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Technology Demonstration of General Black box Standard for Automobiles (GBSA)

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ABSTRACT
GBSA is an upcoming proposal towards Automobile industry and to the federal governing bodies around the world. Here we are intent to create a disciplinary system to save city sons from accident death and to abolish insurance piracy. The proposal is actually developed from the loss of mankind in society but pulled by technology and humanity facts..
Keywords – GBSA, General Black box Standard for Automobiles

I. INTRODUCTION

The GBSA is a automobile security cum safety system that records surrounding parameters immediately at the time of accident. At the time of accident the device read out the GPS position / location information and communicates it with server. The server can translate the GPS co-ordinates to life service destinations like registered insurance companies, Police/ Rescue forces etc.

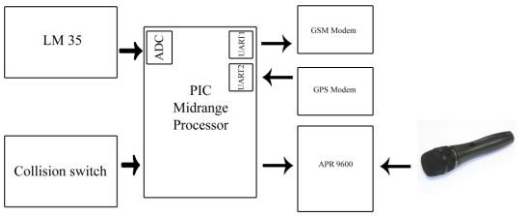

Fig 1 : Block Diagram of GBSA

II. OVERVIEW OF GBSA

The system is buildup on a eight bit PIC Microcontroller PIC 16F877A. The PIC 16F877A is a midrange RISC microcontroller with modified harvard architecture. Our design utilize Analog to Digital Converter (ADC), Addressable Universal Synchronous Asynchronous Receiver Transmitter (UART), Digital I/O modules of PIC Microcontroller.

III. HARDWARE DESIGN

A simple push button switches representing airbag sensing and is connected to digital I/O pin. LM 35 get act as the surrounding temperature. We use the service of a dedicated Single-Chip Voice Recording & Playback Device APR 9600. A TTL GPS Module gives the location information to the microcontroller through receiver pin Rx which is configured at 9600 baud rate. The microcontroller's Tx pin is connected to a GSM Modem through a MAX 232 (TTL to RS 232 level shifter).

IV. OPERATION OF GBSA

The safety part of GBSA is as follows. If air bag sensor switches hits / activated then the Microprocessor automatically reads the GPS information by gathering information from GPS Modem. The information is then passed to the server as GSM SMS. The SMS is read out at server using Matlab and locate the location from coordinate information using a web application developed in Drupal (PHP/HTML) Platform. The web application gives the exact place information to Matlab. The Matlab passes these place name text to the insurance companies, Police/ Rescue forces etc as GSM SMS.

The system expects the good integration of accident rescue from the part of Accident rescue authority. Thereby we have to bring early medical care to the victims and avoid death.

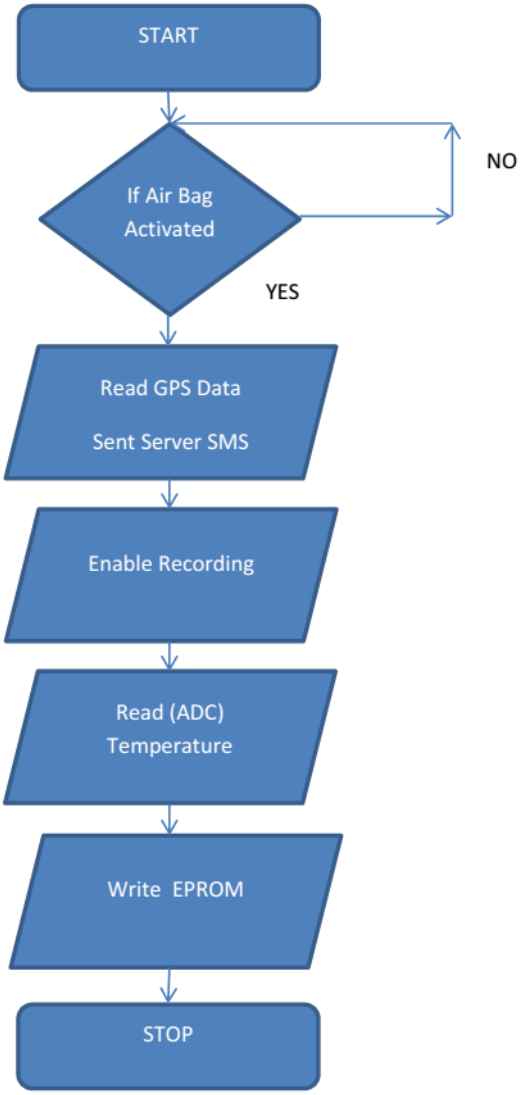

Fig 2 : Flowchart of GBSA Hardware

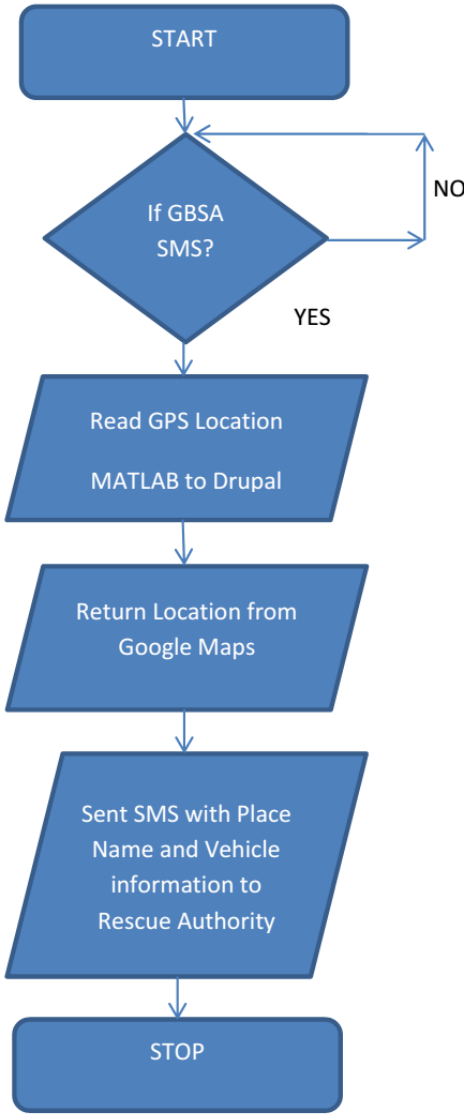

Fig 3 : Flowchart of GBSA Server

The security part of GBSA is as follows. If air bag sensor switches hits / activated then the Microprocessor automatically issue command to record the voice to the Chip Voice Recording & Playback Device APR 9600. It also samples the ADC value and reads the temperature six times and stores the calibrated value to six EEPROM memory locations.

The data reordered can be retrieved from the GBSA box by a technically trained man. These features provide securities to the system. By analyzing these data forensic investigating team can get an idea about accident. .

V. SOFTWARE TOOLS USED

We used MPLAB IDE for PIC Programming; OrCAD is used for PCB Designing, MATLAB is used for Server Modem Interfacing, Drupal is used as web service to translate co-ordinate to places, We used Google Maps for co-ordinates conversion.

VI. CONCLUSION

The GBSA technological demonstration aims at the use of technology for the safety and security of mankind. Currently Automobile industry adopts various technological updates from high end electronics. I am expecting the realization of GBSA will occur in automobile industry on coming years.

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