Advanced Security System Using Speech Processing

Sameer Dhanorkar, S.M.Kulkarni
Padmabhooshan Vasantdada Patil Institute of Technology, Pune, MS-India

Abstract - As good citizens, we have a fundamental duty to contribute towards bringing an order to ensure dignity and respect for women so that she can also enjoy her human rights and fundamental rights with sense of pride, confidence and freedom. To ensure this at every level the society must work together to give an edge to the solution.

This paper give the how we can increase safety of women under any critical condition. So doing such arrangement ie a cab tracking system along with voice recognition system gives the higher security level. Cab tracking include simply finger print scanner, GPS, GSM. And base station contain a server pc that having employee identity and GSM along with speech processing unit for particular speech recognition so that immediate action should be taken.

Keywords - *ARM7 TDMI-S LPC2138, Finger Print, GPS, GSM, Wireless Monitoring Station.*

I. INTRODUCTION

Women in India-a better half of Indian culture, today, are becoming the most susceptible section as far as their safety and defense is concerned. When we rotate the pages of a newspaper, we approach across many headlines reporting cases of sexual attack, molestation, sexual trouble, rapes, trafficking, ill conduct of women in houses, violence against women in distant areas etc. What does this signify? This certainly implies that there has been an increasing tendency of such sexual overdrives in current generation. Our supreme law of land i.e. our Indian Constitution has envisage a dream of true communal, economic and political democracy which guarantees the rich and moral principles of equality (of status, chance, law) for our people but this has not yet been fully realized. Still our better halves are risky and unsecure towards the realization of freedom and liberty. It's unbearable to visualize the plight of women who are sufferers of such crimes. It's a jerk on the confidence of the women, of society and on our legal system. Besides it has much of cascading things which affects her life.

To guarantee this at every level the society must work jointly to give an edge to the solution. For e.g. women could be provided with such devices which could provide her position using GPS technology to a central control room of police or send messages of her address to close by locations. But this requires a lot of effort relating to scaling the enrollment of women bio data viewing her photographs and her permanent or provisional address into a national database system. Other area of interest would be change in police system. Distribution of women police in every area and their constant monitoring which also requires participatory attitudes of govt. Such interventions can also be a precautionary solution. This also requires setting up of CCTV cameras at strategic spaces, beefing up the police security systems and strictly monitoring them. In today's world as the population increases day by day the numbers of vehicles also increases on the roads and highways. This effect in more accident that interns leads to the traffic jams and public catch help instantaneously.

This module provides information concerning the accident to the hospital and police station. As a result sudden help public life may save and the traffic jams are reduced. To develop the level of supervision and management for cargo transport vehicles, specially trucks carrying coal it is essential to develop transport vehicles distant monitoring module .A server computer at the (remote) monitoring station, that is constantly waiting for data from the system, should trace the actions of the vehicle into a database. This contains the information regarding Vehicle position, velocity, identity and temperature in two fashions. The information given to monitoring station is in continuous way and when the accident occurs. The improvement of vehicular design brings public much convenience in life but also brings many troubles at the same time, for example, traffic jamming, difficulty in monitoring dispersive vehicle, stealing and other series of problems. We are projected to made this monitoring wireless using ARM7 hardware platform ported with real time operating system

II. DESIGN OF EMBEDDED SYSTEM

A. Design of Embedded Hardware System

The Circuit works in the way that a certain employs has particular employ ID traced by finger print scanner and vehicle get activated such as vehicle coordinates send to the server pc and vehicle allow to start. Vehicle is equipped with instruments like ARM-7, GPS, GSM, Keyboard matrix, LCD display and some emergency keys. And MATLAB is provided to do speech processing and take immediate actions. The Embedded hardware system architecture is shown in Figure1. The GPS receiver section interfaced with UART1 of ARM processor provides speed and position information. The identity of a vehicle is fixed that is saved in a flash memory of a processor. The Finger print scanner is interfaced to an ADC1 of ARM processor. Vehicular speed, positions are stored in ROM. All this information are displayed on LCD that is interfaced with a GPIO0 and send it to a monitoring station (receiver side) by GSM module wirelessly that is interfaced with UART0 of ARM processor. Also the same information is given to a concern person to get that information anywhere anytime. The module requires GSM SIM (Subscriber Identity Module).

