

Blind navigation system using RFID for indoor environments

Abstract

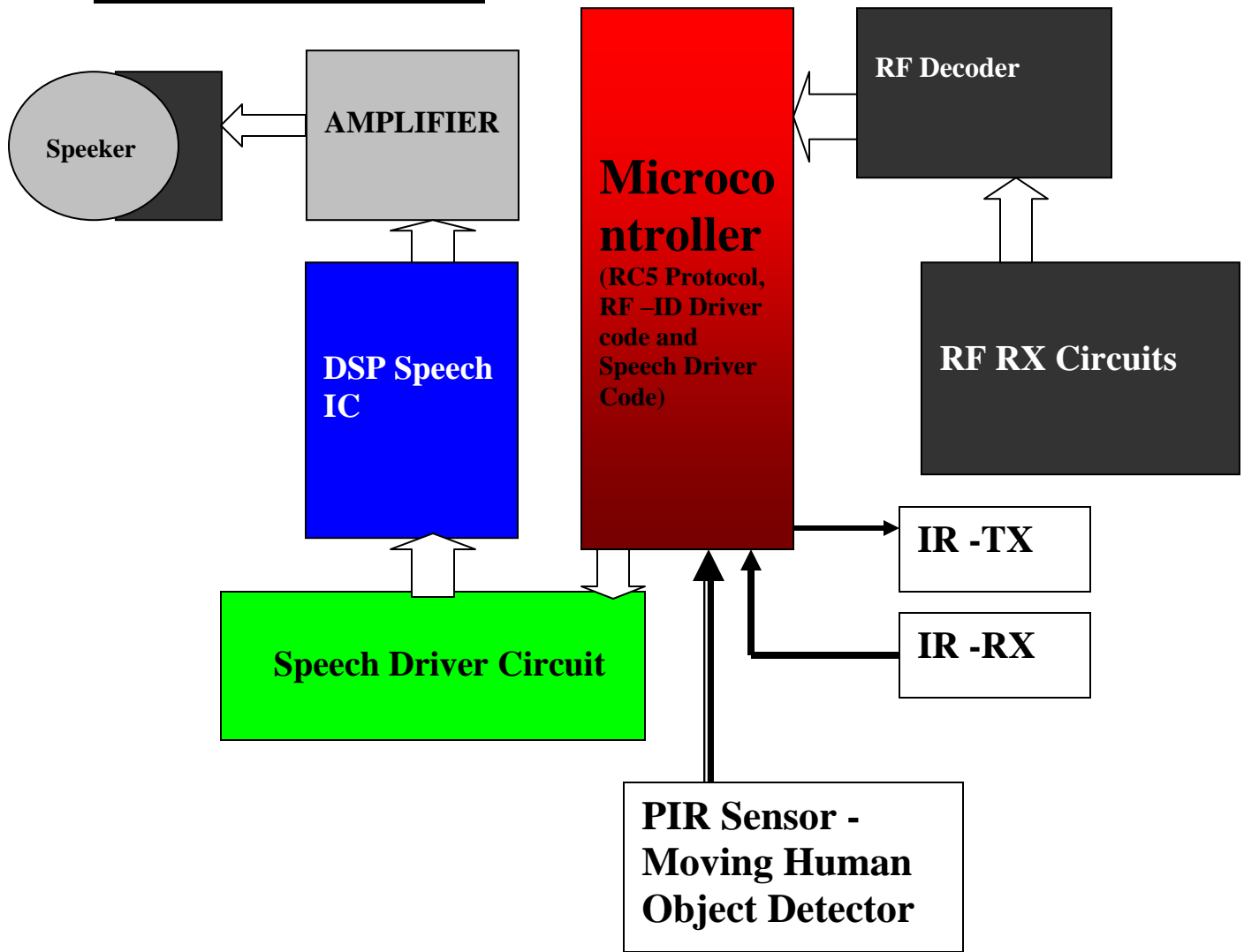
A location and tracking system becomes very important to our future world of pervasive computing, where information is all around us. Location is one of the most needed information for emerging and future applications. Since the public use of GPS satellite is allowed, several state-of-the-art devices become part of our life, e.g. a car navigator and a mobile phone with a built-in GPS receiver. However, location information for indoor environments is still very limited. Several techniques are proposed to get location information in buildings such as using a radio signal triangulation, a radio signal (beacon) emitter, or signal fingerprinting. Using Radio Frequency Identification (RFID) tags is a new way of giving location information to users. Due to its passive communication circuit, RFID tags can be embedded almost anywhere without an energy source. The tag stores location information and gives it to any reader that is within a proximity range which can be up to 10–15 meters for UHF RFID systems. We propose an RFID-based system for navigation in a building for blind people or visually impaired. The system relies on the location information on the tag, a user's destination, and a routing server where the shortest route from the user's current location to the destination. The navigation device communicates with the routing server using GPRS networks. We build a prototype based on our design and show some results. We found that there are some delay problems in the devices which are the communication delay due to the cold start cycle of a GPRS modem and the voice delay due to the file transfer delay from a MMC module

Description:

This System having three different modules,

- 1) Blind RF-ID Module
- 2) Room RF-ID Tag Unit:
3. IR TX Sensor for Object Type and Range Sensing Unit

