Study Article/March 2016/Volume-4/Issue-3/5374-5377 **ISSN 2321-5461**

INTERNATIONAL JOURNAL OF REVIEWS ON RECENT ELECTRONICS AND COMPUTER SCIENCE

AUTOMATED METRO TRAIN LEAVE AND ARRIVE SYSTEM BASED ON AT89C51 MICROCONTEROLLER

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ABSTRACT:

The main aim of this paper is to make an automated place announcement system for Train using voice IC and the radio frequency wireless card for tracking the station data. The paper consists of microcontroller with the RF receiver and the voice recorder chip with speaker .The whole system is attached tothe vehicle (BUS or Train). The encoded RFID tags are placed in the BUS stops or the railway stations. The microcontroller in the TRAIN is programmed in such a way that every station name saved in the voice chip which is having a unique code. So whenever the bus or train reaches the station, the reader in the bus or in the train receives the codes, which are transmitted from the tag and the microcontroller receives this code and checks in the look up table, saved in the chip. Whichever matches, the controller will send the command to the voice chip to play that particular voice. At the same time the train stops for about 10-15 seconds in the station and then before leaving the station, it will again start to announce "PLEASE GET INTO THE TRAIN, THETRAIN WILL LEAVE IN 6 SEC" and the train starts to move to next station. The voice chip will play the voice and this will be heard in the speaker. This voice is repeated till the train leaves the station.

Keywords: BUS, STATION, TRAIN, MICROCONTROLLER, RFID.

1. INTRODUCTION:

The automated system for a metro rail is an integrated application which makes announcements and displays the relevant station information when the train reaches a particular station. The implementation of the paper is based on Radio Frequency Tags and corresponding readers. Serial communication, non-volatile memory storage, voice chip implementation and others aid in bringing out the desired functionality. This embedded application mainly focuses on overcoming loop holes in the existing system. It is optimized to meet the cost and power consumption requirements [1].

Existing vs. proposed systems

The existing system involves announcing the arrival and departure information manually in a particular station while the proposed one is an automated system with very limited human intervention. The proposed system uses relatively less expensive Tags which reduces the cost parameter of the system.

Survey on various Metropolitan Rail networks in the country:

Fig.1.Metro Rail prototype

Few of the metro train networks in the country are as follows:

1. Delhi Metro Rail Corporation Ltd. (DMRC)
2. Kolkata metro rail.
3. Mumbai Metropolitan Regional Development Authority (MMRDA).
4. Namma Bangalore Metro Rail Corporation.

i. Delhi Metro Rail Corporation Ltd. (DMRC)

The city of Delhi with a population of round 12 (16.2) million should have had an MRTS network of at least 100 (300) KM by this time, whereas actually it is still (65.10 kms) at the take-off stage. Delhi has all the ideal dress-up for an excellent Mass Rapid Transit System to be brought in. It has wide roads (roads cover 23% of the city area) where road possession for construction is not difficult (except in the old city area). Implementation will also not involve demolition of large scale private properties. Most of the land required is under Government control and hence can be easily acquired. Government of India and the Government of National Capital Territory of Delhi, in equal partnership have setup a company named Delhi Metro Rail Corporation Ltd. under the Companies Act,1956 which has (already commissioned a 65.10 kms route in Phase-I and is proceeding ahead with another 121 kms in Phase II).

The project update is as follows:

Table 1.DMRC Project update

Fig.2.Delhi Metro Rail Corporation building unit at Badarpur

2. KOLKATA METRO RAIL

The burgeoning transport problem of Kolkata drew the attention of the city planners, the State Government and also the Government of India. It was soon realised that something had to be done and done fast to cope up with the situation. It was Dr. B.C. Roy, the then Chief Minister of West Bengal, who for the first time conceived the idea in 1949 of building an Underground Railway for Kolkata to solve the problems to some extent [2][3]. A survey was done by a team of French experts but nothing concrete came out. Efforts made to solve the problem by augmenting the existing fleet of public transport vehicles barely touched the fringe of the problem as the roads account for only 4.2% of the surface area in Calcutta as compared to 25% in Delhi and even 30% in other cities

3. MUMBAI METRO BY MMRDA

Main objective is to provide a rail based mass transit connectivity to people within an approach distance of 1 to 2 K.m ; to serve the areas not connected by existing Suburban Rail System [4]. To provide proper interchange facilities for connectivity to neighboring areas like Thane, Navi Mumbai, andVasai – Virar etc)

