FUTURE AND EMERGING TECHNOLOGIES IN AI&ML

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Review

Robot for the Treatment of Communicable Diseased Patients using AI and ML

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ABSTRACT

In recent years there has been significant research in the development of medical assistance autonomous robots these robots have the potential to revolutionize healthcare by improving efficiency reducing workload and improving patient outcomes one common theme in this research has been the desire for medical professionals to control their assistant robots remotely through the internet many advanced healthcare technologies have been developed such as smart healthcare systems digital thermometers non- contact infrared thermometers pulse oximeters heartbeat monitoring devices and iot devices for heart problem detection in addition temperature humidity measurement systems have been developed to monitor environmental conditions in healthcare facilities our work focuses on utilizing robotics to provide unique prescription medication care in the digital healthcare sector we have explored various methods of controlling these robots including pathfinding autonomous movement and obstacle avoidance additionally some research has focused on user end manual control through android apps however the development and implementation of medical assistant robots also raise important ethical legal and social implications patient privacy and data security must be protected and there must be regulations in place to ensure the safe and responsible use of these technologies.

Keywords

Digital thermometers; Data security; Iot devices.

INTRODUCTION

Less than one doctor per thousand people globally is the result of the doctor shortage, according to the WHO member status report. This scarcity becomes much more apparent in times of crisis, as the present coronavirus outbreak. Consequently, there is a higher chance of the virus infecting and spreading among medical workers, including physicians, nurses, and medical assistants. Because of the expensive cost of healthcare and the large number of people who need it, poverty is a major problem in developing nations. To alleviate these issues, medical personnel might be replaced with robots that take vital signs and other basic patient data, such as temperature, pulse, oxygen saturation, and electrocardiogram (ECG) measurements. Medication administration and routine checkups are two other areas where this might be useful. As we compile and organize this information, we have come to the conclusion that these three aspects must be combined in order to provide a comprehensive answer. These include: (i) the ability to move freely from one place to another; (ii) the ability to remotely assess a patient's physiological state and track their health status; and (iii) support with daily tasks, including self-care. Making sure the elderly get their prescription on schedule is an important duty. An automated medication dispenser has been developed to assist those who need careful monitoring while taking their prescription. Errors may be reduced with this dispenser since it removes the potential of giving the incorrect medication at the wrong time. A number of parts make up the dispenser, such as an alarm system, a motor controller, a microprocessor, an alphanumeric keyboard, an LED display, and many pill containers.

II. LITERATURE SURVEY

According to a review of the literature, there is a lot of study going on with nurse robots. A wide range of healthcare facilities may benefit from the support and care that nursing robots provide. They are being created with the intention of reducing healthcare expenses, improving patient outcomes, and easing the strain of healthcare personnel. Some of the most important things that came out of the

literature review were: Nursing robot categories: There are several kinds of nurse robots, such as those that provide telepresence, social interaction, and assistance. The purpose of telepresence robots is to allow medical personnel to engage with patients remotely and provide remote treatment. The goal of programming social robots is to make their interactions with patients seem more human by mimicking their movements, emotions, and voice. Physical activities, such patient lifting and transfer, are the specialty of assistive robots.

Nursing robots: According to research, both patients and doctors may reap the advantages of using nursing robots. Through the provision of ongoing monitoring and prompt interventions, they have the ability to enhance patient outcomes. Additionally, they may lighten the burden of healthcare workers, freeing them up to concentrate on more intricate duties. As a result of their increased efficiency and less reliance on human workers, nursing robots may contribute to healthcare cost reduction efforts.

Despite the apparent advantages, nurse robots encounter a number of obstacles. Particularly in intensive care units, guaranteeing their safety and reliability is a major obstacle. Privacy and secrecy are two examples of ethical concerns. It is also important to make sure that both patients and doctors can easily use nurse robots. Where research stands at the moment: Nursing robots seem to be the subject of a great deal of study, according to the literature. The development of nurse robots for use in a variety of healthcare settings is the subject of many active initiatives. The many nurse robots and the pros and cons of each are being investigated in these studies.

As healthcare systems strive to enhance patient outcomes while decreasing healthcare costs, the research indicates that the development of nurse robots will most certainly persist in the future. Improving the safety and dependability of nurse robots and making them more versatile are expected to be the primary goals of future research.

