SMART BUS

ABSTRACT

The purpose of the project is to help the long distant bus travelers

Smart bus consist of three major units

1. Counting the number of seat available
2. Automatic door control
3. Location and location based advertisement

Seat counter

Seat counter will display the number of seats available inside the bus and it will be displayed at the entrance of the bus

Automatic door control

The entrance door will be open when the bus stops, only if vacant seats are available, this will prevent over loading. The exit door will be open when the bus stops which will allow the passengers to exit the bus

Location and location based advertisement

With help of global system for mobile communication(GSM). The location and the location based pre-loaded advertisement will be displayed inside the bus. This will help the new comers to know the place also the passenger at night time. The location based advertisement along with this helps the travelers to know about the main shops, shopping complex, institutions etc..

1. INTRODUCTION

Long distant travelers face so many problems like rush, over load, difficult to identify the place. Our project SMART BUS overcomes these problems. The SMART BUS consists of three major parts vacant seat display, automatic door control, location and location based advertisement.

We have already seen the cases of accident due to over load. Here we are enabling only the fixed amount of people (ie , seat capacity of the bus) to get into the bus by closing the entry door when there is no vacant seats. The number of seats available will be displayed at the entry door of the bus. So that, who are waiting for the bus can easily identify whether the seats are fully occupied or not. Two infrared sensors are used to sense the incoming and outgoing of people and hence to calculate the vacancies.

Doors are controlled automatically. When the bus comes to rest the exit door automatically opened and allows the passenger to leave the bus, the entrance door gets open if and only if vacant seats are available. A proximity sensor is use to determine whether the bus is in motion or stationary.

By using GSM we are providing name of the location in the display placed inside the bus. this will helps the travelers to identify the location. This will be more helpful for the newcomers, also while travelling at the night time during raining. the location based advertisements (pre-loaded) will provides the details of main shopping complexes, shops, institutions, etc..

The overall system is controlled by PIC 16F877A.

3. BLOCK DIAGRAM

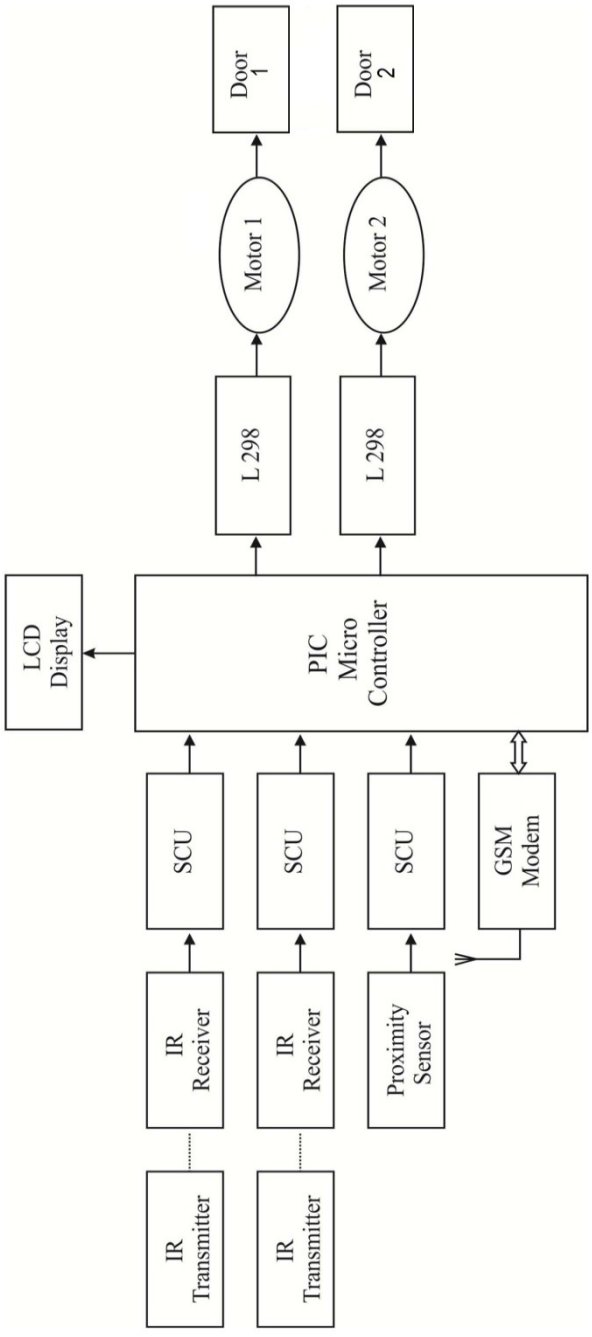

Fig 3.1

4. BLOCK DIAGRAM DESCRIPTION

IR transmitter and receiver

The two infra red (IR) receiver and transmitter placed at the entry and exit doors sense the entry and exit of passengers respectively with the help of SCU (signal conditioning unit), this is sent to the micro controller. When a person is entered the micro controller deducts 1 from the vacant seats, and when a person leaves the bus, microcontroller adds 1 to the vacant seats. This is displayed on a lcd display placed at the entry door.

Signal conditioning unit

The signal conditioning unit accepts input signals from the analog sensors and gives a conditioned output of 0-5V DC corresponding to the entire range of each parameter. This unit also accepts the digital sensor inputs and gives outputs in 10 bit binary with a positive logic level of +5V. The calibration voltages* (0, 2.5 and 5V) and the health bits are also generated in this unit.

Proximity sensor

The proximity sensor sense the motion of the bus, when the bus comes to rest, it sent a signal to the micro controller with the help of SCU. Using the DC motors placed at the doors, microcontroller controls the door. The back door of the bus gets opened whenever the bus stops, while the front door(ie the entry door) will be opened only if vacant seats are available.

GSM modem

Using the GSM modem, micro controller collects the name of the place where the bus is. This is collected from the mobile communication towers, which is in the form of numerical codes, this can be decoded if we know the codes. This will be provided by the network providers. The name of the place is displayed on an LCD screen placed inside

the bus by the micro controller. Also, the pre-stored advertisement is displayed along with this according to the place.

The main advantages of this project are, over loading is not allowed, passengers are aware of places, seat availability etc, no need of door operators, less stress for the travelers.