SMART DOORBELL SYSTEM

Group Name – **HEAR**

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Introduction

The key objective of this project is to aid physically challenged people, particularly deaf through a low-cost device – Smart Doorbell System using Arduino Uno, Arduino Nano, Bluetooth Module (HC-05), Flat Vibrator motor and an OLED screen. How difficult it is live without one of the senses? This question alarms us to the profundity as well as causes us to see that they are so critical to the human body. Our day-to-day travel through the streets of Mumbai caused us to acknowledge one question that was, how terrible is it to live without hearing anything. The basic sounds in our daily life are what makes the day complete, without them one could not even imagine surviving in the hectic lifestyle especially in metro cities. These devices are basically helping the physically challenged people to overcome few of the basic difficulties encountered in their daily lives.

Coming to the main aim of this project, we aim to lend a helping hand to deaf and by providing them with a low cost, portable and easy to use “Smart Doorbell System”. The use of easily available components reduces the manufacturing and maintenance costs. This makes the system an economical, appropriate and a low maintenance solution especially for places and people who cannot invest a large amount of money in this technology.

Motivation

Imagine how difficult and unpleasant it would be to not able to hear anything, the morning birds chirping, the rain drops falling, the ringing of doorbell when the newspaper arrives in morning and many such things. It is quite disheartening and disturbing to even imagine such a situation for few minutes of our life, whereas some people have to deal with it all their life.

Shedding the light on different perspectives we see on deaf people. In the daily society people see deafness as an injury on a human. It separates "impaired" people from the "normal" people. And we, the-hearing-people will kind of feel sorrow for them, or if they "succeed" in the hearing world, we would admire them for conquering this injury. We think that sign language is a replacement for the "real" communication. We are assuming that deaf people are trying to become more of a non-injured person, but it's our duty to make them feel like a normal person, hence we made a project to fulfil their desire of one of the basic sounds i.e. 'doorbell ringing'.

Working

The Doorbell Switch connected to the power supply via an adapter turns the Arduino and the Bluetooth Module ON. The Bluetooth module here acts as the master and goes in Data mode. Similarly, The Assistant Band on the subject's hand is turned ON by a 9v battery, which includes a Bluetooth module, a vibration motor and an OLED Screen. The Bluetooth module over here is in Data mode too but acting as a slave. So, both the Transmitter, i.e., Doorbell and the Receiver, i.e., Assistant Band are now ON but not connected or communicating with each other. After a few seconds the Master Bluetooth module detects the Slave and now the Transmitter and the Receiver are connected to each other wirelessly.

The Doorbell which is connected outside the home is now paired with the Assistant Band on the Subject's Hand and the OLED Screen has a dotted line across it. Whenever a person now rings the Bell, the subject wherever he might be gets an alert on the Assistant Band. This Alarming signal is of 2 types:

1. The OLED Screen displays "OPEN" text.
2. The Vibration Motor also vibrates for a time span of 5-8 Seconds.

The range is up to 10m and these Signals are quite visible and accurate for the Deaf subject to know that someone has arrived at the door.

Existing Technology

Plug-in doorbell kit -

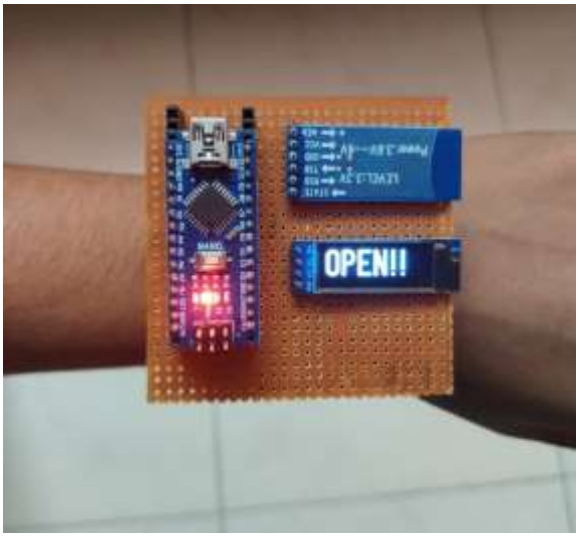
A Plug-in doorbell is a doorbell with built-in strobe light is ideal for hearing impaired or noisy environments and can be plugged into any 120V AC wall outlet.

The price of a plug-in doorbell starts around Rs.5000 in India, whereas in North America is costs around 60$.

There are many more such devices available but the cost is quite high which is sometimes almost equal to a hearing aid. So the edge that we have is obviously the great reduction of cost down to just Rs. 1,499.

Photos

Transmitter and Receiver



Assistance Band displaying "OPEN" Text when doorbell is pressed and the vibration motor vibrates as well.