# INTRUSION DETECTION IN CONTROLLER AREA NETWORK USING MICROCONTROLLER

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**Abstract**— Vehicular ad hoc networks (VANETs) enable wireless communication among Vehicles and Infrastructures. Connected vehicles are promising in Intelligent Transportation Systems (ITSs) and smart cities. This is a serious threat to the safety of road traffic. The Controller Area Network (CAN) is a bus communication protocol which defines a standard for reliable and efficient transmission between in-vehicle parts simultaneously. The message moves through CAN bus from one node to another node, but it does not have information about the source and destination address for authentication .The proposed method for various sensor using vehicle movement to microcontroller connected for IOT pc server to monitoring.

**Keywords :** ITS , reliable , intrusion , microcontroller , Infrastructures

## 1. INTRODUCTION:

Advancement in technology has brought about the concept of intelligent vehicles which are considered to be more efficient and safer for the users. Intelligent vehicles tend to be connected to other vehicles, roadside infrastructure, such as the traffic management system and the internet, hence making them to be among the Internet of Things. However, such high levels of connectivity have meant that intelligent vehicles are at risks of cyber-attacks which might interfere with different aspects of the vehicle, such as its communication systems, endangering the security and privacy of the vehicle as well as putting the lives of its passengers at risk. Connected vehicle technology has always been aimed at solving the challenges that are occasionally experienced with intelligent transport systems.

## 2. LITRATURE SURVEY

The existing system, the oldest ways in vehicle is manual method of checking the parameter. In this method vehicle can be verify all the parameters automatically.[1]In this paper message passing between the each parts the bits range is high and there is dozens of bits are used for single transmission. [2] In this paper using a storage area network is that it would be very difficult to keep up your data if it breaks down. [3] With regards to stability area network is that it would be very difficult to keep your data if it breaks down. [4] High complexity of CAN networks . [5] Low power

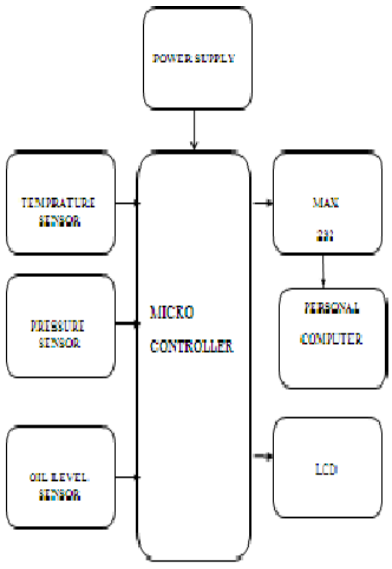
consumption in the vehicle to measure the parameters. [6] in this project CAN based on the channel gain and noise characteristics measures in vehicle.

## 3. PROPOSED WORK

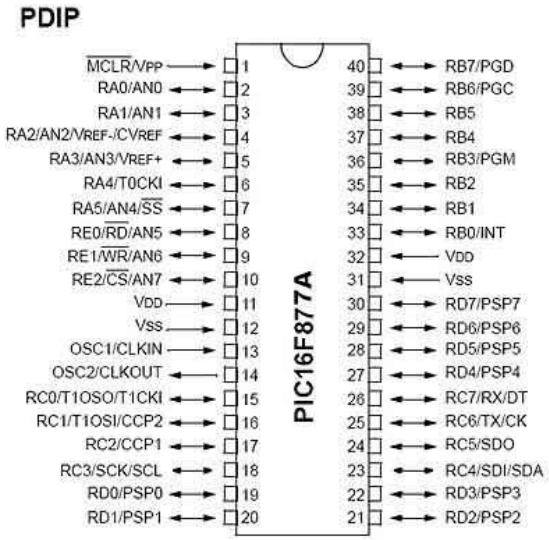
There is not a serious security system need for traditional vehicles because there is no network to communicate with external network. However, Controller Area Network (CAN) connects the parts of vehicle together. Vehicles become computerized and connected to external networks. If the security is achieved, then safety will be achieved as well. The proposed method for various sensor using vehicle movement to microcontroller connected for IOT pc server to monitoring. In modern systems such as connected vehicles, intelligent intrusion detection systems have become a vital security application. These vehicles are targeted of attacks which lead to effects on the vehicles' performance, threats to public and private property and road safety.