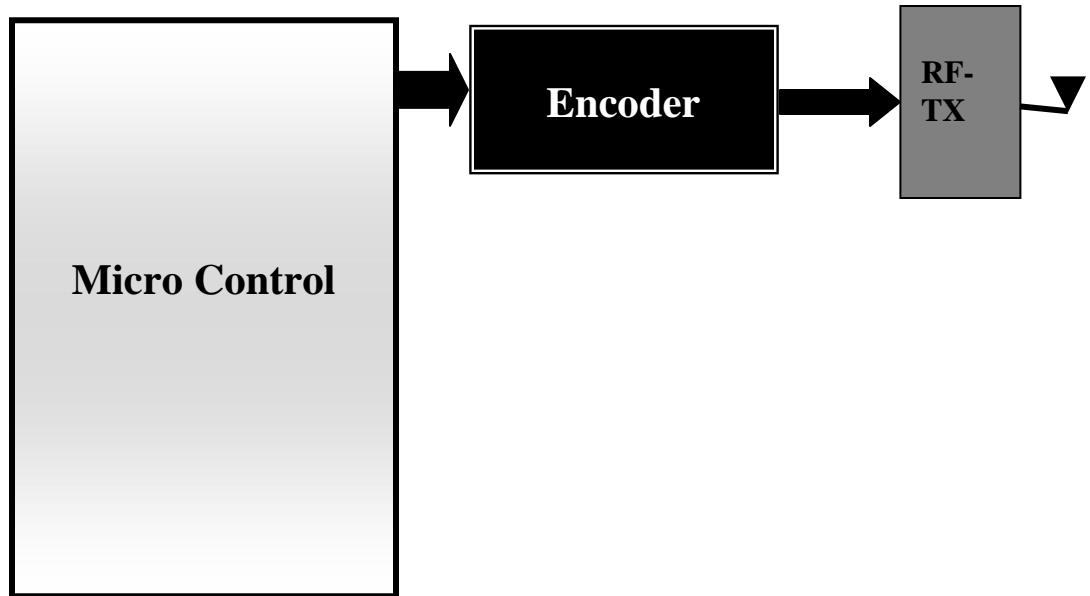
1. Blind RF-ID Module:



This System will Tracking the Room Direction, Object Type and Direction and Moving Human Object Sensing Unit.

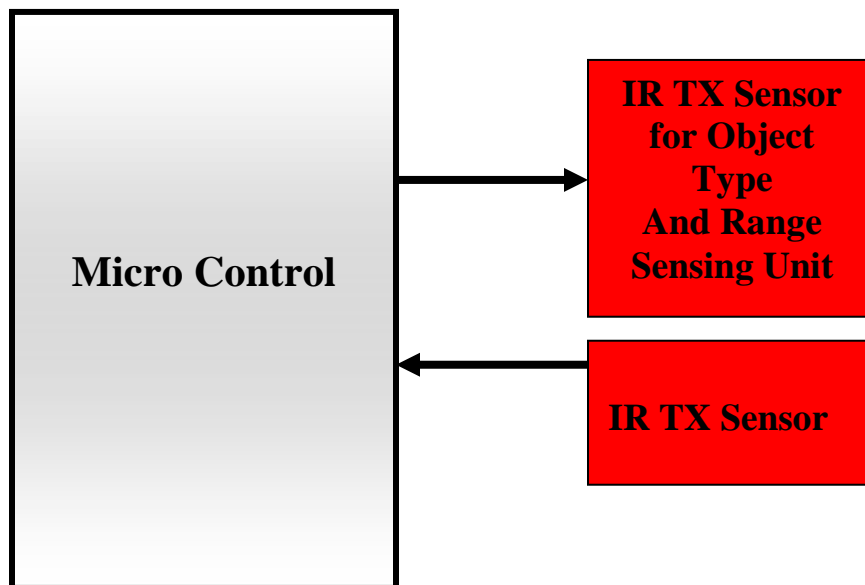
- 1) Always the IR will transmit the ID pulse to straight direction. Whenever the IR will receive the ID of each object then the Microcontroller will receive the ID and decode the pulse.
- 2) The Each Decoded pulse will select the speech Data from RAM of Speech IC.
- 3) PIR will detect the Human based object with in 2 meter or 1meter distance.
- 4) RF-ID is used to receive the room number then select the Speech data through Speech driver circuit.

2. Room RF-ID Tag Unit:



Always this unit will transmit the RF ID- Room type and direction of Code by 433MHZ frequency.

3. IR TX Sensor for Object Type And Range Sensing Unit



Always this unit will transmit the IR Object ID-Code through RC5 Protocol by 38KHZ frequency.

1. Blind RF-ID Module

This is divided into two different modules,

- a) RF-ID
- b) IR-RC5 Protocol
- c) PIR –Human Detect

Advantage of these Systems:

- 1) Automation of all CUSTOMER to communicate through remote GSM using mobile
- 2) Save data using automatic control systems
- 3) Less cost to communicate
- 4) Less power to automate
- 5) Increase Safty
- 6) To increase n number of person to communicate and automate.
- 7) Easy and fast identification system

Demerit:

- 1) This system will support less distance.
- 2) It won't Sense Long Distance object.

PROPOSED SYSTEM:

- 1) This system will support all type of object to identify the blind.
- 2) Less cost
- 3) Signal will support all places.
- 4) Portable
- 5) Wireless communication
- 6) It won't affect any other defects of human being.
- 7) The blind will not depends the help from any others.

Existing System:

- 1) It won't support Speech identification. (Alarm Based)
- 2) No direction based
- 3) All type of blind navigation is outdoor based.