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IOT BASED WHEELCHAIR FALL DETECTION

Shweta Pardhi[1], Priyal Sharma[2], Shravan Powar[3], Prof. Tushar Kafare[4]

[1,2,3]Student, Dept. of Electronics and Telecommunication Engineering, Sinhgad College of Engineering, Maharashtra, India.

[4]Assistant Professor, Dept. of Electronics and Telecommunication Engineering, Sinhgad College of Engineering, Maharashtra, India.

ABSTRACT

This paper proposes an IoT-based system for fall detection in wheelchairs, which aims to provide a solution for the elderly and disabled individuals who use wheelchairs. The proposed system uses an accelerometer and a gyroscope to detect the fall of the wheelchair and sends a notification to the caregiver or family members through a mobile application or an email. The system also includes a GPS module that enables the tracking of the wheelchair's location in real-time. The proposed system is designed to be low-cost, easy to install, and efficient in detecting falls, thereby reducing the risk of injury for wheelchair users. The experimental results shows that the proposed system is capable of accurately detecting falls and sending timely notifications to the caregivers.

Keywords: Measuring system, Gyro meter, Microcontroller

1. INTRODUCTION

The use of wheelchairs is crucial for providing mobility assistance to elderly and disabled individuals. However, wheelchair users are at a high risk of falling, which can lead to severe injuries, hospitalization, and reduced quality of life. Falls in wheelchairs can be caused by a variety of factors, including loss of balance, environmental hazards, and equipment malfunctions. In some cases, users may not be able to call for help after a fall, resulting in further complications

2. METHODOLOGY

The proposed IoT-based fall detection system for wheelchairs consists of both hardware and software components. The hardware and software components include an accelerometer, gyroscope, thing speak and a microcontroller.

2.1 Problem Statement

In this Project, we are focusing on developing iot based wheelchair fall detection. If sensor value exceeds, it will turn ON the buzzer and alert the people around the place.

2.2 Objectives

In this Project, we are focusing on developing iot based wheelchair fall detection. Accelerometer and Gyroscope sensors used to monitor the position of the person. If sensor value exceeds, it will turn ON the buzzer and alert the people around the place.

2.3 Block Diagram

A visual representation of a system that shows the functional components and their relationship.

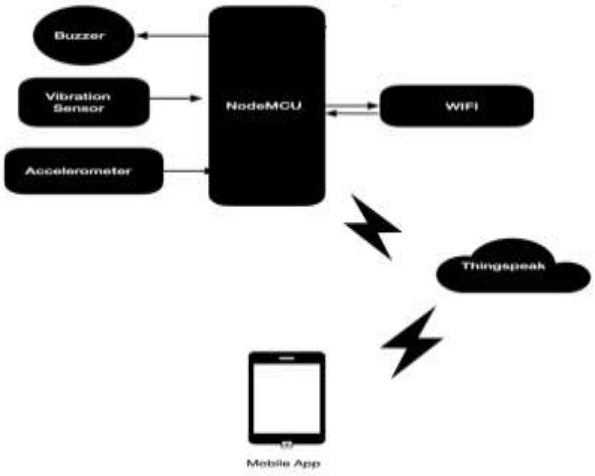

Figure 1: Blockdiagram

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3. FLOWCHART

A block diagram is a visual representation of a system that shows the functional components and their relationships.

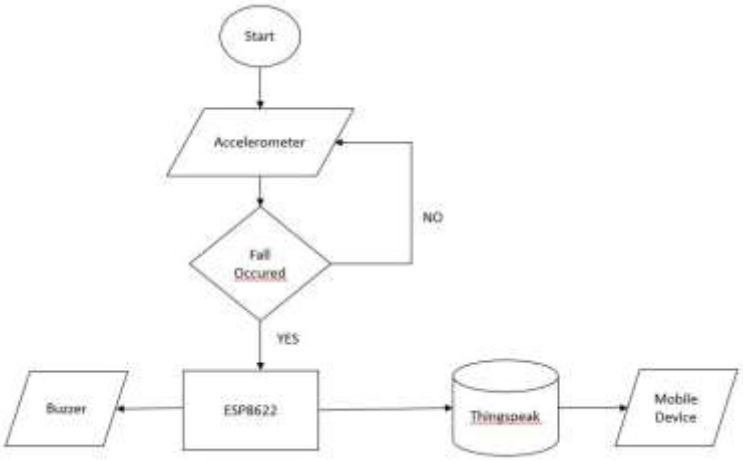

Figure 2: Flowchart for Wheelchair Fall detection

4. RESULTS AND DISCUSSION

Wheelchair fall detection systems are designed to detect when a wheelchair user has fallen and alert caregivers or emergency services to provide assistance.

Figure 3. Hardware of wheelchair fall detection

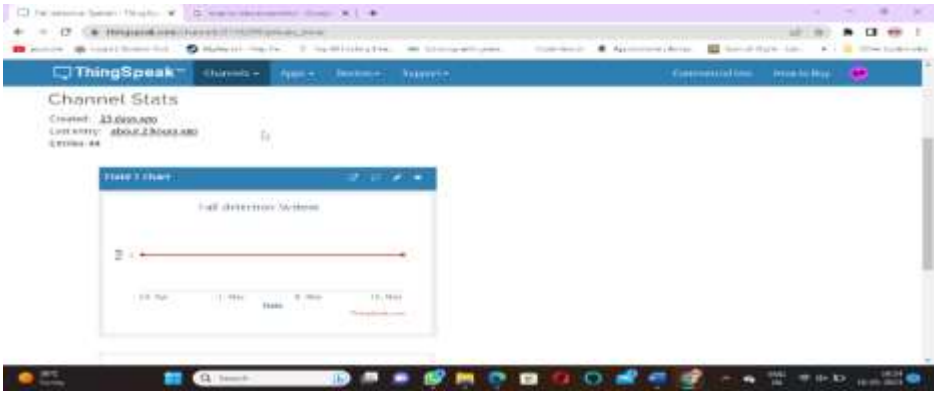

Figure 4: Thing speak window showing sensor threshold values

5. CONCLUSION

The proposed IoT-based fall detection system for wheelchairs offers an affordable and simple solution for improving the safety and security of wheelchair users. The system uses a combination of sensors such as accelerometers, gyroscopes, and GPS modules to detect falls and provide real-time tracking of the wheelchair's location. The algorithm

used for fall detection is highly efficient and reliable, allowing it to detect falls and send notifications to caregivers or family members quickly

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