Smart Commmunicating Wheelchair

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Abstract— **In this project, we have designed a module to be attached in wheel chair that can communicate each other that enables delivery of wheelchairs to the desired location and desired patients without any delay through RF communicating system. Any vehicle that has to be tracked can also made possible through the RF communication system. The method is very cheap and does not undergo serious problems. And therefore we have used RF communication system for explaining the project.**

Keywords—RF, module, communicate, no delay

I. INTRODUCTION

RF wireless communication began at the turn of the 20th century more than 100 years ago when Marconi established the first successful and practical radio waves. In the early years of RF wireless communication radio broadcasting was the most deployed wireless communication technology currently, wireless communication of all kinds of abounds in our society. And here we have applied it in a wheel chair that can be used in public places as well as hospital. In a hospital ,where there are number of wheel chairs available at different locations and the access for those wheel chairs is permitted only for the hospital employees where there is a disadvantage because common people cannot handle it. And also there is an added disadvantage that includes the person from a particular ward who is in need of wheel chair to make a call to the reception and submit their request for wheel chair. Our project is to overcome the above problems by directly communicating with the wheel chair without communicating the reception for the availability and demand for wheelchair. Here we have used RF transmitter and a receiver and an alarm system for the purpose of communication in the wheel chair module. The wheel chair themselves also communicate each other to avoid traffic and confusion of demand from different locations. This enables even a normal person to handle the wheel chair in the absence of hospital employees to take it to the demanding location.

II. DESCRIPTION

A. Components
- RF Transmitter
- RF Receiver
- LEDs
- Alarm System
- Regulator (7805)
- Relay
- Power source

RF Transmitter:
RF transmitter is used to transmit data to the receivers at a frequency of 27MHz that requires a voltage supply of 3V.
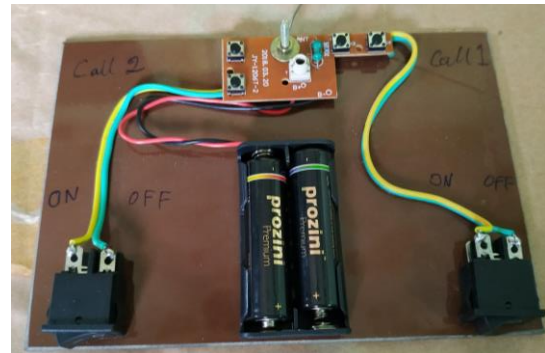Transmitter has been limited to two channels and four channels.

Fig ii.1. RF Transmitter

RF Receiver:
RF receiver is used to receive signals at the same frequency from the transmitter for which a fixed supply of 27Hz is given. Receiver has been limited to two channels and four channels.

Fig ii.2. RF Receiver

LED's:
A light emitting diode is used to indicate the transmitted and received signals from different locations. It works at a frequency of 27MHz.Here different colored LEDs are used to indicate calls from different locations.
Alarm System:

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An Alarm system is a low voltage electrical circuit that is used to trigger a warning signal that works at 27MHz. Here when the signals are received from the transmitter, alarm rings to indicate it.

Regulator (7805):

A Regulator is a device used for controlling or limiting the power supply. It regulates 5V power supply for 27MHz channel frequency from 9V.

Relay:

It is an electrical device activated by current in one circuit to open or close another circuit.

Power source:

It acts as the driving force for the receiver and transmitter module. Typically a 3V and 9V battery is used.

III.METHODOLOGY

A.Working of the wheelchair communicating Module:

Call from the ward:

When there is a need for wheel chair, the patient in any ward .Here the emergency ward then a switch in the particular ward is on and alarm rings in the wheelchairs available in the hospital indicating its need.

Call 1:
The calls in different wheelchairs are indicated by colored LED (GREEN) and an alarm.
We consider two wheelchairs in this project and the communication between them is considered.
When there is a call for wheel chair, it is indicated by green LED in both the wheelchairs followed by an alarm and when a person near the ringing wheel chair is ready to take it to the ward in need of wheel chair, She/he clicks on the switch in the module placed in the wheel chair that transmits information that it is being taken to the ward to the other nearby wheelchairs that prevents confusion among the people taking the wheel chair, which is indicated by means of glowing LED.
And After reaching the destination, the alarm stops by switching off.

Call 2:
Similarly when there is another call for the Wheel chair from a different Location, It is indicated by the glowing LED (RED) and an alarm in both the wheelchairs. Again when a person near the ringing wheel chair is ready to take it to the ward in need of the wheel chair, She/he clicks on the switch in the module placed in the wheel chair that transmits information that it is being taken to the ward to the nearby wheelchair that prevents confusion by same means as before. And after reaching the destination, the alarm stops by switching off.