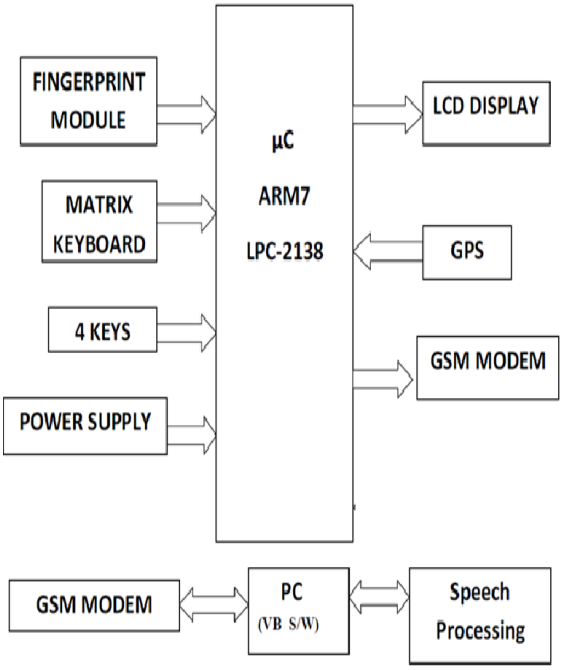


Fig.1. Embedded hardware system

B. Design of Software

KeilµVision4 IDE (Integrated Development environment) is a Windows based front end for the C Compiler and assemble. KeilµVision4 is used for writing embedded C programs. Embedded C is a high level language, which includes many aspects of the ANSI (American National Standard Institute) C programming language. Standard libraries are altered or enhanced to address the peculiarities of an embedded target processor. The analog signal from this module is applied to the on-chip peripheral ADC0. This ADC0 is configured as a 10-bit output data which gives high precision compared to the 8-bit microprocessors. This digital data is transmitted through UART1. UART1 transmits the data 8-bit at a time. These digital values are transmitted to GSM module through UART1. Speech Recognition Using MATLAB (based on Pattern recognition)

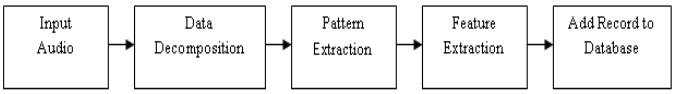


Fig.2: Procedure for Speech Feature's extraction**.**

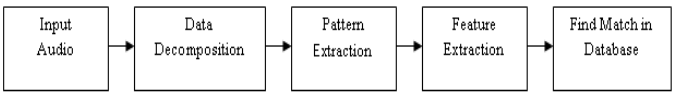


Fig.3: Procedure for Speech recognition.

Pattern recognition aims to categorize data (patterns) based on either a priori knowledge or on statistical information extracted from the patterns. The patterns to be classified are typically groups of measurements or observations, defining points in an suitable multidimensional space. This in contrast to pattern matching, where the pattern is strictly specified. A whole pattern recognition system consists of a technique that gathers the observations to be classified or described; a feature extraction mechanism that computes numeric or symbolic information from the observations, and a classification or description scheme that does the real job of classifying or describing observations, relying on the extracted features.

