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Wifi Based Location Identification System Using Heart Rate Analysis

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Abstract: -Now IoT plays the major role in all domains. Location tracking becoming major part in various industrial as well as security purposes. Majority of existing systems uses GPS for tracking which cannot be used precisely for indoor localization and GPS completely depend on the satellite. Instead of relying on satellites use of WI-FI is implemented. The proposed system makes use of Node MCU (WI-FI module) in both transmitter and receiver. WI-FI access points and WI-FI enabled sensor for gathering information is used. Location data of any devices collected by sensor is transmitted to the open-source cloud and monitored continuously. When it detects any error or loss of signal it alerts receiver end which contains another Node MCU (ESP8266-12E Module) connected with the indicator. It is used for detecting the loss of any smart devices like smart phones, handbags, wallet, and laptop. Pulse sensor is used for measuring the heart rate which is the primary component.

Keywords: Microcontroller (Node MCU), Pulse Sensor, LED, Wi-Fi.

1. Introduction

In today's world location tracking of person and the object is major in every sector .For the industrial purposes we need to track the materials , devices ,information about the output .Incase of security purposes we need to track the person's location .For the above mentioned progress GPS is always considered, as it has the ability of continuous tracking of location .The main disadvantages of the GPS is as it cannot be used for indoor localization due to the taller buildings .GPS completely the satellite dependent system .It cannot detect or track the objects in satellite uncoverage area So we started using WI-FI for those applications .The WI-FI locating technology uses relative network signal strength gathered at network access points. Every industrialist turned their view from GPS to WI-FI locating services because of their low cost, easy adaptations to the sensors. The algorithm used in wi-fi is WPA2.

Usually when we cannot reach the particular person if he got snatched, we use GPS for locating him using his IP address. when the devices get lost, we need to track the devices using its signal when signal gets stops, we cannot track the particular devices and exact time of its location and its data is not stored in any storage medium and indication is also not given by the existing systems. People cannot identify the exact time of missing and indication at the time

Our proposed system gives the solution for this problem. We use pulse sensor for measuring heart rate and Node MCU for WI-FI connection settings. NodeMCU (ESP8266 12-E MODULE) is the open source IOT platform as our system is completely the IOT based project we use Node MCU. It is the inexpensive system on a chip hardware. It can interact with more complex external devices. To connect the Node MCU with WI-FI we use Arduino IDE software which is easiest platform to write code and uploading to the hardware components. To make the Arduino IDE flexible for Node MCU, install ESP8266 driver with required specification in that software.

Pulse sensor is the significant component for this methodology. Pulse sensor is used for detecting the heart rate of the human. In this system pulse sensor is connected to the Node MCU in transmitter side. When it is connected to any smart devices it starts transmitting the heart rate signal to the cloud.

As our project is completely the IOT domain we use cloud as the major storage platform. Here we use an popular open source, easy accessible THINGSPEAK cloud platform.

Thing speak receives data from the connected devices and create visualization of live data and send alerts. It enables clients to update and receive updates from channel via the Thing speak. The protocol used in Thing speak is MQTT which is a communication protocol that uses web sockets.

2. Objectives

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3. Methods

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4. Results

When all the hardware set up is done successfully whenever the pulse sensor detects the heart rate from the person it transmits the signal directly to the cloud with its exact heart rate and the heart rate is examined continuously in the cloud. At the receiver side when the hardware set up is done it start transmitting the LED data in the cloud both the data get monitored in the cloud in various fields . Whenever the signal from the pulse sensor stops due to missing of that devices loss of detection of heart rate signal which passes to the cloud get stop it get indicated to the visualization in the cloud.

5. Discussion

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