Finally, there is a lot of interest in researching nurse robots because of the many advantages they might provide to both patients and healthcare providers. Although there are still many obstacles to overcome, research and development into nurse robots will certainly go on, with an eye toward creating more sophisticated and intuitive devices.

III. METHODOLOGY

Nursing robots are an emerging technology that aims to enhance the quality of care for patients and reduce the workload of healthcare professionals. These robots can perform a variety of tasks, such as monitoring vital signs, administering medication, and assisting with mobility. They can also provide emotional support and companionship to patients.

Animal Detection

One of the key features of nursing robots is their ability to interact with patients in a human-like manner. Some robots are equipped with artificial intelligence and natural language processing capabilities that enable them to understand and respond to verbal and non-verbal cues from patients. They can also use facial recognition technology to identify patients and personalize their interactions.

Objective.

The goal of this project is to design a robot that can perform various human tasks, including the important task of dispensing medication. This is especially important for elderly individuals who may need medication but do not have constant supervision from healthcare professionals.

To accomplish this task, we have designed an automatic medication dispenser that is user-friendly and reliable. The dispenser includes a microcontroller that is connected to an alphanumeric keypad, LED display, motor controller, alarm system, and multiple pill containers.

Methodology

Our approach combines state-of-the-art technology with a user-friendly dispenser that can be filled with the patient's medicine. The medication dispenser has a built-in alarm that goes off at certain intervals to remind the patient to take their medication. The patient's demands will determine the maximum number of times per day that the system can accommodate medicines.

Our goal in creating this robot with a medicine dispenser is to make life easier for those who have to take their prescription on a daily basis. To make sure patients get their prescription on time and at the right amount, we're working to make taking medication easier and less confusing.

Os Raspberian

Some may compare the operating system on a Raspberry Pi to Mac OS X, while others may notice a more Windows-like desktop experience. Using Raspbian is quite similar to using Windows (with the exception of Windows 8, which is a whole new beast!), albeit it may need some initial adjustment. The fact that Raspbian has all the standard desktop environment features is one of its many wonderful qualities. Many shortcuts to the pre-installed programs may be found on the desktop, in addition to a menu bar, web browser, and file manager. Indeed, Raspbian is essentially an unauthorized fork of Debian Wheezy arm, with compilation parameters fine-tuned to generate Pi-friendly "hard float" code. The enhanced instructions of the ARMv6 CPU in the Raspberry Pi will greatly improve the performance of apps that depend on floating-point arithmetic operations, while also making all other applications operate more efficiently.

The development of Rasp Bian was mostly done by Mike Thompson (MP Thompson) and Peter Green (plug wash), but the success of the project has also been greatly contributed to by the Raspberry Pi community. The community's boundless energy and creativity have been instrumental in the growth and enhancement of Raspbian, and they are always discovering new methods to get the most out of their devices.

LCD MODULE

To connect the LCD module to the Arduino, we use a simple method that requires fewer connections and allows us to utilize almost the

full potential of the LCD module. The RS pin of the LCD module is connected to digital pin 12 of the Arduino, while the R/W pin of the LCD is grounded. The Enable pin of the LCD module is connected to digital pin 11 of the Arduino.

To interface the digital lines DB4, DB5, DB6, and DB7 with the Arduino, we connect them to digital pins 5, 4, 3, and 2 respectively. Additionally, we use a 10K potentiometer to adjust the contrast of the display.

To power the Arduino, we can use the external power jack provided on the board. Alternatively, we can tap into the 5V source on the Arduino board to power any other parts of the circuit that require +5V. The Arduino can also be powered via the USB port on a PC. Overall, this method is quite simple and allows for easy connectivity between the LCD module and the Arduino, making it a great option for various projects.

IV. CONCLUSION

Primary patient monitoring and daily care support robot "Virtual doctor robot" was the major focus of this project's design and development. This robot has both an autonomous control system and a manual one, making it easy to operate. Through the Internet of Things (IoT), doctors from any location may access a patient's complete medical record and converse with them via video chat, eliminating the need for physical examinations. The global shortage of medical professionals is something that these robots may help alleviate significantly. People who

is familiar with primary surgery and can use a virtual doctor robot to help with family medical needs. The implementation of AI and machine learning systems is imminent.

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