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Blind Stick using Aurdino

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Abstract: *This project describes ultrasonic blind walking stick with the use of arduino. according to who, 30 million peoples are permanently blind and 285 billion peoples with vision impairment. if you notice them, you can very well know about it they can't walk without the help of other. one has to ask guidance to reach their destination. they have to face more struggles in their life daily life. using this blind stick, a person can walk more confidently. this stick detects the object in front of the person and give response to the user either by vibrating or through command. so, the person can walk without any fear. this device will be best solution to overcome their difficulties.*

Keywords: Arduino, Sensor, personal security

I. INTRODUCTION

Visually impaired persons have difficulty to interact and feel their environment. They have little contact with surroundings. Physical movement is a challenge for visually impaired persons, because it can become tricky to distinguish obstacles appearing in front of them, and they are not able to move from one place to another.

They depend on their families for mobility and financial support. Their mobility opposes them from interacting with people and social activities. In the past, different systems are designed with limitations without a solid understanding of the nonvisual perception. Researchers have spent the decades to develop an intelligent and smart stick to assist and alert visually impaired persons from obstacles and give information about their location. Over the last decades, research has been conducted for new devices to design a good and reliable system for visually impaired persons to detect obstacles and warn them at danger places.

Smart walking stick is specially designed to detect obstacles which may help the blind to navigate care-free. The audio messages will keep the user alert and considerably reduce accidents. A voice enabled automatic switching is also incorporated to help them in private space as well. This system presents a concept to provide a smart electronic aid for blind people, both in public and private space the proposed system contains the ultrasonic sensor, water sensor, voice play back board, raspberry pi and speaker. The proposed system detects the obstacle images which are present in outdoor and indoor with the help of a camera. The stick measures the distance between the objects and smart walking stick by using an ultrasonic sensor. When any objects or obstacles come in range of an ultrasonic sensor and it make buzzer sound..

II. COMPONENTS

1.Aurdino Board Uno
2.Ultra Sonic Sensor
3.B10 Buzzer
4.Jumper Wires
5.Led
6.Aurdino IDE Software
7.Stick

