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Moveable Voice Activated Self Driven Medicine Box Kit Traveler for Disability

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Abstract

This paper presents an automatic voice-controlled medicine box kit Traveler using voice recognition it makes its way by its own using a remarkable top tier artificial intelligence. A voice-controlled medicine box kit Traveler makes it easy for physically disabled person who cannot travel from one room to another to get the medicine box kit or they need someone to provide them their medicine. It will help people that are skipping their medical intakes because they are totally depended on the other person to give them medicine. The powered medicine box kit traveler depends on motors for locomotion, voice recognition for command and LIDAR and depth sensor to map your home. The circuit of the project comprises of an Arduino including HM2007 Voice recognition module and different Motors. The voice recognition module recognizes the command by the user and provides the corresponding coded data stored in the memory to Arduino Microcontroller. Arduino Microcontroller will controls the locomotion accordingly.

Keywords—voice controlled med box, Microcontroller, Voice Recognize, microcontroller, Arduino

INTRODUCTION

The recognition and understanding of spontaneous unrehearsed speech remains an elusive goal in the area of computing. A human considers not only the specific information conveyed to the ear, but also the context in which the information is being discussed. For this core reason, people can understand spoken language even when the speech signal is corrupted by noise. This paper details the overall design of a voice activated medicine box traveler which is a theoretical research paper. Disable people who cannot walk through to get the medicine or are totally depended on other to give them the medicine can access the medicine kit box traveler by the voice sensor and take the medicine at the desired place with comfort. It will have the ability to hear commands such as "come here medicine kit" it makes its way by its own using a remarkable top tier artificial intelligence. When the command has been interpreted by the user the medicine box traveler automatically make its way without bumping into your walls.

The core part of the product may be essentially divided into two subsystems. Such a design was chosen owing to its modularity. The two subsystems are the Main Device and the Switch.

Hardware

Main core Device: This device is responsible for practically all the computation and serves as the primary controller in

the mesh networks. The Raspberry Pi, a credit-card-sized Linux-based microcomputer that is well-liked by the world's DIY community, powers the gadget. The ARM1176JZF-S (ARMv6k) processor and 512 MB of RAM on the Pi are both clocked at 700 MHz It is a powerful and effective device that fits our needs effectively. It can run Arch Linux ARM and uses only 3.5 W of power in ordinary use. A tiny diaphragm condenser microphone is linked to the Pi through a USB connection to an audio interface. This concludes the device's section for audio input. The Pi is connected to an XBee Series 2 XB24-Z7WIT-004 module from Digi through its GPIO pins in addition to the peripherals already stated. Since every appliance or power outlet that needs to be operated needs one of these to interface with the Main Device, the Switch is what is located at the other end of the network, and its plurality has no restrictions. An 8-bit Atmel AVR microcontroller, which powers the Switch primarily, is pre-loaded with the Arduino boot loader to facilitate development using the Arduino integrated development environment (IDE) and C or C++ code. For RF communication with the Main Device, the Microcontroller is connected by RS-232 to a compatible XBee Series 2 XB24-Z7WIT-004 module. The microcontroller is equipped with a solid state relay that allows it to switch high power circuits.

B. Software

Pocket Sphinx: Running on the Main Device on top of the Linux kernel, Pocket Sphinx is a lightweight voice recognition engine that supports dictation and keyword spotting utilizing constrained vocabularies and dictionaries that are customized to the specific application domain. The speech recognition code has undergone a number of adjustments to improve its accuracy in the testing conditions and make it acceptable for real-time input. The engine's output mostly consists of detected utterances that are forwarded to another component created with Open Dial. 1) Open Dial: Open Dial is a software toolkit that runs on Java.

to aid in the creation of effective and flexible spoken dialogue systems. The toolkit itself is domain-neutral and is simple to use with any specific dialogue domain. In Open Dial, dialogue understanding, management, and generation are expressed by probabilistic rules that are simply encoded in XML. This keeps the possibility of the system reacting to the user in the future open and serves to link user statements to specific system actions. The output of this component, which is written in Java, is delivered back to the main function, which is the voice recognition component written in C that was previously described. Responsible for RF transmission of the necessary instructions to the specific Switch.

3) Firmata: Since low level pin access is required to ma-nipulate the appliance connected to the Switch in question, the Firmata protocol was adopted for communication between the Main Device and the Switch. Firmata is a generic protocol for communicating with micro-controllers from software on a host computer. It is intended to work with any host computer software package. There is a matching object in a number of languages.

