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# Design of cost-effective real time tremor alerting system for patients of neurodegenerative diseases

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ABSTRACT

In recent years, many people are affected by neurodegenerative disorders like Alzheimer, Parkinson, motor neuron disease, and Chorea. Brain function loss, movement problems and typically cognitive impairments occur from their influence on the central nervous system. In this situation, early symptom monitoring and assessment are essential for enhancing the tremor patient life. Here, we propose embedded system development, for early alerting of tremors by integrating heart rate and MEMS sensors. In the created system, a collection of different four sensors are linked to a development board. This device can track the geographical location of Alzheimer's patients and detect tremor/movement, as well as accidental falls. Using GSM connectivity, a remote administrator may collect data from the development board. A data compression method is constructed directly on board to improve data transmission efficiency and reduce power usage.

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## 1. Introduction

Tremor is defined as an uncontrollable, repetitive muscle spasm which produces the trembling of one or more body parts. It is a typical motion disorder that primarily affects the hands and which also affect the other human parts. Tremor can be intermittent (happens at different times with gaps) or persistent (happens all of the time). It can take place at any time or as a result of another illness. Tremor is most prevalent in adults in their forties and fifties, although it can affect anybody at any time. Men and women are both affected equally by this disease. Tremor is not a critical situation. It may, however, humiliating and debilitating, building job and everyday life activities difficult or impossible. The brain function loss is caused by the influence of neuro degenerative disorders on the central nervous system. We suggest developing an integrated system that integrates a heart rate and a MEMS sensor to detect

tremors in earlier stage. It can detect the location of the patient and send out an alarm in the event of an emergency.

The significance of this study can be summarized as:

- Create the framework to enhance medicinal results and the features of health care offered, particularly to the seniors.
- Get real-time vital signs from patients.
- Reducing the need for hospital visits or stays.
- Medical practitioners have the capacity to monitor the tremor condition, even if the patient stays far away from the hospital.

Many researchers concentrating on the healthcare area have proposed different models for the IoT, with the goal of early identification of various abnormal conditions through the contemporary medicinal technology. In this paper some of the studies that have been done in the same field.

A Wi-Fi sensor network is developed to measure all tremor symptoms that a patient has while at home using a monitoring system that allows professionals to keep track of tremor patient physical condition state distantly [6,10]. These devices assess pressure, heart rate, and other vital signs at the same time.

The remote monitoring system was created to give clinicians with critical patient health information in real time [7,9]. The goal of this

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