

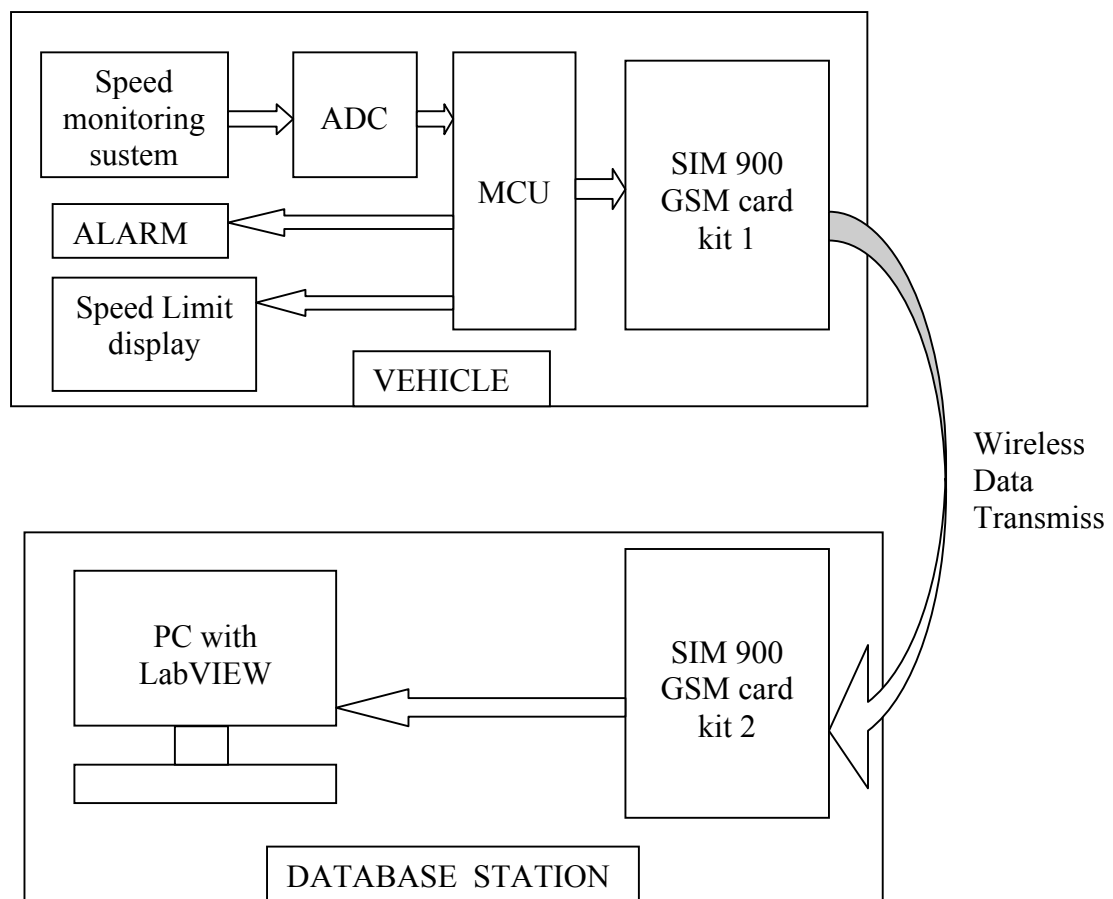
VEHICULAR DATABASE MANAGEMENT SYSTEM FOR ACCIDENT AVOIDANCE USING LABVIEW

❖ ABSTRACT:-

The prescribed method focuses on the development of a Vehicular Accident Avoidance System by monitoring vehicles' physical parameters such as speed and warns the driver. In limit exceeding cases, the system gives signal to driver using Analog/Digital Communication Techniques and prevents the driver from over speeding.

At times due to various factors like over-speeding, rash driving; accidents are more prone to happen. The system proposed aims to provide autonomous communication to the driver as well as to the Police Authorities so as to provide quick alert. If driver still violates the speed and exceeds the threshold of maximum allowable “count” then the license of the driver will be cancelled permanently.