VOICE AND REMOTE CONTROLLED

Every type of person can work on this perfect project. Consider the elderly; they cannot move about constantly like other individuals can. To get them wherever and whenever they want to go, they need some help. The issue also affects those with disabilities. But their voice might still be audible. Therefore, we can install speech recognition technology and use their voices as the primary key to operate the voice-controlled medical kit traveler.

The speech recognition system converses with users and accepts commands in their preferred tongue. People can simply operate their chairs and can drive themselves independently.

Required elements are:-

Arduino UNO R3

Bluetooth module

servo motor X 2

wheels

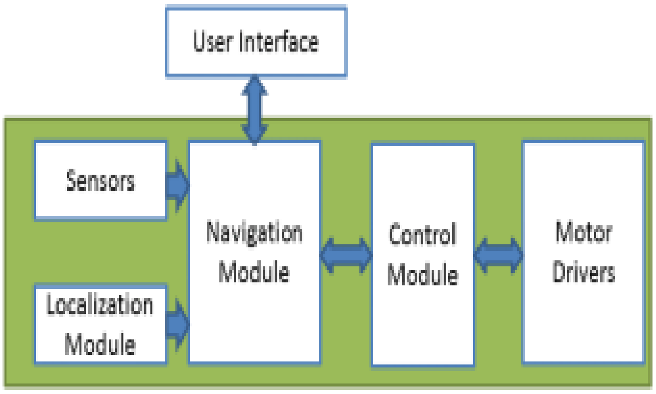
motor driver(l298)

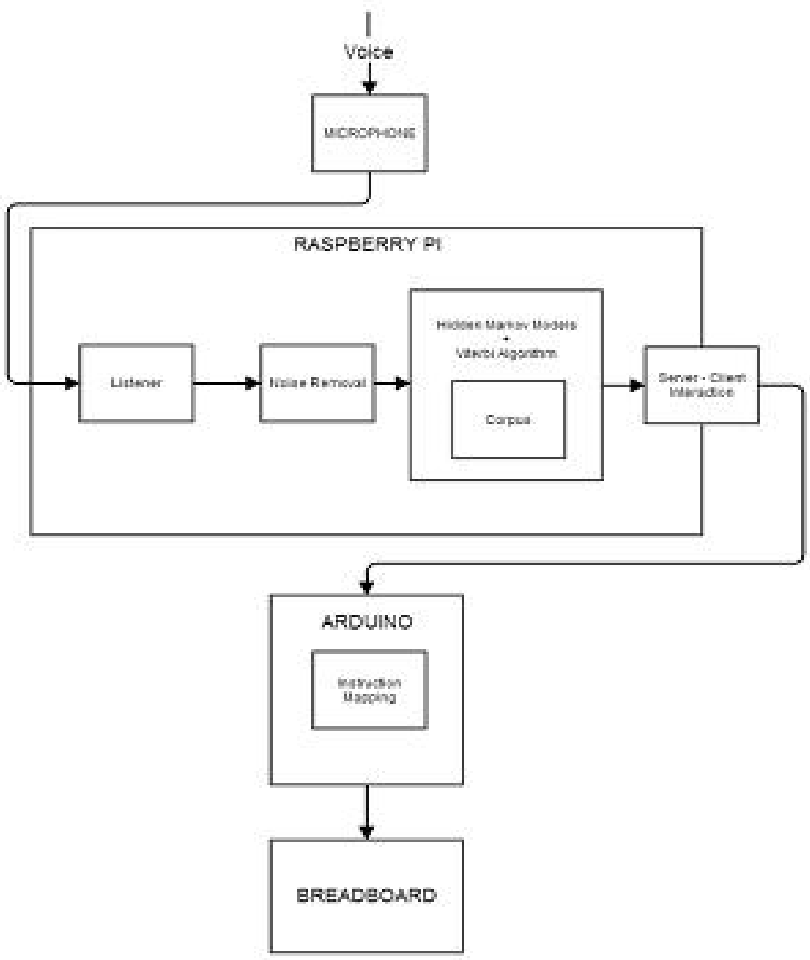
BLUETOOTH(HC-05)

Raspberry pi

Spec	Arduino Uno	Raspberry Pi 3 B
CPU Type	8-bit Microcontroller	64-bit Microprocessor
Operating System	None	Some flavor of Linux
Storage	32 kB flash	Depends on size of SD card
Memory	2 kB	1 GB RAM
Speed	16 MHz	1.2 GHz
GPU	None	Built in
Networking	None	Ethernet, Wi-Fi, Bluetooth
Price	$20-$22	$35
USB ports	1	4
Power consumption	Can be < 0.25 W	Several watts