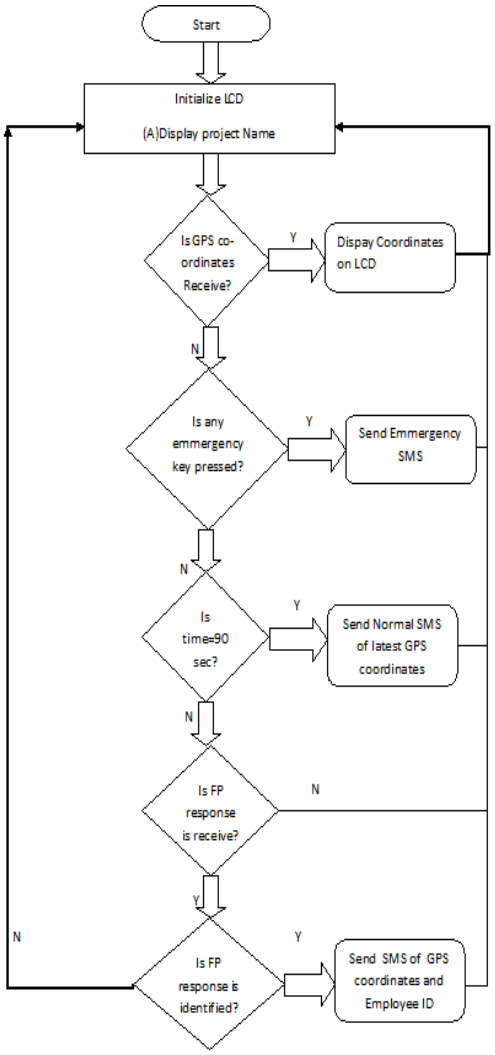


Fig.3. Project flow of System

III. RESULTS

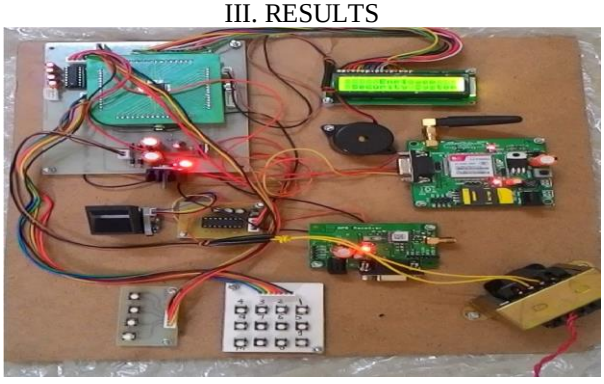
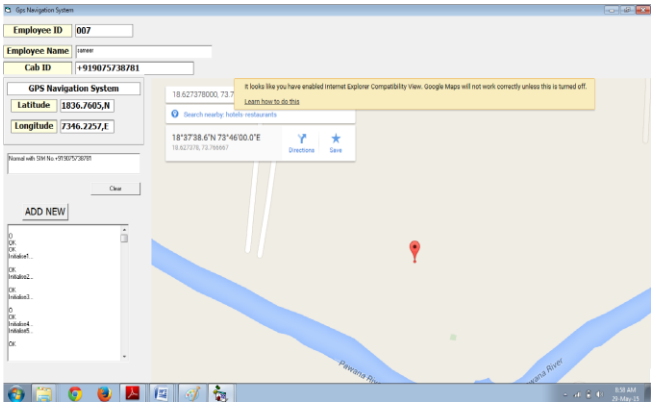
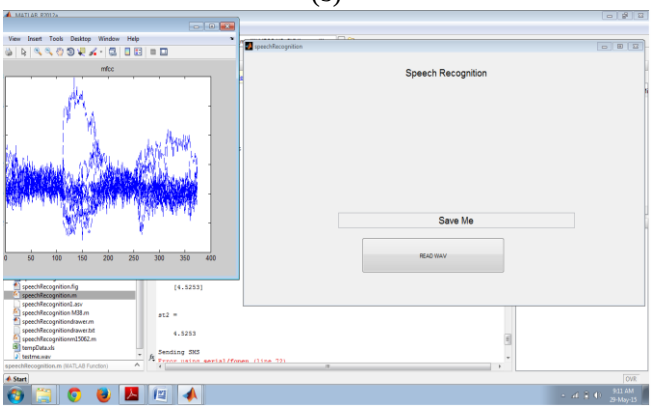


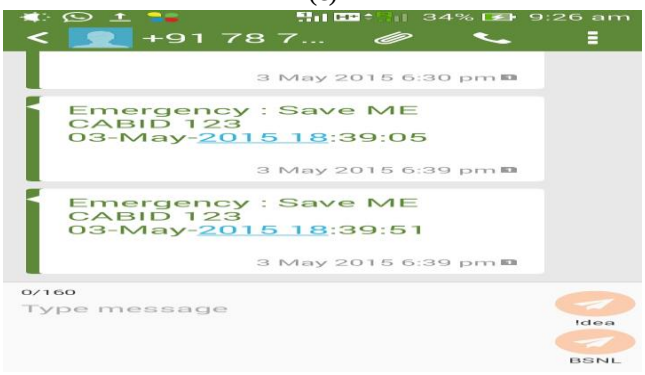
Fig.5 (a)



(b)



(c)



(d)

IV. CONCLUSION

The system can provide enhanced customizability, global operability and expenditure when compared to existing solutions. For future work, further design on multilayer PCB can be undertaken to decrease the wires on the prototype. The reliability of the system can be enhanced and additional features can also be added. Once the system is complete, the vehicle tracking system has the potential to be commercialized as a separate product since its effectiveness is quite popular.

The Vehicular System provides information of a vehicle like velocity, location, through a GPS module and identity of a vehicle to a monitoring station and to a mobile phone according to a definite event stored in a program or a query from a monitoring station. The monitoring station show these information on GUI also stored these information in database for advance process according to a program. The system is useful in much application such as supervision, security, tracking, which may be installed in cargo trucks, cars, motorcycle, and boat. The system can be used in many applications.

V. REFERENCES

[1] Zhang Wen, Jiang Meng " Design of Vehicle positioning System Based on ARM", Business Management and Electronic Information (BMEI), International Conference 2011 IEEE.

[2] Lu Xutao1, Cui DongSen2" Design of Transport Vehicles Remote Monitoring System", 2nd International Conference on Education Technology and Computer (ICETC). 2010

[3] Peng Chen, "ShuangLiu, Intelligent Vehicle Monitoring System Based on GPS, GSM and GIS", WASE International Conference on Information Engineering. 2010

[4] Hui Hu, LianFang, published a paper title "Design and Implementation of Vehicle Monitoring System Based on GPS/GSM/GIS", Third International Symposium on Intelligent Information technology Application. 2009

[5] M.AL-Rousan, A. R. AI-Ali and K. Darwish, published a paper title" GSM-Based Mobile Tele Monitoring and Management System for Inter-Cities Public Transportations", International Conference on Industrial Technology (ICIT).This paper presents a Tele-monitoring.2004 IEEE.

Sameer Dhanorkar received the B.E degree in E&TC from SGBA University, India. He worked withVPSCET,(MS), India. His area of interest are Embedded systems, Digital Systems.

Mr. S.M. Kulkarni working as Asst. Professor in E&Tc. Dept. at PVPIT, Pune (MS). Completed B.E.(Elex) and M.E.(Elex) from Shivaji university, Kolhapur. He has 26 Years of teaching experience. His areas of interest are Image and video processing, Power Electronics, analog circuits. He is Pursuing Ph.D. from JNTU, Kakinda (A.P.), India.