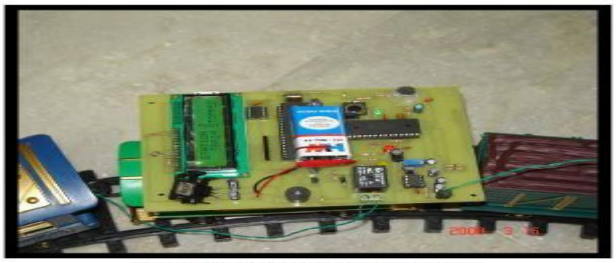

Fig.8. PCB mounted on the engine of the train

Fig.9. 5X5 feet circumference track with the train prototype

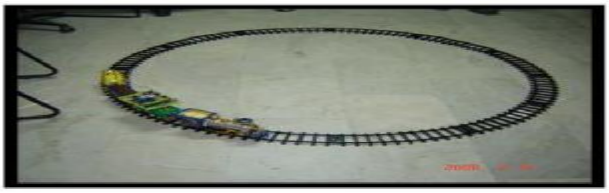

Fig.10. RFID Tag placed under the tracks

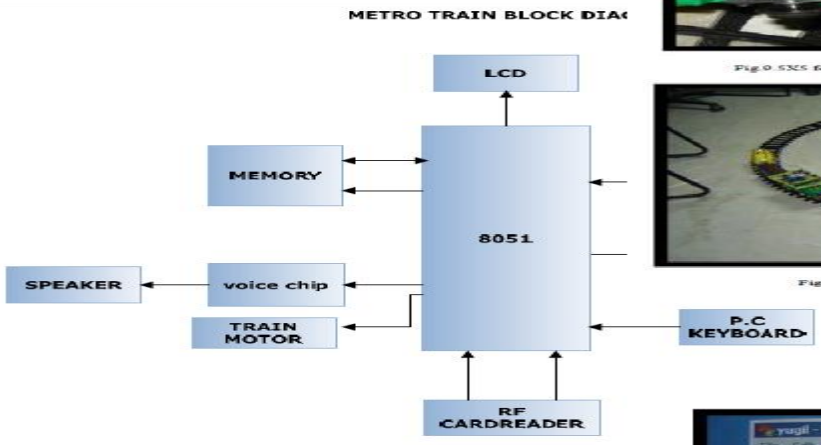

Fig 5: Basic Block diagram of the Metro Train P

4. SNAPSHOTS:

The following are few snapshots of the working model at our workplace, United Telecom Ltd., Hyderabad

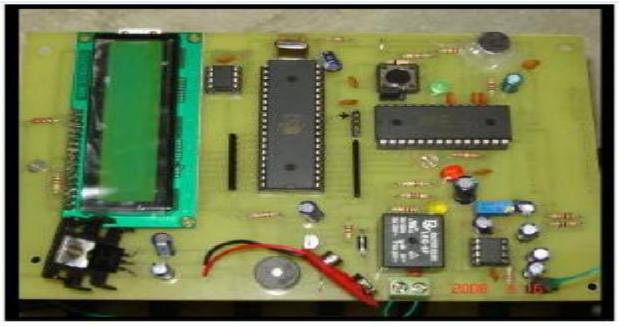

Fig 7. PCB showing controller and interfaced components

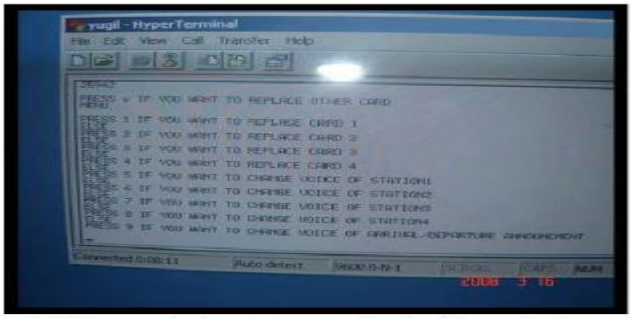

Fig.12. Hyper-terminal showing the menu options in serial communication module

4. CONCLUSION:

This paper aims at an automated system to make announcements and display at stations codes. Finally as a part of a project we can implement an automatic door opening system in feature by interfacing a dc motor to the micro controller. The main aim of this project is to make an automated place announcement system for Train using voice IC and the radio frequency wireless card for tracking the station data. It can be extended to any number of stations.

BIBLIOGRAPHY:

[1] Microcontroller projects in C for the 8051by Dogan Ibrahim

[2] The Microcontroller Idea Book: Circuits, Programs & Applications by Jan Axelson

[3] The 8051 Microcontroller and Embedded Systems: Using Assembly And C by Muhammad Ali Mazidi, Rolin D. McKinlay

[4] PIC Microcontroller and Embedded Systems: Using Assembly and C for PIC18 by Muhammad Ali Mazidi, Rolin D. McKinlay,Danny Causey