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Article

IoT Based Epilepsy Monitoring and Detection

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I N F O

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A B S T R A C T

In recent days numerous individuals have experienced the ill effects of medical issues like heart related, cardiovascular, malignancy and various illnesses. Epilepsy is like a complex network disease, those who have seizures, which are controlled, and those who struggle daily. Many epilepsy patients cannot call for help during a seizure, because of the unconscious so it can lead to injuries, medical Complications and loses memory during the seizure attack. The seizures happen because of electrical activity in the brain, causing a sudden change in behavior at times seizures appear to be unique and on what part of the cerebrum they influence. This paper proposes a methodology for epilepsy individual which uses sensor to evaluate the parameters of the patients like temperature, fall of the patient, shaken of the hand and sound of the patient. The patient's status can be seen on PC through IoT so that the specialist/attendants can occasionally screen the patient's epilepsy.

Keywords: Cardiovascular, Adapter, Temperature Sensor

Introduction

Epilepsy is the fourth most typical neurological issue and impacts people of all ages and is "seizure issue." Many people with epilepsy have more than one sort of seizure and may have various signs of neurological issues as well. A neurological issue set a section by abrupt, dreary scenes, loss of memory and sporadic electrical activity in the brain. Epilepsy is ordinarily treated by drug and now again by operation. Numerous people are affected by this neurological issue called epilepsy. Now and again, it can have uncontrolled seizures and it can influence to body parts, for instance, hands, legs and head. The principle thought of Green errand-based detecting is that the correspondence occurs over the organization just when new information is available. Here we have used two accelerometers* for detecting seizures. In this the microcontroller will gauge various parameters, for instance fall identification, shaking of hands, body.

Improving The Design

In this paper, we present a framework dependent on IoT that provides a continuous monitoring without restricting the opportunity and security of the patients. The primary objective is to recognize information with and without seizure development.[1]

Implementation

- All aspects successfully linked.
- Using Wi-Fi, IoT is valuable for hospital team or doctors.
- No errors continuously updated.
- Code accuracy is good.

Modification Done

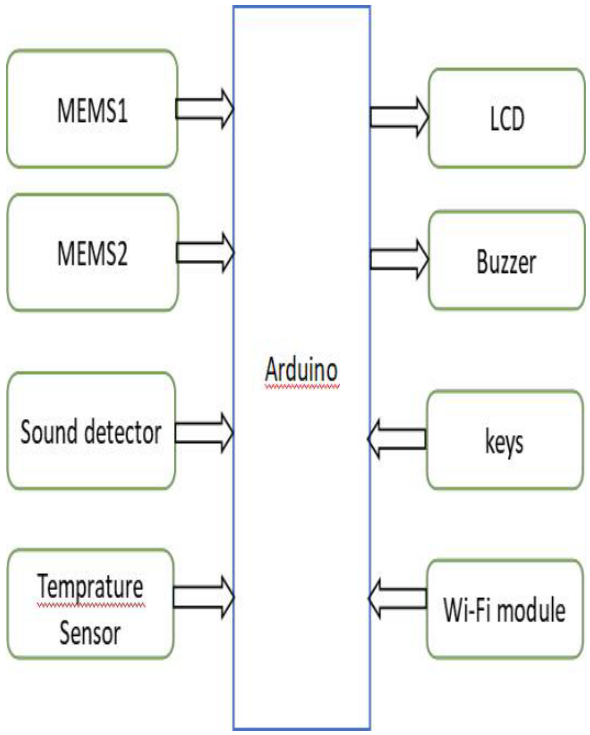
1. Alteration using IoT.
2. Adjustment done current same paper build using GSM

Adapter : The contribution to the circuit is applied from the controlled force supply. The AC. input i.e., 230V from the

mains supply is venture somewhere near the transformer to 12V and is taken care of to a rectifier. The yield got from the rectifier is a throbbing DC voltage. So to get an unadulterated DC voltage, the yield voltage from the rectifier is taken care of to a channel to eliminate any A.C segments present even after correction.[2]

