

पेटेंट कार्यालय  
शासकीय जर्नल

**OFFICIAL JOURNAL  
OF  
THE PATENT OFFICE**

---

---

निर्गमन सं. 12/2023  
ISSUE NO. 12/2023

शुक्रवार  
**FRIDAY**

दिनांक: 24/03/2023  
DATE: 24/03/2023

---

---

पेटेंट कार्यालय का एक प्रकाशन  
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202341008392 A

(19) INDIA

(22) Date of filing of Application :09/02/2023

(43) Publication Date : 24/03/2023

(54) Title of the invention : COIN BASED IOT DEVICE FOR HEALTH MONITORING IN COMMUNAL PLACE

<p>(51) International classification :A61B 050000, G06F 094510, G11C 163400, H01M 044850, H04W 047000</p> <p>(86) International Application No :NA Filing Date :NA</p> <p>(87) International Publication No : NA</p> <p>(61) Patent of Addition to Application Number :NA Filing Date :NA</p> <p>(62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant : <b>1)Dr. P. SENTHILKUMAR</b> Address of Applicant :PROFESSOR, DEPARTMENT OF MECHANICAL ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>2)Mr. C. SATHIYAVEL</b> Name of Applicant : NA Address of Applicant : NA</p> <p>(72)Name of Inventor : <b>1)Dr. V. KAVITHA</b> Address of Applicant :PROFESSOR, DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>2)Dr. P. SENTHILKUMAR</b> Address of Applicant :PROFESSOR, DEPARTMENT OF MECHANICAL ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>3)Dr. G. MOHANA PRABHA</b> Address of Applicant :PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>4)Mr. S. KUMARESAN</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>5)Mr. T. KAPILA CHANDER</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>6)Mrs. V. SINTHUJA</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>7)Mr. M. MOHANRAJ</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>8)Mrs. L. SUGANYA</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>9)Mr. R. K. HARISH GOWTHAM</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>10)Mr. L. SATHISHKUMAR</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>11)Mrs. S. PRIYADARSHINI</b> Address of Applicant :PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p> <p><b>12)Mr. C. SATHIYAVEL</b> Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING, PGP COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMAKKAL, TAMILNADU, INDIA, 637207. -----</p>
--	--

(57) Abstract :  
The present invention discloses a coin based IoT device [100] for health monitoring in communal place. The coin based health monitoring device comprises a processor, coin inserting module, detection module, comparison module and a receipt generation module. The coin inserting module [15] having an ER sensor [5] configured to operate the system for detection. The detection module [16] includes the plurality of sensors adapted to measure the health parameters of user. The comparison module [17] receives the information of detection module and identifies the exact information using ThingSpeak cloud platform. The receipt generation module [18] provides the printed form of results to the user through the thermal receipt printer. The coin based IoT device will measure the health parameters using ThingSpeak.

No. of Pages : 17 No. of Claims : 6

**COIN BASED IOT DEVICE FOR HEALTH MONITORING IN  
COMMUNAL PLACE**

**FIELD OF THE INVENTION**

The present invention relates to the field of coin operated devices and its systems. More specifically, the present invention related to a coin based health monitoring device for measuring the health parameters of human using internet of things.

**PRIOR ARTS**

US11191432B2 discloses a Devices, systems and methods are disclosed which relate to remotely monitoring the health of an individual. The individual wears a health monitoring device, with an attached strap, capable of sensing characteristics of the individual. These characteristics may include voice level and tone, movements, blood pressure, temperature, etc. The device allows individuals to constantly monitor their health without having to physically visit a doctor or other health care professional.

Wireless communication, for instance with an Internet Protocol Television (IPTV) set-top box, allows measurements to be made and evaluated by a computerized healthcare service provider. For a more accurate

evaluation, measurements are sent over the INTERNET to a service. The device communicates with services in order to diagnose the individual based upon the characteristics.

US20190304285A1 discloses a data collection system collects and stores physiological data from an ambulatory patient at a high resolution and/or a high data rate ("more detailed data") and sends a low-resolution and/or down sampled version of the data ("less detailed data") to a remote server via a wireless network. The server automatically analyzes the less detailed data to detect an anomaly, such as an arrhythmia. A two-tiered analysis scheme is used, where the first tier is more sensitive and less specific than the second tier.

