Virtual Caretaker for Differently Abled People based on IOT

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Abstract: *Nowadays it's very challenging and difficult task to keep track of Physically and Mentally challenged people, because of the hectic life style. According to the survey poll, the world is grappling with the economic and care giving issues faced by mentally and physically challenged children, adults, and the elderly people. Maintaining and supporting these people physically, intellectually, and morally is a service provided by society utilizing many strategies and technical tools. There are numerous complex mental diseases that necessitates the highest level of treatment and medicines. Living with such people is a significant challenge to family members and caretakers. The proposed project closely monitors children and people with physical and mental disabilities and alerts the caretakers, if they are sexually, mentally or physically harmed either by external sources or internal disabilities.*

Keywords: IOT, Raspberry pie, Buzzer, Capacitive sensor, GPS, Camera

I. INTRODUCTION

Use of wireless technologies has evolved from simple information connectivity into tools that can enhance community engagement, participation, and self determined living. Wireless connectivity has enabled a new generation of ''smart'' and connected objects with assistive potential, ranging from wearable computing devices (wearable) worn by individuals to connected physical objects in the environment such as sensors and specialized displays. We refer to this connected ecosystem, in the broadest sense, by the common term ''Internet of Things'' (IOT). Unfortunately, and as has been the case with previous cases of information technology, design and development has often served to limit the accessibility and usability of these devices. People with disabilities have a range of physical, sensory, and cognitive characteristics. Wearable and more broadly, IOT devices offer the capability to adapt to individual circumstances, informed by the principles of universal design (UD) originally adopted for the built environment.

For the purposes of this review, physical disability may refer to both lower and upper body mobility limitations, including, but not limited to, wheelchair users, users of walking aids, or individuals with spinal cord injuries, cerebral palsy, or injuries or conditions affecting the limbs, hands, or dexterity function. Sensory disability may include, but is not limited to, individuals who are blind or have low vision, individuals who are deaf or are hard of hearing, or individuals with communication disorders. Cognitive disabilities may refer to individuals with developmental or learning disabilities or who may have impaired memory or processing abilities from injuries. As such, it is now possible to intelligently apply the benefits of current aims to apply the current trend in technology, i.e., Internet of Things (IOT) to eliminate fear filled lifestyle of female folks. The Internet of Things (IOT) is an ecosystem of connected physical objects that are accessible through the internet. It refers to the ever-growing network of physical objects that feature an IP address for internet connectivity, and the communication that occurs between these objects and other Internet-enabled devices and systems. As a matter of grave concern, this paper introduces a Raspberry-Pi based wearable device called the Smart Belt that proves constructive to the Physically Challenged person in danger and helps them to fight such odds. The main objective of the system is to intimate an instant location and a help message through an Android app to a registered number of contacts and the police, so that untoward incidents could be prevented and to provide real time evidence for swift action against the perpetrators of the crime.

II. LITERATURE SURVEY

1. J.K.Thavil , V.P.Dhurdawale,P.S.Elake, "Study on Smart Security Technology for Physically Challenged person based on IOT", International Research Journal of Engineering and Technology(IRJET),Vol: 4, Issue: 02,Feb 2017. Authors worked on the use of Internet of Things (IOT) that leads to the Smart Security technology. They have highlighted the development of a safety device called the Smart Band that communicates with a Smart Phone that has access to the Internet, thereby, alerting the victim's family, friends and police about the incident, aided by GPS tracking and message services.

2.GeethaPratyushaMiriyala,P.V.V.N.D.P.Sunil,RamyaSreeYallapalli,Vasantha Rama Lakshmi Pasam, Tejaswi Kondapalli, Anusha Miriyala, "Smart Intelligent Security Sytem for Physically Challenged person", International Journal of Electronics and Communication Engineering & Technology(IJECET), Vol: 7, Issue 2, March-April 2016, pp. 41–46,Andhra Pradesh, India

Authors proposed a smart intelligent security system for Physically Challenged person and have shown their concern regarding various issues faced by Physically Challenged person. Their proposed system uses two objects, a wrist band and spectacles, where the band incorporates a switch to activate a screaming alarm and tear gas mechanism for self-defending purpose and also sends alert messages and location to emergency contacts. The system also incorporates a mechanism to figure out the attacker using a live streaming video.

3.A.Helen,M.FathimaFathila,R.Rijwana,Kalaiselvi V.K.G,"A Smart Watch for Physically Challenged person Security based on IOT Concept",2nd International Conference on Computing and Communications Technologies(ICCCT),23-24 Feb 2017,Chennai,India.

Authors have developed a smart security device based on IOT concept. Throwing light on societal challenges faced by Physically Challenged person, a device called "watch me" has been proposed that includes a sensor to detect the heartbeat rate of a person that will become high when the Physically Challenged person is in danger, generating an alarm sound to grab the attention of nearby people. The device also automatically makes a call to registered contacts and supports GPS tracking to track the victim's location.

5. "Self defense system for Physically Challenged person with location tracking and SMS alerting through GSM network". This system contains a shock mechanism to produce non-lethal electric shock in emergency situations to deter the attacker as soon as the trigger key on the band is pressed.