Temperature Sensor

The temperature sensor is used for internal heat level of a patient. We can evaluate temperature more definitely than a killing a thermistor. The LM35 circuit temperature sensors, whose yield voltage is straightly relating to the Celsius temperature. The LM35 works at - 55˚ to +120˚C.[3]



Block Diagram

The accelerometer sensor used as a piece of the displayed structure is ADXL335. In this framework two accelerometers are used accelerometer 1 is used to distinguish the fall of the patients and accelerometer 2 is used for shaking of hand of the patients. Accelerometers are in one, two, or three symmetrical. It suggests that ADXL335 response to both tilt and speeding up as actual data.[4]

Sound Detector

This is a multipurpose sound sensor which can be used to distinguish the sound of the patient. The sensor gives a mechanized yield when the conscious sound additions past a set limit. This edge level can be adjusted using a locally accessible potentiometer. The sensor yields an apportion alone (+5V) at the high level yield when it recognizes sound and a reasonable zero(0V), when there is no steady perceived. A locally accessible LED is used to show the yield status.[5]

Wi-Fi Module

Each ESP8266 module comes pre-modified with an AT order set firmware, which means, you can just attach this to your arduino gadget and get probably as much wi-fi capacity as a wi-fi shield offers. The ESP8266 module is an amazingly practical board with a gigantic, and truly developing, local area.[6]

Buzzer

The ringer creates an equivalent loud stable independent of the voltage variety applied to it. The Red lead is associated with the Input and the Black lead is associated with Ground.

Hardware Requirements and Software Requirements

1. Adapter
2. Ardino
3. Accelerometer
4. Sound sensor
5. Temperature sensor
6. Wi-fi module
7. Buzzer
8. LCD
9. Keys

Advantages

1. Easy to use
2. Flexibility
3. It is wireless
4. Reliability
5. Biaxial acceleration measurement
6. Staying Connected
7. Comfortability

Disadvantages

Possibility of failure due to communication problem.

Applications

- Industries
- Hospitals
- Houses
- Schools
- Offices

Conclusion

In this task we presented a checking framework dependent on IoT for recognition of epilepsy seizures. This framework can be utilized for patients living in a clinical climate or at their home, where they do just their everyday schedule.

Our framework can decide the area of the patient when a seizure is identified and sends a caution to medical clinic staff or the patient's family members

Referances

1. McHale SA, Pereira E, Weishmann U et al. An IoT Approach to Personalized Remote Monitoring and Management of Epilepsy," in 14th International Symposium on Pervasive Systems, Algorithms and Networks & 2017 11th International Conference on Frontier of Computer Science and Technology & 2017 Third International Symposium of Creative Computing. *IEEE*, 2017; 414-418.
2. Alhalafi L, Naous SR, Shihada B. gTBS: A green Taskg Based sensing for energy efficient Wireless Sensor Networks, "in Conference Computer Communications, Workshops. *IEEE* 2016: 136-143.
3. Becq G, Kahane P, Minotti L et al. Classification of Epileptic Motor Manifestations and Detection of Tonic-Clonic Seizures With Acceleration Norm Entropy. in Biomedical Engineering. *IEEE Transactions* 3; 2080-2088.
4. http://www.who.int/mediacentre/factsheets/fs999/en/
5. Helmy HA. Seizario: Novel Mobile Algorithms for Seizure And Fall Detection. in Globecom Workshops. *IEEE* 2015; 1-6.
6. Múgica SS, Corona BT, Silva-Ramírez MA et al. An intelligent system to assist the diagnosis of epilepsy disorder in children: A case of study. in Healthcare Innovation Point-Of-Care Technologie Conference. *IEEE* 2016: 142-145.
7. Ti.com,"CC25002.4GHzRFTransceiver,"Texas Instruments, TI.com, 2017. [Online]Available: http://www.ti.com/lit/ds/symlink/cc2500.pdf