If the more sensitive analysis detects or suspects the anomaly, the server signals the data collector to send more detailed data that corresponds to a time period associated with the anomaly. The more specific second tier analyses the more detailed data to verify the anomaly. The server may also store the received data and make it available to a user, such as via a graphical or tabular display.

US20210378554A1 discloses the various embodiments of a health-monitoring system are disclosed. In one aspect, this health-monitoring system

includes a server and a set of health-monitoring sensors communicatively coupled to the server. In some embodiments, the server is configured to establish a new profile for a person to be monitored by: receiving a new profile request for establishing the new profile; generating a unique person-ID for the received new profile request; creating a new entry including the unique person-ID for the person in a profile database; and transmitting the unique person-ID along with the profile photos of the person to the set of health-monitoring sensors.

Moreover, each health-monitoring sensor in the set of sensors is configured to establish the new profile by adding a new entry for the person in a person-ID dictionary of the health-monitoring sensor based on the received person-ID and the profile photos of the person.

In the aforementioned health monitoring systems and methods, there is no devices are introduced for coin based health monitoring using IoT. Thus, there is a need to introduce a coin based IoT devie for health monitoring in public places.

## **OBJECT OF THE INVENTION**

The primary object of the present invention is to introduce an IoT device for health monitoring to identify the physical parameters of human body.

Another object of the present invention is to develop a coin based device to measure the health parameters in affordable price using ThingSpeak.

Yet another object of the present invention is to create the receipt generation subsystem for providing the printed results of one or more user.

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 various embodiment of the present invention discloses a coin based IoT device for health monitoring. The IoT device comprises a processor, a coin inserting module, a detection module, a measuring module and a receipt generation module. The processor configured to execute the predefined instructions based on the need of user. The user may identify one or more

information using the device. The coin inserting module adopted to allow the coin inside the device. Once, the coin is inserted in the device, the IR sensor is switch ON the device to measure the parameters. The detection module provided to identify the various health parameters using plurality of sensors, wherein the sensors may include one or more. The plurality of sensors detects the health parameters and it sends the measured data to ThingSpeak by using processor. The comparison module configured to compare the real time sensor information with the predefined standard values for identifying the deviations. The receipt generation module configured to give the deviated values in printed form to the user.

According to another embodiment, the coin inserting module adopted to feed the coins for determining the one or more health parameters per user. The detection module may detect the temperature, breathing or the like. The processor sends the detection module information to the comparison module for identifying the exact value.

These and other aspects of the embodiments herein will be better appreciated and understood when considered in conjunction with the following description and the accompanying drawings. It should be understood, however, that the following descriptions, while indicating

preferred embodiments and numerous specific details thereof, are given by way of illustration and not of limitation. Many changes and modifications may be made within the scope of the embodiments herein without departing from the spirit thereof, and the embodiments herein include all such modifications.

### **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 device for health monitoring system, 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:



MAX30100 sensor – 1, Temperature sensor-2, Breath sensor-3, Galvanic skin response sensor-4, IR sensor-5, Arduino Nano board -6, Relay -7, Arduino MEGA 2560 Microcontroller -8, Wi-fi modem-9, Thermal receipt printer-10, Lithium-ion battery-11, AC to DC converter-12, Charge controller-13, Dc to Dc converter-14, Coin inserting module- 15, Detection module- 16, Comparison unit- 17 & Receipt generation module- 18.

### **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.

The various embodiment of the present invention discloses a coin based IoT device [100] for health monitoring. The IoT device comprises a processor, a coin inserting module, a detection module [16], a measuring module and a

receipt generation module. The processor configured to execute the predefined instructions based on the need of user. The processor operates the one or more sensors based on the need of user to identify the health parameters. The user may identify one or more information using the device.

According to an embodiment, the coin inserting module [15] adopted to allow the coin inside the device. Once, the coin is inserted in the device, the IR sensor is switch ON the device to measure the parameters. The module is operatively controlled by the processor. The IR sensor [5] is switch ON the device by using relay connection.

