International Journal of Research in Advanced Engineering and Technology
ISSN: 2455-0876; Impact Factor: RJIF 5.44
Received: 23-01-2019; Accepted: 28-02-2019
www.newengineeringjournal.in
Volume 5; Issue 2; April 2019; Page No. 24-25

Traffic control system and monitoring of vehicle speed by Wireless sensor network

Ahsan Arif
Department of Electronics and Telecommunication Engineering, Stamford University, Dhaka, Bangladesh

Abstract
Traffic control is a troublesome component in the protected and proficient activities of any transit system. Over speed vehicle always crushed so the accident will stop by monitoring of vehicle speed. A smart Vehicle Speed Monitoring and Traffic Routing System (VSMTRS) is raised using Wireless Sensor Networks to monitor and response about the speeding vehicles and also to rein in the traffic. This paper illustrates about the hardware prototype setup for portion of VSMTRS, the algorithms applied for the intention, the benefits and the restrictions of the whole system. Constructing fresh roads isn't possible resolution for numerous cities to lessen road accidents. Wireless Sensor Network for Intelligent Transportation is a system that lessen congestions.

Keywords: Traffic control system, GPS device, wireless sensor network, ITS, Bluetooth 4.0

Introduction
Traffic crowding is a main problem in developed cities. In this traffic crowding continuity peoples are destroying vehicles fuel and incapable to take advantage of their time [1]. Leading traffic efficiently is too much significant by high utilization of current road receptivity. Nowadays, vehicle and cars are increasing faster than any previous time. The position can't be elevated obviously because of the large commission and long erection time, only rely on backside working. Due to these traffic congestion people's routine schemes finding disturbed as well as some are going by tight lawsuit. If we take up instance ambulance having patient in tight situations and if there is traffic jam on the road, there are lofty possibility that ambulance will not be capable to come at hospital in time. Because of conditions as these human lives are in gamble. That's why at that place is necessity of progressive intelligent traffic control system who can capable to conduct these traffic situations efficiently to complicate traffic mobbing and casualty conditions. Every time high rates of touch the road accident. In a suspicious variety for the country, World Health Organization (WHO) has stated in its first ever worldwide state report on the road surety that much people lost life in rad accidents. So accident defeats can reduce to use Wireless Sensor Network. Wireless communication is recently ocular as providing for the maximum useful notifies of sending and gathering knowledge to passing vehicles. The progression in Wireless Sensor Networks (WSN) and embedded systems has led to comprehensive research in different fields. One of the main appeals with a lot of possibility influence on social welfare is defined as the implementation of WSN in designing Intelligent Transportation Systems (ITS). Intelligent Transportation Systems (ITS) have been measured as an expert process to resolve or allay the problem of transportation efficiently.

Historical Background
There has been a lot of research in scheming and implementing ITS (Intelligent Traffic System) but using WSN in ITS is still in its morning. A few technologies that have been used in earlier efforts comprise inductive loop creators, micro-loop probes, and pneumatic road tubes, all of which use underground intrusive sensors.

In [1], authors have designed urban traffic control and dynamic route guidance are subsystems of intelligent transportation system (ITS), Traffic Signal Control (TSC) and Dynamic Route Guidance (DRG) are two major means of urban traffic management, they are united, affected, constrict and combined to each other.

Authors of [2], have developed traffic control system model for the major parts of road. The real-time traffic image, traffic density and other statistics will be transmitted to server. The data can be broadcasted from server at any time on demand through digital resolutions.

In [3], authors have designed framework for expressway traffic control system is planned, and apropos conference the inelastic requisites of expressway traffic control system for traffic situation parameters, a model-based estimate system for dynamic traffic state parameter is raised, and the usefulness of the process is tested by the real field data.

Authors of [4], have measured to travel speed and real time estimation monitoring by CCTV. So they used Urban Traffic Information System (UTIS), CCTV, Travel speed, traffic information. UTIS is principally a means of gathering raised roadway situation report and then broadcasting united traveler intelligence and different alarms back to vehicles.

In [5], authors have introduced agent-based networked traffic control system which "control on demand". In this system, a traffic signal controller turns an agent host where different agents live at various times in reply to various traffic situation. Conducting, dispatching, migrating, replacing of control agents are schemed in the high level regionally traffic control center and global traffic operation center.

Authors of [6], have designed an expert system and sub-area division system founded on compact interrelation exponent to trade off various demands. Traffic sub-area division expert system framework and consciousness deputation process are set up, and conjecture engine is planned base on fuzzy logic.

Advantages & Disadvantages
This project is made with best of abilities and inscription. Describes were aching care of making of it. The problems faced with in several moves were aching into estimate and dispelled to many limitation so wherein they may not loss the project operating.

Advantages
1. Device can be controlled from long distance.
2. Wireless (No Cable).
3. It lessens the accident rate.
4. It gives in alarm to driver.
5. Its maintenance low.
6. This technology gives safety.

Disadvantages
- The system is network dependent. Hence, network congestion can reduce the reliability of the system.
- Every car must have Bluetooth and GPS tracer to communicate with each other.
- Sometimes it may be costly when routing path longer than current path.

Speed control system
Get SPEED (from gps using Wheel speed sensor)
Get speed_limit (from gps device ang traffic server)
if (SPEED >speed_limit) then
do {Show warnig;
Send sms to traffic Control System;

10 Sec time to reduce SPEED
If (SPEED >speed_limit) then do{ Send sms to traffic Control System;

Traffic police will take the action against the vehicle
}else do{ Show that the vehicle is Okay;}
}else do{Show that the vehicle is Okay;}

Traffic Information System
Get SPEED (from gps using Wheel speed sensor)
Get speed_limit (from gps device ang traffic server)
Get road_capacity (from traffic server)
Get vehicle_location (from gps device)
if (total_vehicle>= road_capacity & SPEED = 0) then
do{Show ("Black :Blocked, Heavy traffic delays");
} elseif (total_vehicle<road_capacity&&
SPEED=<speed_limit/3) then
Do {Show ("Red: Slower traffic delays");}
elseif (total_vehicle<road_capacity&&
SPEED=<speed_limit/2) then
do{Show ("Orrange :Medium traffic delays");
}elseif (total_vehicle<road_capacity&&
SPEED=<speed_limit/3) then
Do {Show ("Green: No traffic delays");}

Conclusion
ITS has been attendant in a extensive and detailed resolution of implementing WSN. Two practical appeals of WSN in this behalf has been identified and completed with comprehensive statement of the software and hardware implementation method. The raised system is extremely malleable and adaptive to Bangladeshi situations. It is relatively over economical when balanced to the operable moving forward technics attached in modern ITS due to downcast expansion and protection expenses. The raised VSMTRS is able of routing the traffic on heavily mobbed roads with infraction human convoy and over proficiency.

References
1. https://ieeexplore.ieee.org/document/4028083
2. https://ieeexplore.ieee.org/document/8212827
3. https://ieeexplore.ieee.org/document/6199285
4. https://ieeexplore.ieee.org/document/7965582
5. https://ieeexplore.ieee.org/document/4238989
6. https://ieeexplore.ieee.org/document/4659831