6. "Physically Challenged person Safety Device and Application-FEMME". In this paper, the ARM controller the device is designed in which the GSM, GPS, Bluetooth and RF detector is connected. The whole device just runs with total of 12v in which 5v is enough for the ARM to procaine this system, an Android Application is used to find the location and send the location to the group of people stored in the phone, SOS Message, Track your phone and additionally we used a technique of clicking the volume button, if the button is pressed on time then message alert .We implement the same part in the hardware side if the person use in case of hardware he/she can user hardware or if he/she want to use software use software.

7. "Safe: a Physically Challenged person security system". This system consist of three main components namely an android application, main device and portable camera together this devices will work as an effective security system main device which consist of raspberry pi integrated GPS shield along with manually operate pepper spray .Android application can be used in two possible ways in which it will either use phone GPS system or it will use GPS system of main device to capture location.

III. PROPOSED WORK

- Different type of sensors is adopted to monitor or keep track on mentally or physically disabled people.
- If any emergency or anything happens when they go out a Buzzer is fixed where it makes a noise and public becomes alter so that they can help the disabled person.
- It's easy to wear and hence physically challenged people can handle it easily.
- The device is designed to make the user feel personalized, autonomous and self-sufficient.
- A GPS is fixed to track the live location of the person and a camera is fixed.

Impact Factor: 6.252

3.1 Hardware Requirements

A. Raspberry PI

Fig 1. Raspberry PI

The Raspberry Pi is a general purpose computer. ϖ Processor speed ranges from 700 MHz to 1.2 GHz for the Pi 3 on-board memory ranges from 256 MB to 1 GB RAM. Secure Digital (SD) cards are used to store the operating system and program memory in either SDHC or Micro SDHC sizes. Types of Card SDSC (SD): 1MB to 2GB, SDHC: 4GB to 32 GB, SDXD up to 2TB.

The Raspberry Pi 3 Model B is the third generation Raspberry Pi. This powerful credit-card sized single board computer can be used for many applications and supersedes the original Raspberry Pi Model B+ and Raspberry Pi 2 Model B. whilst maintaining the popular board format the Raspberry Pi 3 Model.

B. Buzzer

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke. Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms, electronic toys, automotive electronic equipment, telephones, timers and other electronic products for sound devices. Active buzzer 5V Rated power can be directly connected to a continuous sound, this section dedicated sensor expansion module and the board in combination, can complete a simple circuit design, to "plug and play." An active buzzer sensor module has a built-in oscillation circuit, thus the sound frequency is fixed.

C. Capacitive Sensor
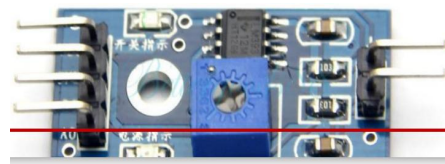
Capacitive sensors are suitable for the detection of metallic and non-metallic objects of all types. Even highly transparent glasses or liquids are easy to detect with a capacitive sensor. Only the dielectric conductivity of the target material is relevant: the greater the dielectric constant of a material, the higher the possible switching distances or the more reliable the detection. The measurement of filling levels is among the classic applications of capacitive sensors because many liquids have comparatively high dielectric constants. Under certain circumstances it is also possible to measure from outside the container because capacitive sensors can, so to speak, see through walls. They are also used for detecting

solids such as wood, paper and plastics. They are found in the most varied of industrial sectors due to their great immunity to interfering factors of all types.

D. Temperature

Normal human body-temperature is the typical temperature range found in humans. The normal human body temperature range is typically stated as 36.5-37°C (97.7-98.6°F) Human body temperature varies. It depends in sex, age, time of day, health states such as illness and menstruation. The measurement is taken at, state of consciousness (walking, sleeping, sedated), and emotions.

IV. GPS (GLOBAL POSITIONING SYSTEM)

The GPS is a Global Navigation Satellite System (GNSS) developed by the United States Department of Defense. It is the only fully functional GNSS in the world. It uses a constellation of between 24 and 32 earth orbit satellites that transmit precise radio signals, which allow GPS receivers to determine their current location, the time, and their velocity. A GPS receiver calculates its position by precisely timing the signals sent by the GPS satellites high above the Earth. Each satellite continually transmits messages containing the time the message was sent, precise orbital information (the ephemeris – orbit path and speed of each satellite), and the general system health, current date and time of all GPS satellites (the almanac). The receiver measures the transit time of each message and computes the distance to each satellite. A form of triangulation is used to combine these distances with the location of the satellites to determine the receiver's location. The position is displayed, perhaps with a moving map display or latitude and longitude; elevation information may be included.

V. APPLICATIONS OF GPS

- Can be used for the prosperity of Physically Challenged person.
- Can be used for the prosperity of adolescents.
- Can be used for the prosperity of elderly developed people.
- Can be utilized for the security of physically tested individuals.

VI. CONCLUSION AND FUTURE SCOPE

Main purpose of the system is fast process, low cost of development, acceptable quality, accurate tracking. This paper put forth a technique where a Physically Challenged person, when in danger, can instantaneously intimate to the concerned authorities. The proposed technique uses GPS tracking of the smart phone to get the device's co-ordinates. The device proposed in this paper can be a major help in solving a few of the many challenges faced by the differently abled. To further extend the paper, the device can be made more compact and wearable to make it easy for the user to use. Further this paper can be carried out with any advanced tool by using simple programming language for fewer complications. The complications can be minimized by a small device which can be very useful to these peoples in this mechanized world.

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