According to an embodiment, the detection module provided to identify the various health parameters using plurality of sensors, wherein the sensors may include one or more. The plurality of sensors detects the health parameters and it sends the measured data to ThingSpeak by using processor. The heartbeat level, temperature, breathing rate, SPO<sub>2</sub> level, and sweating rate are measured in the detection module. The MAX30100 sensor is used to measure SPO<sub>2</sub> and Heartbeat level. The MAX30100 Sensor operates at +5V. The Enable pin (EN) of the sensor is tied to VCC pin So that the sensor is activated. The MLX90614 is a Contactless Infrared (IR) Digital Temperature

Sensor that can be used to measure the temperature of a particular object ranging from  $-70^{\circ}\text{C}$  to  $382.2^{\circ}\text{C}$ .

The GSR sensor is used to measure the electrical conductance of the skin. The GSR sensor contains two leads. Both leads are attached to two fingertips. Resistance temperature detector (RTD) based microsensor for minimally invasive breathing analysis and monitoring for real-time. An infrared (IR) sensor is an electronic device that measures and detects infrared radiation in its coin which is based on working the sensor like MAX30100 sensor, Temperature sensor, Breath sensor and Galvanic skin response sensor. An arduino nano board is one microcontroller board used to operate the IR (5) Detecting signal. The device further includes a lithium ion battery configured to provide the necessary amount of energy to the system.

The comparison module [17] configured to compare the real time sensor information with the predefined standard values for identifying the deviations. The receipt generation module [18] configured to give the deviated values in printed form to the user. Thermal printer is the readily available and cost-effective solution to print all health data like a heartbeat, Temperature, sweating rate, breathing rate, and  $\text{PCO}_2$  level. The printer uses

thermochromic paper, a special type of paper that transforms into black when exposed to a certain amount of heat.

Fig 1 is illustrating the schematic view of the coin based IoT device for health monitoring in communal place. The coin based IoT device for health monitoring comprises a processor. The processor activates the device using IR sensor information while inserting the coin. The device will be switched ON when the instruction comes from the processor. The IR sensor [5] is detecting the coins in the coin inserting module as well user presence. The detection module may include the plurality of sensors configured to detect one or more health parameters of one or more user. The processor controls the working of plurality of sensors based on the need of user. The power source is provided by a lithium ion battery and which is rechargeable.

The comparison module is receiving the measured value from detection module for identifying the exact health parameters. The ThingSpeak platform is identifying the exact health parameters using the knowledge of IoT. The receipt generation module [18] is preparing the printed form of health parameters and providing it to the user.

According to another embodiment, the coin inserting module adopted to feed the coins for determining the one or more health parameters per user. The detection module may detect the temperature, breathing or the like. The

processor sends the detection module information to the comparison module for identifying the exact value. ESP8266 Serial Wi-Fi Wireless Transceiver Module has a powerful enough on-board processing and storage capability that allows it to be integrated with the sensors and other application-specific devices through its GPIOs with minimal development up-front and minimal loading during runtime. The method of coin based IoT device for monitoring the health parameters, the method comprising the steps of:

- Inserting the coin in the coin inserting module for switch ON the device using IR sensor information;
- Detecting the health parameters using the plurality of sensors;
- Comparing the detected values with the predefined data in the comparison module's ThingSpeak; and,
- Generating the receipt in receipt generation module to show the result to the user.

In another aspect, The Wi-Fi modem is to produce Radio signals which are connected to ESP8266 after it helps to upload the sensor data to the thinkspeak Server. All the sensor data (Heartbeat, Temperature, sweating rate, breathing rate, PCO<sub>2</sub> level) information is transmitted via ESP8266 to the

thinkspeak channel. In the Think speak channel, the real-time sensor measuring data is denoted as a graph easily understood.

It is noted that the above-described examples of the present invention is for the purpose of illustration only. Although the present invention has been described in conjunction with a specific example thereof, numerous modifications may be possible without materially departing from the teachings and advantages of the subject matter described herein. Other substitutions, modifications and changes may be made without departing from the spirit of the present solution. All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive. Although the embodiments herein are described with various specific embodiments, it will be obvious for a person skilled in the art to practice the embodiments herein with modifications.