SMART ASSISTIVE TOOL FOR ALZHEIMER PATIENT

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Abstract: *In everyday life due to their age, commonly disregard to ingest their medications. Alzheimer disease(AD) is a constant neurodegenerative sickness that causes to create dementia, Alzheimer patient think that it's difficult to recall late occasions, reason and even to perceive individuals they know. As the infection propels, Symptoms can incorporate trouble with language bewilderment including getting lost, temperament swings, loss of inspiration, absence of mindfulness and generally speaking conduct the main objective of our proposed system consists of two modules remainder module and tracking module the remainder module consists of Arduino board, Accelerometer and RTC this module is used to remind the Alzheimer's patient and loop will continue for 2 to 3 times until the person response like tablets and important events. And the tracking module consists of GPS & GSM where this module is used to track the Alzheimer patient.*

Key words: Arduino, Accelerometer, RTC, GPS, GSM, IR sensor.

1.INTRODUCTION

Alzheimer Disease(AD) is critical in the improvement of a checking framework for patients experiencing this infection. In this segment, AD is surveyed investigating its danger variables, manifestations and movement, analyze, treatment, assessing the advantages and disadvantages of different methodologies. Worldwide overall measurements are likewise referenced. Advertisement is a reformist neurodegenerative cerebrum issue which gradually debases intellectual elements of its transporter, similar to memory and thinking abilities and, in last cases, even the adaptability to play out the easiest undertakings of the individual's day by day schedule. With the movement of the infection indications will in general deteriorate, spreading to language for instance. Promotion is the most well-known reason behind dementia among old individuals, tallying around 55% cases. It is named after Dr. Lois Alzheimer, which in 1906 saw unusual loss of mind tissue of a lady who had kicked the bucket of a phenomenal dysfunctional behavior. During her lifetime, side effects like cognitive decline, language issues and unpredicted conduct were much of the time present. Inspecting her mind, he saw amyloid plaques and neurofibrillary tangles. These are presently viewed as two of the chief significant highlights of AD alongside loads of association between nerve cells in cerebrum.

2.RELATED WORKS

M. Alwan, P. Rajendran and their colleagues in 2006 proposed a smart and passive floor vibration method for fall detection for elderly. They developed a piezo sensor-based system that records floor vibration patterns. The framework was tried with human fakers. The outcomes were a 100% of precisely identified falls with no bogus cautions. This framework has the upside of not needing the subject to wear or enact the gadget. Nevertheless, the detection is confined to a restricted area. The method has been deployed in real world residential [7].

Still in fall detection area, since 2006 researchers from United Kingdom are working on a "smart carpet" to detect fall incidents. The concept is to use pressure sensors connected to a computer. The idea is to detect changes in weight distribution reporting them to the system. The implementation has some drawbacks as people with dementia have difficulties walking on carpets, which are needed to protect the sensors. The project is as of now in assessment with genuine setting arranged [8, 9].

P. Yap and D. Tan in 2006 proposed a practical reach for urinary incontinence in dementia patients. The sensor isn't dispensable, so it should be adjusted to general use, as Institutions utilize expendable grown-up diapers. It is at present being tried in two nursing homes. The sensor sends an alarm via wireless transmitter, that the diaper needs to be changed, and can be uploaded to the internet to send to selected individuals. The sensor isn't dispensable, so it should be adjusted to general use, as Institutions utilize expendable grown-up diapers. It is at present being tried in two nursing homes.

P. M. Rowe, S. Lane and C. Phipps in 2007 proposed an improvement of a home checking framework, Care Watch intended for use in homes of individuals with psychological debilitation as AD. The aim is to prevent unwanted exits, especially at night as it can be considerable danger to AD patients. The Care Watch consists of a security system control panel, wireless receiver and sensor to detect door motion and bed occupation. The system evaluations were done so far in 27 homes with other 28 in the control test. The system has operated for more than 200 months without many failures. There were no unattended routes out during the night in instrumented homes point by point, yet the relationship with control people has not yet been conveyed [10].

D.Chen, H. Wactlar and their partners in 2008 proposed a modified estimation fit for seeing human practices from video records using neighborhood twofold development. The fact of the matter is to develop a structure that can normally recognize deviations or uncommon instances of activity. The structure would as of now have the option to see practices as sitting, walking, standing, and passing in anterooms. The success rate is high, however there are still some false positives. The study has been tested on 15 subjects with AD in a nursing home [11].

