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A DESIGNING TETRAPLEGIA AID AND AI ENCHANCED METHOD FOR HEAD MOVEMENT SYSTEM USING IOT

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ABSTRACT

This project aims to develop an AI enhanced tetraplegia Aid using IOT for head movement control. The proposed system consists of a head -mounted devices that uses IOT sensors to detect head mov3ements and convert them into control signals for various convert them into control signals for various electronic devices. Hence we have come up with smart sensors will continuously monitor the health and the patient's dosage. A smart sensor will continuously monitor the health and the patient's dosage. A smart sensor will continuously monitor the health of the patient's and send the reading to the Arduino board. Each "Medical Box" will have its own timing information which will be continuously compared to real world time. If the information matches the alarm will start to ring and will remind the patient to take his medicine and then there is a moisture sensor in the patient diapers to detect the moisture level if it is crossed over a level, the sensor sends an intimation the family mobile phone.

Keywords: Smart sensors, IOT technology and Medical Box.

1. INTRODUCTION

Tetraplegia is a type of paralysis that affects a person's ability to move their arms, legs and torso due to a spinal cord injury. This condition can greatly impact a person's quality of life and ability to performs daily tasks independently. To address the challenges faced by people with tetraplegia, various assistive technologies have been developed. Such as wheelchairs, voice recognition software and brain computer interface. However, these technologies often require specialized training and can be costly, making them in accessible to many individuals. In this project, we propose a new approach to assist individuals with tetraplegia, by designing an aid that utilize head movements to control electronic devices. Such as fan, light. This aid will be enhanced by artificial intelligence. Additionally, we added moisture sensor and medical box. A moisture sensor is to detect the moisture level in a patient's diapers, "Medical Box" will have its own timing information which will be continuously compared to real world time. This innovation tetraplegia aid has the potential to revolutionize the way people with tetraplegia interact with their environment, providing greater independence and improving their overall quality of life.

2. LITERATURE SURVEY

HEALTH MONITORING SYSTEM - Intelligent health monitoring system of the long-span railway stayed requires the comprehensive knowledge of instrumentation, analytical and information processing technologies with the knowledge and experiences in design, construction, operation and maintenance of railway equipment for long-term monitoring the performance throughout its lifecycle. It is necessary to perform sensor-based structural monitoring for identifying the conditions in order to assure the structural safety and to evaluate the operational performance. The

considerations for deploying a proper monitoring system are appropriate sensor instrumentation, robust signal acquisition, reliable signal processing, and intelligent signal and information processing. Sensor and hardware instrumentation, signal transmission, signal acquisition and analysis are schematically described mainly. Fire and gas sensors are used to protect entire train system. And for passenger safety, we are attaching a wireless RF system. With this advanced equipment, the exact dangerous spot is known with in less time.

HUMAN HEALTH MONITORING SYSTEM. - Moving into a new era of healthcare, new tools and devices are developed to extend and improve health services, such as remote patient monitoring and risk prevention. In this concept, Internet of Things (IoT) and Cloud Computing present great advantages by providing remote and efficient services. In India many patients are dying because of heart attacks and reason behind that they are not getting timely and proper help. To give them timely and proper help first we want to continuous monitoring of patient health. The fixed monitoring system can be used only when the patient is on the bed and this system is only available in hospitals. The system is developed for home use by patients that are not in critical condition but need to be constant or periodically monitored by clinician or family. In any critical condition the SMS is send to doctor or any family member. In this paper, a prototype of a wireless health monitoring system capable of sending SMS related to the health status of the patient is developed.

A SMART PATIENT HEALTH MONITORING SYSTEM USING IOT. The healthcare monitoring systems has emerged as one of the most vital system and became technology oriented from the past decade. Humans are facing a problem of unexpected death due to various illness which is because of lack of medical care to the patients at right time. The primary goal was to develop a reliable patient monitoring system using IoT so that the healthcare professionals can monitor their patients, who are either hospitalized or at home using an IoT based integrated healthcare system with the view of ensuring patients are cared for better. A mobile device based wireless healthcare monitoring system was developed which can provide real time online information about physiological conditions of a patient mainly consists of sensors, the data acquisition unit, microcontroller (i.e., Arduino), and programmed with a software (i.e., JAVA). The patient's temperature, heart beat rate, EEG data are monitored, displayed and stored by the system and sent to the doctor's mobile containing the application.