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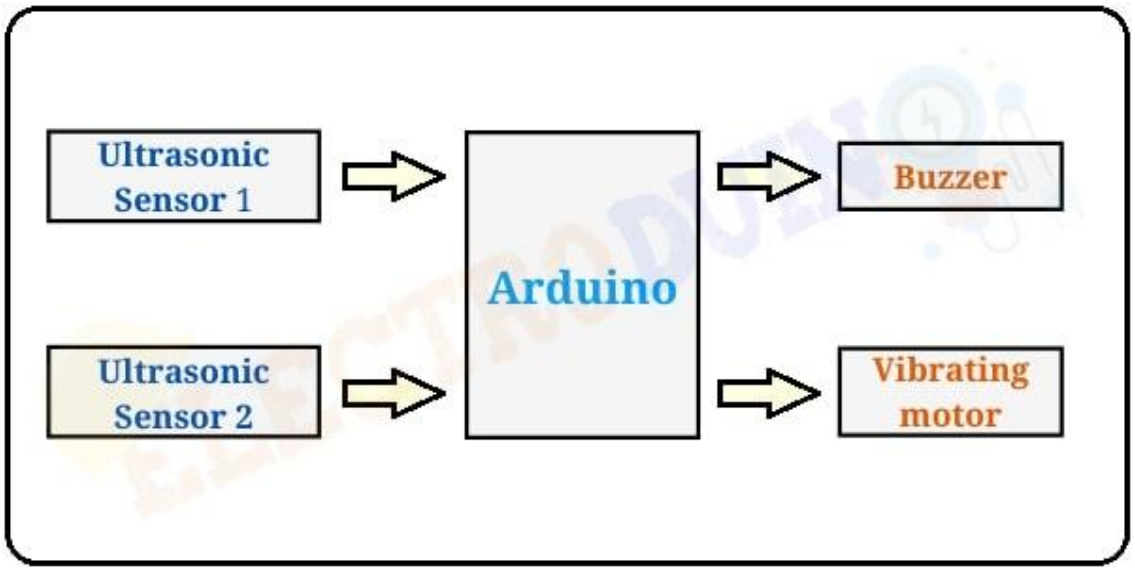
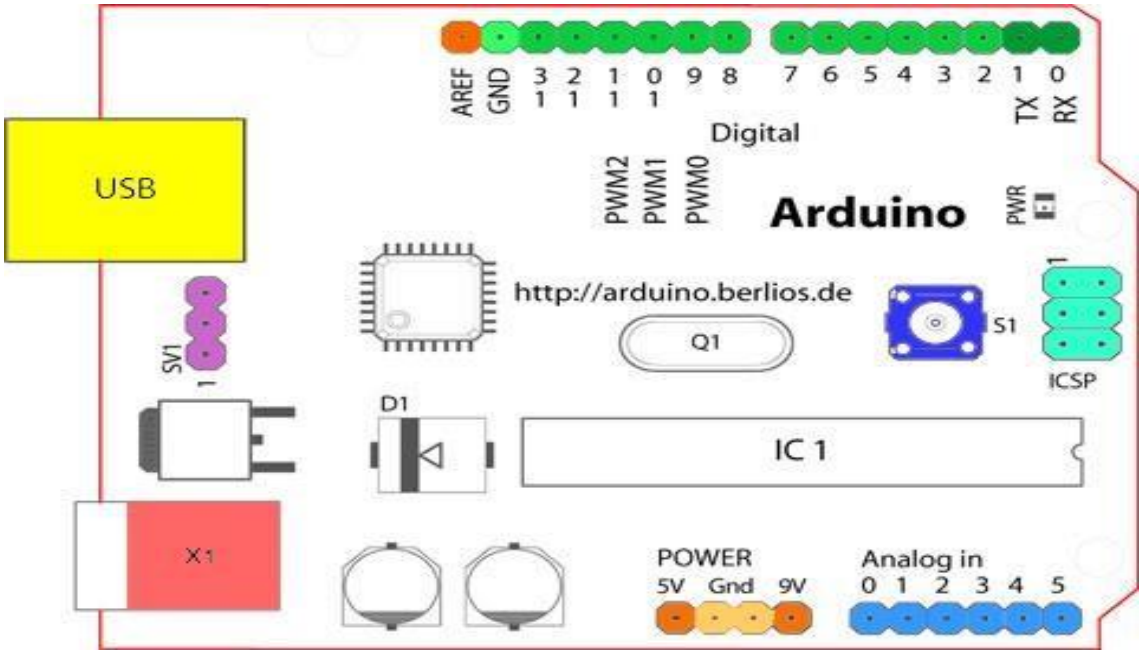
III. BLOCK DIAGRAMS



IV. PROCEDURE

INTRODUCTION TO THE ARDUINO BOARD

looking at the board from the top down, this is an outline of what you will see (parts of the board you might interact with in the course of normal use are highlighted):



STARTING CLOCKWISE FROM THE TOP CENTER:-

- Analog Reference Pin (Orange)
- Digital Ground (Light Green)
- Digital Pins 2-13 (Green)

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- Digital Pins 0-1/Serial In/Out - Tx/Rx (Dark Green) - These Pins Cannot Be Used For Digital *I/O* (Digitalread And Digitalwrite) If You Are Also Using Serial Communication
- (E.G. Serial.Begin).
- Reset Button - S1 (Dark Blue)
- In-Circuit Serial Programmer (Blue-Green)
- Analog In Pins 0-5 (Light Blue)
- Power And Ground Pins (Power: Orange, Grounds: Light Orange)
- External Power Supply In (9-12vdc) - X1 (Pink)
- Toggles External Power And Usb Power (Place Jumper On Two Pins Closest To Desired Supply) - Sv1 (Purple)
- Usb (Used For Uploading Sketches To The Board And For Serial Communication Between The Board And The computer; can be used to power the board) (yellow)

Digital Pins:-

In addition to the specific functions listed below, the digital pins on an arduino board can be used for general purpose input and output via the pinmode(), digitalread(),and digitalwrite() comm ands. Each pin has an internal pull-up resistor which can be turned on and off using digitalwrite() (w/ a value of high or low, respectively) when the pin is configured as an input. The maximum current per pin is 40 ma.

