device as claimed in Claim 1. Wherein this whole setup is connected with AC-DC converter (5) to produce constant 5 Volts and further connected with IR Sensor (1) and Node MCU controller (2) to stabilize with the help of charge controller (6). Finally, Lithium Ion Battery (4) distribute the power source to the entire module through DC-DC convertor (7).

Signature of Applicants



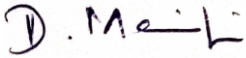
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ABSTRACT

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Figure 1