❖ BLOCK DIAGRAM:-



❖ EXPLANATION:-

1. **The speed monitoring system:** This system consists of a vehicular speedometer which may be analog or digital.
2. **Analog to Digital converter(ADC):** If the vehicle is having an analog speedometer then it is require to convert the analog speed value to digital value for further process. If speedometer is digital then ADC can be omitted.
3. **Microcontroller(MCU):** This is heart of the system which accepts the speed limit value from local mobile station tower via SIM 900 GSM card kit and gives the signal to speed limit display block in order to display the speed limit value on a dashboard of a vehicle. The microcontroller also takes digital speed from ADC and compares “current speed of vehicle” with the “speed limit value”. If current speed of vehicle is greater than speed limit value then for 20-30 seconds violating the speed limit is allowed (since there may be overtaking which will require more speed for some time only say for 30 seconds). If driver still violets the speed limit after 20-30 seconds then a warning will be sent to driver by buzzer. At the same time, microcontroller sends the signal to add a “count (which is zero initially)” in the driver’s account where his database is maintained. The signal is given to database station wirelessly by means of a SIM 900 GSM card kit 1.
4. **SIM 900 GSM card kit:** this kit accepts the signals from mobile tower and gives it to microcontroller. It also takes the signals from microcontroller and gives it to mobile tower. The interface used is simple serial cable.
5. **PC with LabVIEW:** At the database center, the database of each car driver is maintained. The LabVIEW is interfaced to SIM 900 GSM card kit 2 via a serial cable. If it receives a warning signal from microcontroller via SIM 900 GSM card kit 1 then it increases the “count” to 1 from 0. Likewise whenever LabVIEW receives this warning signal, it keeps increasing the “count” value (which implies that no of times the driver has violated the speed limit equals to “count” value). If

this count value exceeds “threshold” value (for ex. 10) then license of driver will get cancelled permanently. LabVIEW sends “BLOCK” signal to vehicle via SIM 900 GSM card kit 2. The SIM 900 GSM card kit 1 receives this message and gives it to microcontroller. Finally microcontroller can be programmed in such a way that once it receives “BLOCK” signal then it prevents ignition of vehicle next time when driver tries to start it again.

❖ **BENEFITS OF THIS SYSTEM:-**

1. Any microcontroller can be used.
2. This system is very cheap (max 50\$ per vehicle) so it can be afforded by anyone having any type of vehicle.
3. It accepts the speed limit values of respective roads. i.e. if you are on a highway then it will display “speed limit=80” on the dashboard of vehicle. If your vehicle enters some city area where less speed is allowed then the system updates the limit value and it will display “speed limit=50”. So driver will be required to decrease the speed.
4. It is very easy to modify the standard speed limit values whenever required. (i.e. on a highway if maintenance is going on then we can change the standard value from 80 to 50 for that region as and when required).
5. The main aim will be achieved which is to decrease accidents due to over speed of vehicle.
6. This system will not be fitted in the emergency vehicles like ambulance, police and fire fighters or military vehicles.

❖ IMPLEMENTATION:

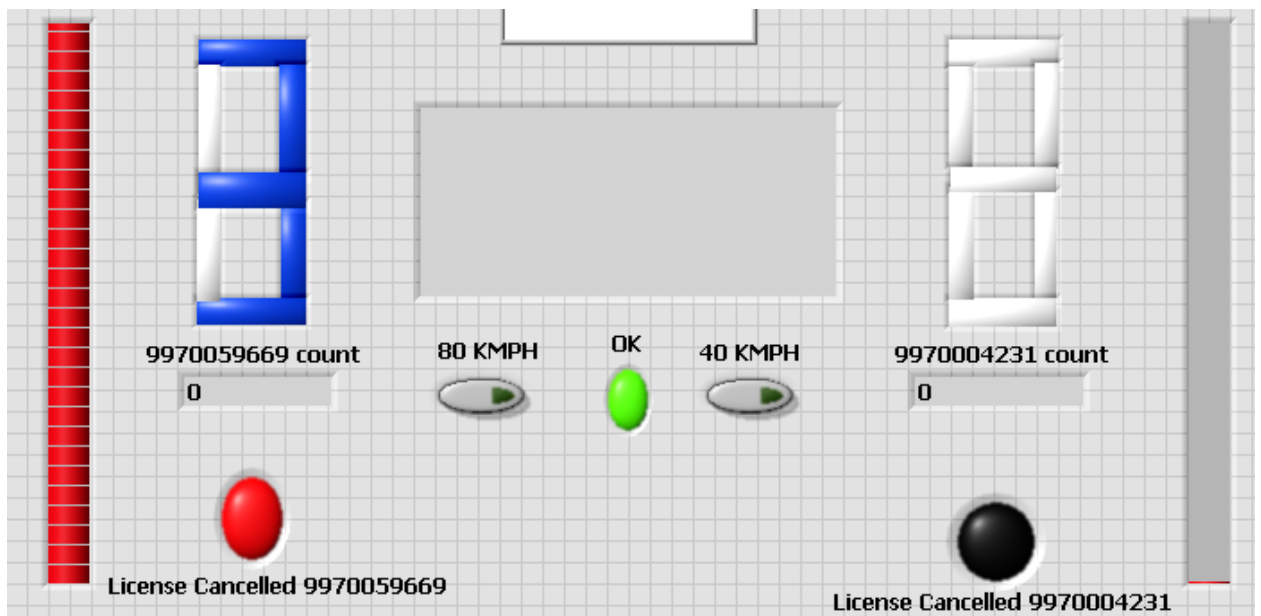
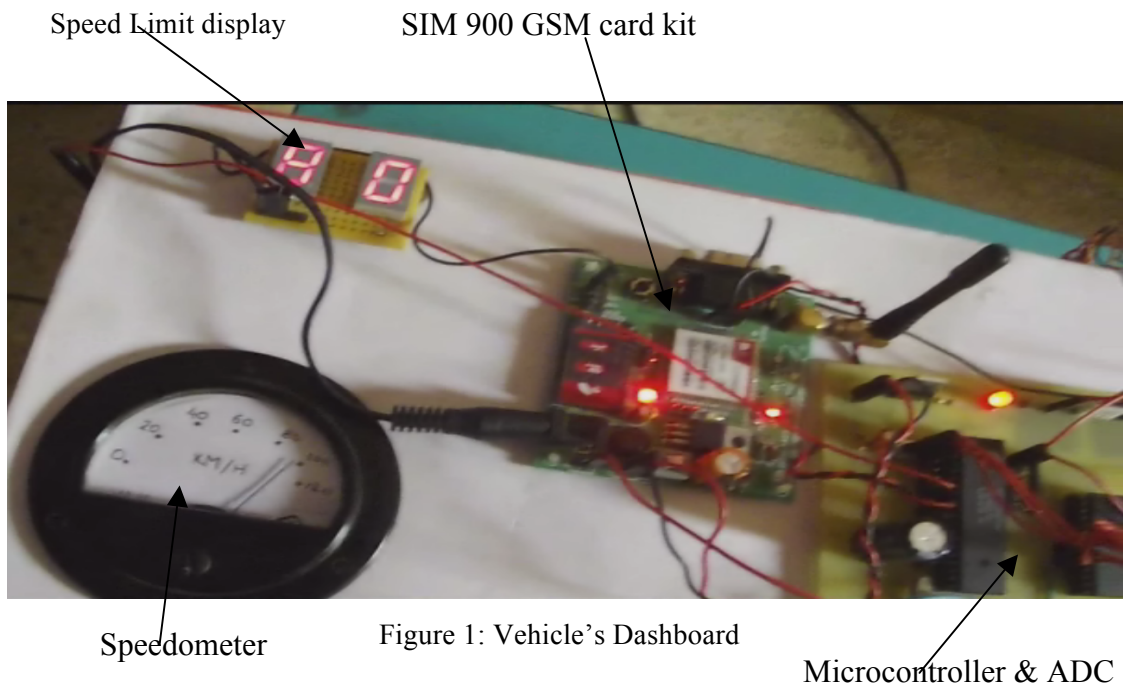


Figure 2: A main part of LabVIEW GUI

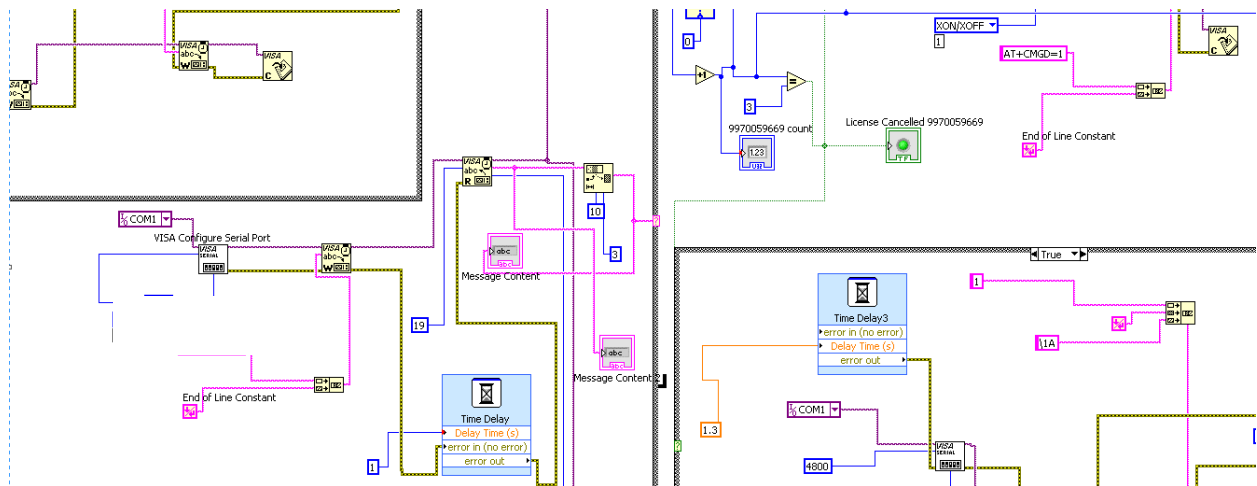


Figure 3: A part of LabVIEW Block Diagram