.Serial: 0 (rx) and 1 (tx). Used to receive (rx) and transmit (tx) ttl serial data. On the arduino decimal, these pins are connected to the corresponding pins of the ftdi usb-to-ttl serial chip. On the arduino bt, they are connected to the corresponding pins of the wt11 bluetooth module. On the arduino mini and lilypad arduino, they are intended for use with an external ttl serial module (e.g. The mini-usb adapter).

- External interrupts: 2 and 3. These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value. See the attach interrupt() function for details.
- Pwm: 3, 5, 6, 9, 10, and 11. Provide 8-bit pwm output with the analogwrite() function. On boards with an atmega8, pwm output is available only on pins 9, 10, and 11.
- Bt reset: 7. (arduino bt-only) connected to the reset line of the bluetooth module.
- Spi: 10 (ss), 11 (mosi), 12 (miso), 13 (sck). These pins support spi communication, which, although provided by the underlying hardware, is not currently included in the arduino language.
- Led: 13. On the diecimila and lilypad, there is a built-in led connected to digital pin 13. When the pin is high value, the led is on, when the pin is low, it's off.

ANALOG PINS:-

In addition to the specific functions listed below, the analog input pins support 10-bit analog to-digital conversion (adc) using the analogread() function. Most of the analog inputs can also be used as digital pins: analog input 0 as digital pin 14 through analog input 5 as digital pin

19. Analog inputs 6 and 7 (present on the mini and bt) cannot be used as digital pins.

i2c: 4 (sda) and 5 (scl). support i2c (twi) communication using the wire library (documentation on the wiring website).

POWER PINS: -

- Vin (sometimes labelled "9v"). The input voltage to the arduino board when it's using an external power source (as opposed to 5 volts from the usb connection or other regulated power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin. Note that different boards accept different input voltages ranges, please see the documentation for your board. Also note that the lilypad has no vin pin and accepts only a regulated input.

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- 5v. the regulated power supply used to power the microcontroller and other components on the board. this can come either from vin via an on-board regulator, or be supplied by usb or another regulated 5v supply.
- 3v3. 3.3-volt supply generated by the on-board ftdi chip.
- Gnd. Ground pins.

OTHER PINS: -

- Aref. Reference voltage for the analog inputs. Not currently supported by the arduino software.
- Reset. (diecimila-only) bring this line low to reset the microcontroller. Typically used to add a reset button to shields which block the one on the board.

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Arduino isan open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices. Its products are licensed under the gnu lesser general public license (lgpl) or the gnu general public license (gpl), permitting the manufacture of arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form or as do-it-yourself (diy) kits.

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (i/o) pins that may be interfaced to various expansion boards ('shields') or breadboards (for prototyping) and other circuits. The boards feature serial communications interfaces, including universal serial bus (usb) on some models, which are also used for loading programs from personal computers. The microcontrollers can be programmed using c and c++ programming languages. In addition to using traditional compiler toolchains, the arduino project provides an integrated development environment (ide) based on the processing language project.

The arduino project started in 2005 as a program for students at the interaction design institute ivrea in ivrea, italy, aiming to provide a low-cost and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators. Common

Examples of such devices intended for beginner hobbyists include simple robots, thermostats and motion detectors.

The name arduino comes from a bar in ivrea, italy, where some of the founders of the project used to meet. The bar was named after arduin of ivrea, who was the margrave of the march of ivrea and king of italy from 1002 to 1014

V. CONCLUSION

The smart walking stick, constructed with at most accuracy, will help the blind people to move from one place to another without others help. This could also be considered a crude way of giving the blind a sense of vision. This stick reduces the dependency of visually impaired people on other family members, friends and guide dogs while walking around. The proposed combination of various working units makes a real-time system that monitors position of the user and provides dual. The smart stick detects objects or obstacles in front of users and feeds warning back, in the form of voice making rather than vibration. Also, the incorporation of automatic room equipment switching in the stick will be useful while they are indoor. The advantage of the system lies in the fact that it can prove to be a low-cost solution to millions of blind person worldwide.

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