Chung studied the Flexible and scalable patient's health monitoring system in 6LoWPAN (2007). The main advantage of this enabling factor is the combination of some technologies and communications solution. The results of Internet of Things are synergetic activities gathered in various fields of knowledge like telecommunications, informatics and electronics.

Kaiver studied a cell phone based health monitoring system (2009) with self analysis which incorporates IoT a new paradigm that uses smart objects which are not only capable of collecting the information from the environment and interacting the physical world, but also to be interconnected with each other through internet to exchange data as well as information

3. EXSITING SYSTEM

In existing system patients who were affected by a tetraplegia aid needs to get hospitalized for regular monitoring. It is not possible once he/she is discharged from the hospital. There is some equipment to measure the patient health. But the system cannot be used at home. The existing systems only used to measure the health parameters of the patients and send it through ZigBee or Bluetooth protocol etc. these are used for only short range communication to transfer the data. At the same time not all the times doctors can fetch these details.

4.PROPOSED METHOD

Here we proposed some deep learning method to continuously monitor the patient healthcare. In this project it is fully designed for the tetraplegia aid patients. We were implemented some smart systems like head movement for controlling light, fan, wet diapers indicated medicine box with IOT technology. This project doesn't require special training for medicine box handling. It is a user friendly device even elder patients can operate easily that the instructions are displayed in LCD display. By these knowledge doctors easily prepare their treatment plan earlies for patients

5. SYSTEM SPICIFICATION

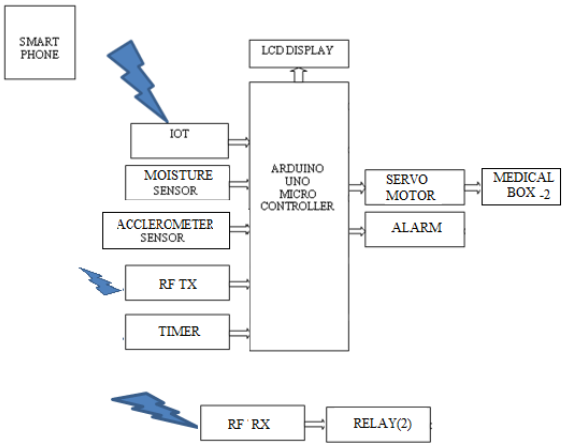
5.1 HARDWARE REQUIREMENT

Arduino Uno Microcontroller
Moisture Sensor
Accelerometer Sensor
Wi-Fi-(Iot)
Relay
Alarm
Servo Motor
RF Transmitter and Receiver

5.2 SOFTWARE REQUIREMENT

PCB Designing
Arduino Ide
Android Studio

6. BLOCK DIAGRAM



7.INTERNET OF THINGS (IOT)

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these things to connect, collect and exchange data. IoT involves extending Internet connectivity beyond standard devices, such as desktops, laptops, smartphones and tablets, to any range of traditionally *dumb* or non-internet-enabled physical devices and everyday objects. Embedded with technology, these devices can communicate and interact over the Internet, and they can be remotely monitored and controlled. With the arrival of driverless vehicles, a branch of IoT, i.e. the Internet of Vehicle starts to gain more attention. The definition of the Internet of things has evolved due to convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of things. The concept of a network of smart devices was discussed as early as 1982, with a modified Coke machine at Carnegie Mellon University becoming the first Internet-connected appliance, able to report its inventory and whether newly loaded drinks were cold. Mark Weiser's 1991 paper on ubiquitous computing, "The Computer of the 21st Century", as well as academic venues such as Unicom and PerCom produced the contemporary vision of IoT. In 1994, Reza Raji described the concept in *IEEE Spectrum* as "[moving] small packets of data to a large set of nodes, so as to integrate and automate everything from home appliances to entire factories". Between 1993 and 1997, several companies proposed solutions like Microsoft's at Work or Novell's NEST. The field gained momentum when Bill Joy envisioned Device to Device (D2D) communication as part of his "Six Webs" framework, presented at the World Economic Forum at Davos in 1999.

