

A Microbit Gadget for Medical Assistance for Parkinson & Epilepsy

Sub-theme: Health

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Introduction:

As we all know that our body moves and act as per directions given by our mind. Persons suffering with neurological disease like Parkinson and Epilepsy does not have control on their body. In critical condition, they are not able to take support of their nearby family members due to uncontrolled physical condition and voice. This may lead to major accidents and sometimes leads to death. In this situation, if problem occurs during night hours, nobody will be able to help them. Here we find the problem and decided to create a project for the solution of the same.

Parkinson is a disease which occurs due to poor control of mind over body. Vibrations in full body are observed in this disease, majorly in half portion of body either right side or left side. In due course, the patient feels that he/she can not even speak due to which he/she can not take help of family members for medication and other support. Patient is unable to take help during Parkinson attack.

Epilepsy is a neurological disease which also occurs due to poor control of mind over body. Vibrations in full body are observed in this disease and patient got unconscious when he face the Epilepsy attack. Due to this Patient is unable to take help during Epilepsy attack.

Our project provides solutions for communication between patient and family members through alarm system developed through Micro-bit programming. The alarm does not produce any sound during normal movement of hand. It only functions when hand vibrates due to either Parkinson attack or Epilepsy attack.

Scientific Principle Involved:

The Microbit gadget leverages the principles of motion detection and real-time data processing. Integrated sensors, including accelerometers and gyroscopes, capture and interpret movement patterns associated with Parkinson's tremors or Epileptic seizures. The Microbit's programmable interface allows for the development of custom algorithms to identify specific symptoms.

Materials used for the Construction:

- a) **Microbit Board:** The core computing unit with integrated sensors and programmable interface.

- b) **Power Source:** 1.5 V Battery AAA battery 2 Nos.
- c) **Battery Holder:** For holding batteries for proper power supply.
- d) **Encasing Materials:** Lightweight, durable materials for housing the Microbit and battery holder.
- e) Wrist Watch casing with strips from scraped watch.

Construction and Working:

- a) **Algorithm Development:** Custom algorithms are programmed in the Microbit to analyse sensor data and identify patterns associated with Parkinson's tremors or Epileptic seizures.
- b) **Real-time Monitoring:** The Microbit continuously monitors movement patterns and compares them to predefined algorithms, allowing it to distinguish between normal movements and medical disorders.
- c) **Alert System:** Upon detecting abnormal patterns from Epilepsy & Parkinson's patients, the Microbit analyse & communicate signals to an alert system and buzzer starts beeping.

Application:

For communication to the close family members, friends & relatives to take immediate measures such as medication for patient during Epilepsy & Parkinson's attack.

Advantages:

- a) **Timely Assistance:** The gadget provides immediate assistance during Parkinson's tremors or Epileptic seizures, minimizing the risk of injury.
- b) **Continuous Monitoring:** Allowing for early detection of symptoms and proactive intervention through continuous monitoring.
- c) **User-Friendly:** Design of Gadget is user-friendly, ensuring ease of use for individuals with neurological disorders.
- d) **Economy of the project:** Cost of the Microbit kit available online e-commerce websites is approx Rs 1699/- which may be further reduced after customisation during bulk production.

Result:

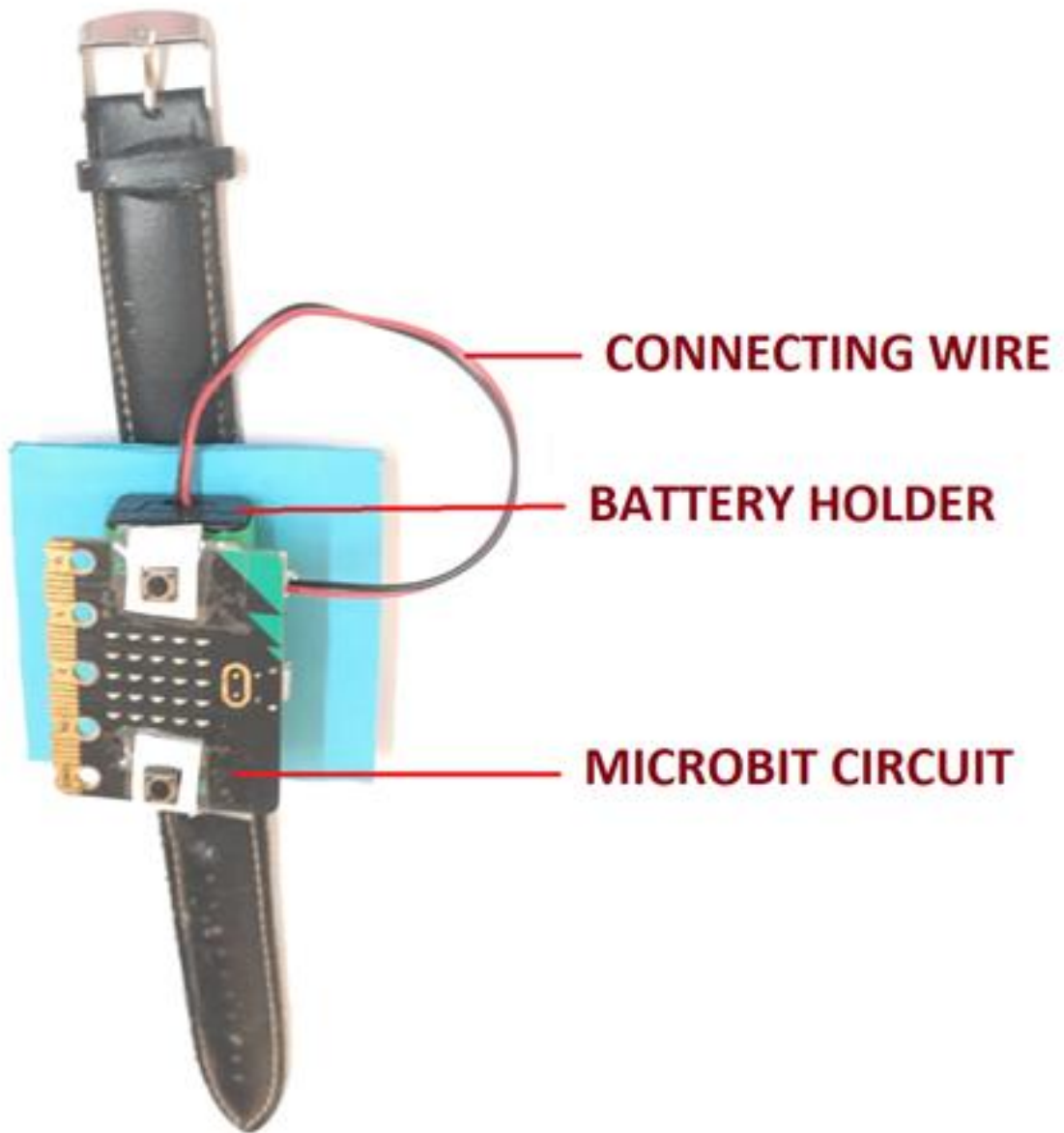
Preliminary testing of the gadget has shown promising results. The device effectively distinguishes normal movement from symptoms associated with Parkinson's and Epilepsy. The automated response mechanism has demonstrated its ability to provide timely assistance, offering a sense of security to individuals and their caregivers.

The development of a gadget for medical assistance in Parkinson's and Epilepsy represents a significant step forward in enhancing the quality of life for those who are suffering with these neurological disorders. As technology continues to advance, such innovations contribute to a more supportive and responsive healthcare environment.

References:

1. www.microbit.org/code/
2. Coding Cards provided by British Council, K.G. Marg, New Delhi.

Schematic Diagram of Microbit Gadget



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