Because wireless communication encompasses both voice and remote control modes. they need a means of data transport between the chair and the interface. Here, a chair and wireless devices are connected through the usage of Bluetooth. Some commands are initially specified by the developer in the user's preferred language for speech recognition mode. Each command issued by the user during chair control is translated into a particular set of characters that must remain anonymous. The analogue data that is received will be transformed into digital data, and data transfer will take place in serial communication mode at a 9600 baud rate. Bluetooth receives data in digital form, which is later translated to analogue form and checked against directives that were being set by the developer. If it gets a ping, the operation which is corresponding to the particular instruction is executed.


User Interface
Sensors
Localization Module
Navigation Module
Control Module
Motor Drivers


Voice
MICROPHONE
RASPBERRY PI
Listener
Noise Removal
Hidden Markov Models + Viterbi Algorithm
Corpus
Server - Client Interaction
ARDUINO
Instruction Mapping
BREADBOARD

Types of Sensors That Can Be Used For Object Detection.

Over time, the automation business has experienced remarkable growth. Object detection is a key component of many automated procedures. Automation may be found everywhere, from garage gates that open as a car arrives to escalators that begin moving when a person steps on the first step.

When an object reaches a predetermined point, many machines require a trigger. Finding out if the object has arrived at a particular point becomes crucial in industrial processes. Security procedures must also find hidden suspicious objects. There are numerous sensing technologies that can be employed for diverse applications. We'll look at six typical types of sensors for object detection in this article.

Inductive Sensors

Metal objects are the only ones that can be detected by inductive proximity sensors. When a metal object approaches a sensor, its own electromagnetic field is disrupted. The presence of an object is indicated by this disturbance. Even when the object is concealed by another non-metallic substance, it can still be found. Although it is not necessary for the object to make direct touch with the sensor, these sensors have small sensing ranges. These reasonably priced sensors are available in a variety of sizes and shapes and are frequently employed in various automation applications.

Capacitive sensors

There are objects that are different from the air. The sensors can detect objects made of a wide variety of materials. They can detect the change in the field when the object is within range. The range is not very large. The distance from the sensor to the object cannot be measured.

Parameter	Capacitive	Inductive
Typical Range	.01 mm–10 mm	0.1 mm–15 mm
Resolution	2 nm	2 nm
Required Sensing Area	130% of probe diameter	300% probe diameter
Typical Probe Size	800% of Range	300% of range
Rotating Targets	Unaffected	Small errors on ferrous targets
Target Material	Conductive targets	Conductive targets only
	Not affected by material differences	Affected by conductive material differences
	Also measures nonconductors (i.e., plastics)	Does not measure nonconductors
Gap Material	Senses changes in nonconductive gap material	Ignores nonconductive gap materials
Cost	$$	$

The sensors are Ultrasonic.

The sound waves are used to detect objects. A short sound wave is transmitted towards the target. The wave confirms the presence of the object when it reflects back the target. The object's distance can be measured by the sensors. The objects have no impact on their detection since the working involves sound waves. There are a lot of places where the level of a liquid needs to be measured or monitored.

There are photoelectric sensors.

A photoelectric sensor uses a beam of light and a reflected light to detect an object. Different colors, luminescence and contrast can be detected by the sensors. It is possible to have a photoelectric sensor with a range of more than 50 meters. The types of photoelectric modes used are diffuse, reflective, and through-beam. The slim line photoelectric sensor range provides a cost-effective and flexible solution.

RESULTS AND DISCUSSION

In this work the cost effective voice automated medical box kit traveller can be made from the locally source materials readily available in the market, except the gear motor that was sourced online. Gear motor is used for controlling the forward and the backward movement of the kit traveller This will help the poor disabled and old age people to take their medical intake without any support other person presence.

CONCLUSION

There is research showing that humanity still exists in our society. Everyone has a role to play in making sure these unlucky people are not left behind. A better voice controlled medical traveler box is being built. After technology for a muscle contraction detector is available, the number of sensors in a controlled medical traveler box will be reduced to one. It happens due to misread of signal by the sensors. Different approach used to increase motivation for the patient. In navigating a controlled medical traveler box, all of the combinations of different sensors produce the same result. A lot of people produce a good result and a few need small improvements to make it perfect.

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