The term "Internet of things" was likely coined by Kevin Ashton of Procter & Gamble, later MIT's Auto-ID Center, in 1999, though he prefers the phrase "Internet *for* things". At that point, he viewed Radio-frequency identification (RFID) as essential to the Internet of things, which would allow computers to manage all individual things. A research article mentioning the Internet of things was submitted to the conference for Nordic Researchers in Logistics, Norway, in June 2002, which was preceded by an article published in Finnish in January 2002.The implementation described there was developed by Kary Främling and his team at Helsinki University of Technology and more closely matches the modern one, i.e. an information system infrastructure for implementing smart, connected objects. Defining the Internet of things as "simply the point in time when more 'things or objects' were connected to the Internet than people", Cisco Systems estimated that IoT was "born" between 2008 and 2009, with the things/people ratio growing from 0.08 in 2003 to 1.84 in 2010.

8. WIFI

A Wi-Fi-enabled device, such as a personal computer, video game console, smartphone or digital audio player, can connect to the Internet when within range of a wireless network connected to the Internet. The coverage of one or more (interconnected)access points called hotspots comprises an area as small as a few rooms or as large as many square miles. Coverage in the larger area may depend on a group of access points with overlapping coverage. Wi-Fi technology has been used successfully in wireless mesh networks in London, UK, for Wi-Fi provides service in private homes and offices as well as in public spaces at Wi-Fi hotspots set up either free-of-charge or commercially. Organizations and businesses, such as airports, hotels, and restaurants, often provide free-use hotspots to attract or assist clients. Enthusiasts or authorities who wish to provide services or even to promote business in selected areas sometimes provide free Wi-Fi access. As of 2008 more than 300 city-wide Wi-Fi (Muni-Fi) projects had been created. As of 2010 the Czech Republic had 1150 Wi-Fi based wireless Internet service providers. Routers that incorporate a digital subscriber line modem or a cable modem and a Wi-Fi access point, often set up in homes and other buildings, provide Internet access and internetworking to all devices tuned into them, wirelessly or via cable. With the emergence of MiFi and WiBro (a portable Wi-Fi router) people can easily create their own Wi-Fi hotspots that connect to Internet via cellular networks. Now iPhone, Android, Bada and Symbian phones can create wireless connections.[5] One can also connect Wi-Fi devices in ad-hoc mode for client-to-client connections without a router. Wi-Fi also connects places normally without network access, such as kitchens and garden sheds.

9. PYTHON

Python is a high-level, interpreted scripting language developed in the late 1980s by Guido van Rossum at the National Research Institute for Mathematics and Computer Science in the Netherlands. The initial version was published at the alt. sources newsgroup in 1991, and version 1.0 was released in 1994. Python 2.0 was released in 2000, and the 2.x versions were the prevalent releases until December 2008. At that time, the development team made the decision to release version 3.0, which contained a few relatively small but significant changes that were not backward compatible with the 2.x versions. Python 2 and 3 are very similar, and some features of Python 3 have been backported to Python 2. But in general, they remain not quite compatible. Both Python 2 and 3 have continued to be maintained and developed, with periodic release updates for both. As of this writing, the most recent versions available are 2.7.15 and 3.6.5. However, an official End of Life date of January 1, 2020 has been established for Python 2, after which time it will no longer be maintained. If you are a newcomer to Python, it is recommended that you focus on Python 3, as this tutorial will do. Python is still maintained by a core development team at the Institute, and Guido is still in charge, having been given the title of BDFL (Benevolent Dictator for Life) by the Python community. The name Python, by the way, derives not from the snake, but from the British comedy troupe Monty Python's Flying Circus, of which Guido was, and presumably still is, a fan. It is common to find references to Monty Python sketches and movies scattered throughout the Python documentation.

10. CONCLUSION

In recent days' healthcare system is changing all over the world. IOT based application of smart healthcare system has created a new dimension of medication and healthcare in hospitals. The objective of his project is focusing on proper medication of a patient. Older people who need regular monitoring of their medication will be benefited through this project. Server for storing medication time and other information, mail transferring protocol, temperature sensor for proper monitoring of patient body temperature has been integrated in this project.

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