3.EXISTING SYSTEM

The RFID play a vital role in object detection and personal identification which can be use categorized the person while remote monitoring when number of people information have observed which will helpful to unique identity to each patient and their information will be dealt with in old construction proposed Application of RFID Technology for In-House Drug Management System , RFID based improvement have used to make drug the board structure, in this following of medication should be possible including crisis or customary medication with or without RFID tag .the RF tag have appointing the client and by utilizing RFID per user. This framework can be useful for the mature age, less taught individuals. The highlights of the current framework called "Alzheimer's day by day buddy" are as per the following Free and quick guidance and tips for managing Alzheimer's and dementia practices and circumstance, 24hour care giving help by means of complementary telephone number or email accommodation. Admittance to free Alzheimer's and other dementia guardian assets and preparing materials. No web network required.

4.METHODOLOGY

In order to overcome the drawbacks of existing system a new smart tool is proposed for Alzheimer's patient this system consists of an IR Sensor, MEMS sensor, LCD, GPS, Arduino Uno, Noise recorder, GSM and power supply. also, here Microcontroller atmega328p is power regulator from central processor and it dependent on AVR RISC design. GPS used to follow the area and GSM is utilized for sending messages and here mems sensor is utilized for ventilators to screen the patients breathing IR sensor is utilized to distinguish the overall development and furthermore to detect qualities in its environmental factors Liquid Crystal Display it is utilized for show reason as shown in Figure 4.1.

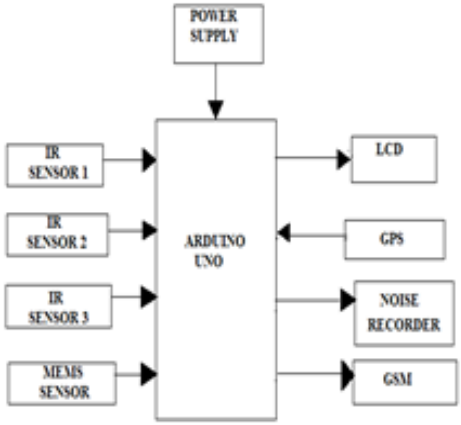

Fig 4.1: proposed system block diagram

5.SYSTEM ARCHITECTURE

The design of any system consists of Hardware requirements and Software development. Hardware requirement is focused on the components which are used for designing the project and Software development is focused on the coding which is loaded into the hardware

HARDWARE DEVELOPMENT

The smart assistive tool for Alzheimer's patient consists of Arduino Uno, IR sensor, MEMS sensor, GPS, GSM, LCD, Noise recorder and buzzer.

5.1 ARDUINO ATMEGA328P

The low power Atmel 8-bit AVR RISC based micro controller combines 8KB of programmable flash memory, 1KB of Static RAM ,512 KB EEPROM. The device supports through put of 16MIPS at 16Mhz and operates between 2.7-5.5 volts. As shown in Figure 5.1.

Fig 5.1: Arduino atmega328p micro controller

5.2 GPS neo 6m

GPS neo 6m is a profoundly incorporated brilliant GPS module with an earthenware GPS fix receiving wire. The receiving wire is associated with the module by means of a LNA. The module is with 51 station obtaining motor and 14 station track motor, which be fit for accepting signs from up to 65 GPS satellites and moving them into the exact position and timing data that can be perused either Universal Asynchronous Receiver Transmitter port or RS232 sequential port. As shown in Figure 5.2.

Fig 5.2: GPS neo 6m

5.3 Buzzer

A ringer is a sound hailing device, which might be mechanical, electromechanical or piezoelectric. Ordinary employments of ringers and beepers incorporate caution gadgets, clocks and affirmation of client info, for example, mouse click or keystroke Transmitter port or RS232 sequential port. As shown in Figure 5.3.