## 4. HARDWARE USED

### I.PIC16F877A MICROCONTROLLER

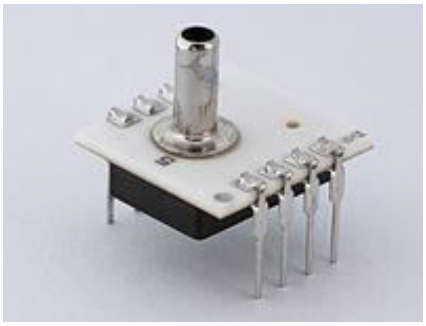



PIC is used to connecting the device and sensors .Sensed instruction given to PIC controller and control on the WANET for




vehicles. Wireless PIC controller is used to connected vehicles through internet and microcontroller connected for IOT pc server to monitoring.

### II.Pressure Sensor

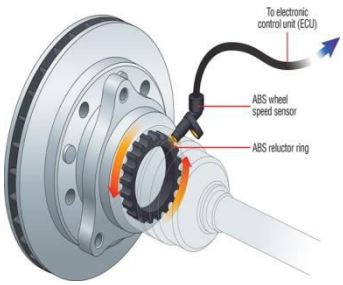


Accurate pressure measurement and monitoring of relative and absolute pressures 4 to 20mA sensors and switches for all industrial applications. Get An Advice. Payment Options Available. Innovative Products. Quality Instruments.

### III.Wheel speed sensor

*Vehicle* electronics today play a key role in all comfort and safety features. Active

wheel-speed sensors are an integral part of brake control systems. They detect the rotational wheel speed of vehicles using a non-contacting measurement principle.




**IV.TEMPERATURE SENSOR**

**Temperature Sensors** measure the amount of heat energy or even coldness that is generated by an object or system, allowing us to "sense" or detect any physical change to that temperature producing either an analogue or digital output. There are many different types of **Temperature Sensor** available and all have different characteristics depending upon their actual application.

**V.OIL LEVEL SENSOR**

Oil level is sensed by sensitive monitoring of small shift in capacitance of a vertically mounted specially designed capacitive device, caused by change in oil level. An assembly of uniformly spaced multiple number of rectangular stainless steel plates is the capacitor assembly whose capacitance changes on account of change in fractions of two dielectric media, namely oil and air (or any inert gas), within the electrode gaps. The capacitor is in the timing circuit of a compact logic gate oscillator and, hence, shift in digital pulse frequency at the output of the oscillator is directly related to change in oil level. The oil level sensor and the dielectric type thermal sensor are capacitive components in specially designed low power consuming logic gate oscillator circuits which are embedded in the probe head and require only 5V DC supply from an external source.

## 5. SOFTWARE USE

**I.PROTEUS:**

In our system PROTEUS ISIS is used to create circuit design and simulate it. Also PROTEUS ARES is used to create PCB layout. Already the circuit design using PROTEUS. Simulation for LCD display using PROTEUS ISIS design suite. Likewise, simulation for different units used in the system like relay, power supply, led and serial communication is also done successfully.

**II. PICKIT2** ***software***

Auto Detects Programming Hardware and Inserted Devices; Hi-Speed USB . the programming *s*oftware by running setup of PICKIT2.

## ALGORITHM

**I.FUZZY ALGORITHM**

They have employed the term "algorithm" in the very broad and somewhat vague sense of a set of numbered instructions. it can the notion of a conventional algorithm can be defined precisely in the context of countable sets by placing it in one-one correspondence with a turning machine.

## CONCLUSION

Serious security system need for traditional vehicles because there is no network to communicate with external network. However, Controller Area

Network (CAN) connects the parts of vehicle together. Vehicles become computerized and connected to external networks. It also aims at providing an excellent notification system and assists in monitoring appropriate tire pressure, fuel level and pollution rate constantly. It reduces or increases the tire pressure according to requirement of the tire and helps in gaining best mileage and most importantly assures to provide comfortable and safe driving. The displayed results explains that the system is more accurate and efficient. The proposed system is more user-friendly, reliable, easy to install and highly beneficial for the automotive industry. If the security is achieved, then safety will be achieved as well. The proposed method for various sensors using vehicle movement to microcontroller connected for pc server to monitoring. In modern systems such as connected vehicles, intelligent intrusion detection systems have become a vital security application. These vehicles are targeted of attacks which lead to effects on the vehicles' performance, threats to public and private property and road safety.

## FUTURE SCOPE

Smart vehicle monitoring System would be definitely exploding as a new product in the automobile supplier industry as such a product does not currently installed for majority of passenger automobiles, hence the market conditions would be favourable to release such a system. It specially satisfies the user requirement by maintaining ideal tire pressure for under inflated tires.

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