Color code
- **Green – Call from Emergency ward**
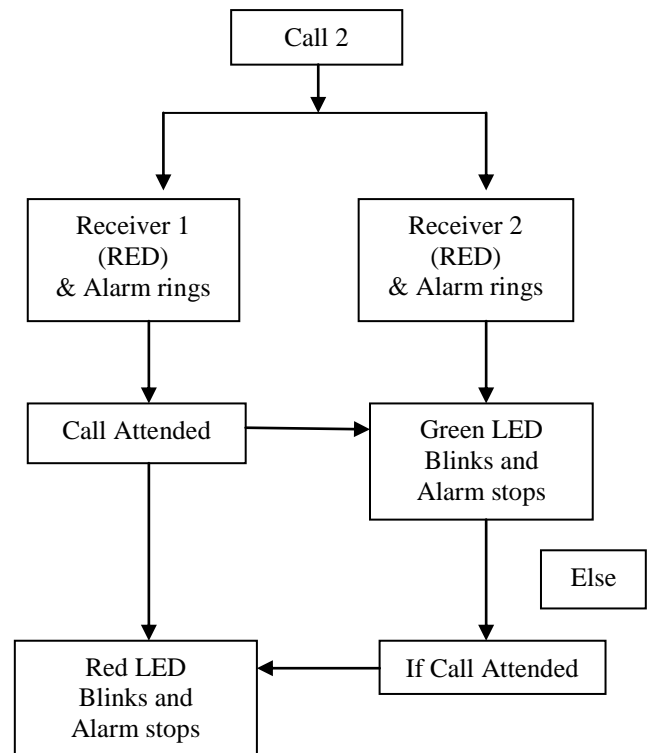- **Red   - Call from General ward**

IV BLOCK DIAGRAM

A) Call (From Emergency ward):
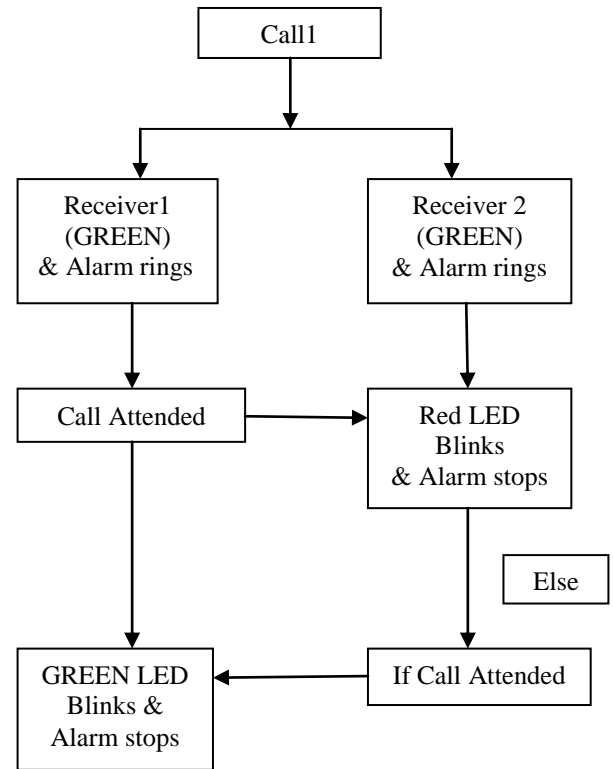
IV 1. Block diagram indicating call 1

B) Call(From General ward)

IV 2.Block diagram indicating Call 2

V HARDWARE MODULE

A) Working:

- The transmitter transmits call when the switch is pressed indicating the demand for wheelchair from emergency ward (call 1) and is switched off.

- Both the receivers at the receiver end which is placed in the wheelchair rings and the Green LED blinks indicating the location.

- A person attending the call presses the switch that indicates the call attended for the particular location and also signal regarding the delivery status is sent to the other wheel chair.

- The other wheel chair blinks without alarming thus indicating the delivery status.

- Once the wheel chair reaches the location the alarm and the signal transmitted is stopped by switching off.

V.RESULTS

We have obtained the results with respect to the call made from a location for wheel chair and how the call is attended and the wheel chair is delivered. This is how the patient is benefitted by quick delivery without any delay.

VI.FUTURE WORKS

In future, the project can be extended as follows.

- The idea can be used for number of wheelchairs that requires multichannel and data transmission can be made easy by programming.

- A digital display can be used that shows the name of the patient and the location along with some maps that shows the shortest path to reach the destination.

- The alarm can be replaced by voice reminding the call and location and the patient name.

- Multichannel transmission is possible with zigbee 2.0 ,GSM and other wireless communication means.

- However the module requires proper maintenance that it should be charged once in a week either through wired or wireless technologies.

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