Fig 5.3: Buzzer

5.4 LCD

A liquid valuable stone introduction (by and large consolidated LCD) is a feeble, level grandstand contraption contained many tone or monochrome pixels showed before a light source or reflector. It is much of the time utilized in battery-energized electronic contraptions since it uses unobtrusive amounts of electric power. As shown in Fig -5.4

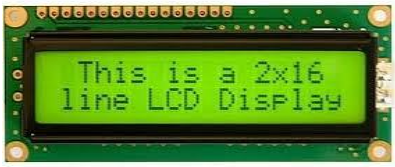

Fig 5.4: LCD display

5.5 IR sensor

PIR sensors identify general development, however don't give data on who or what moved. For that reason, an imaging IR sensor is required. PIR sensors are usually called just "PIR", or now and again "PID", for "latent infrared finder". The term latent alludes to the way that PIR gadgets don't emanate energy for location purposes. They work completely by distinguishing infrared radiation (brilliant warmth) transmitted by or reflected from objects. As shown Figure 5.5

Fig 5.5: IR sensor

5.6 GSM

The Global System for Mobile Communication is a standard created by the European media communications principles foundation to portray the convention for second era (2G) computerized cell networks utilized by cell phones like cell phones and tablets

5.7 RTC

A continuous clock (RTC) is a gadget (frequently inside such a coordinated circuit) that actions the section of your time. Albeit the term regularly alludes to the gadgets in PCs, workers and implanted frameworks, RTCs are available in practically any gadget which should keep exact time.

6.ADVANTAGES OVER EXISTING METHOD

1. It is mainly used to remind their daily task, important events, medicines and also used to track the location of Alzheimer patient.
2. It is not only used for Alzheimer patients but also for all age groups.

3. It is more reliable and accurate.
4. It is also used for taking intake medicines properly and avoiding from taking the false medicines.

7.EXPERIMENTAL RESULT

This sort of item can be utilized for Alzheimer patients as they used to not take tablets in time so this framework will be useful for them as it offers update to require some investment and furthermore it is utilized for recalling that them about significant days or going to occasions. This framework is additionally useful for cognitive decline patients it is that when the patient goes outside he/she shuts the entryway than here it will detect consequently and through home robotization the message is being shipped off the cell phone and when the patient met with a mishap implies likewise the message is being shipped off their overseers. Also, here the patient live area will follow consistently for the security for the patient.

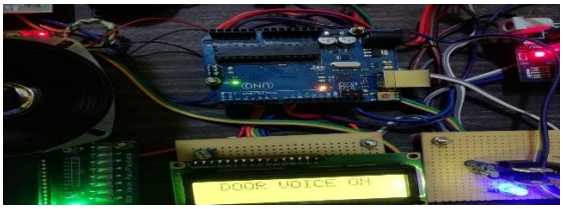

Figure 7.1 Hands on kit after connecting.

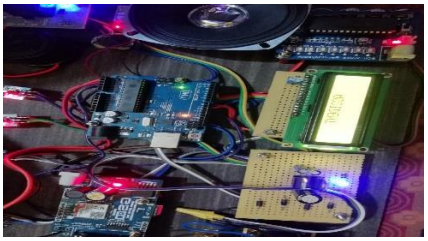

Figure 7.2 Hands on kit after door voice is on

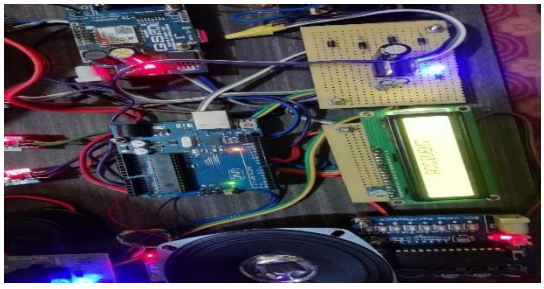

Figure 7.3 Hands on kit after accident.

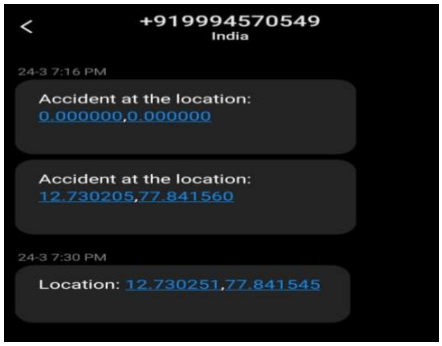

Figure 7.4 Message after accident.

8.CONCLUSION

We have successfully completed this project work. In existing this project work, we got exposed to many practical problems and difficulties, facing such situation and solving this problem as given in us a confident and courage, which are very essential for a successful engineer. By doing the project, we understand the working principle and uses of various electronic component. It will be no doubt that micro controller will be an integral part of any process in industry, in the sooner rather than later and we have utilized the micro controller for completion of this project. Once gain we express our sincere thanks to our project guide and staff members

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