



ROAD TRAFFIC CONGESTION MANAGEMENT USING VANET

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ABSTRACT

With the constant increase in vehicular traffic, existing traffic management solutions have become inefficient. Urbanization has led to an increase in traffic jams and accidents in major cities. In order to accommodate the growing needs of transport systems today, there is a need for an Intelligent Transport System. Vehicular Adhoc Network (VANET) is a growing technology that assists in Intelligent Transport Systems. VANETs enable communication between vehicles as well as fixed infrastructure called Road Side Units (RSU). We propose a distributed, collaborative traffic congestion detection and dissemination system that uses VANET. Each of the driver's smart phones is equipped with a Traffic App which is capable of location detection through Geographic Position based System (GPS). This information is relayed to a remote server which detects traffic congestion. Once congestion is confirmed the congestion information is disseminated to the end user phone through RSUs.

Keywords: *Traffic Congestion, VANET System, RSU Units, GPS System, Android Application*

I.INTRODUCTION

Abu Dhabi is a modern city, but it faces a modern problem. Every morning and evening, the streets are crowded with cars, taxis and trucks. Abu Dhabi is one of the most highly developed cities in the Arab world. However, traffic congestion is a serious problem. Thirty years ago there were only a handful of cars in the dusty town of Abu Dhabi. Today, the streets are bumper-to-bumper with modern 4WD vehicles, luxury saloons, and taxis. Transportation is an activity involving the movement of people or goods from one place to another in order to meet the perceived social and economic needs of a user. As these needs change, the transportation system itself evolves and problems occur. One of the negative impacts of any transportation system is traffic congestion. Road traffic jams continue to remain a major problem in most cities around the world, especially in developing regions resulting in massive delays, increased fuel wastage and monetary losses.

In order to accommodate the growing needs of transport systems today, there is a need for an Intelligent Transport System. Vehicular Adhoc Network (VANET). VANET is a growing technology that assists in Intelligent Transport Systems. VANETs enable communication between vehicles as well as fixed infrastructure called Road Side Units (RSU) And perform simulations at a relatively low cost. Recent efforts have placed a strong emphasis on VANET design implementations.

II. NEED FOR TRAFFIC CONGESTION MANAGEMENT

Traffic congestion is when vehicles travel at slower speeds because there are more vehicles than the road can handle. This makes trip times longer, and increases queueing this is also known as a **Traffic Jam** Congestion may result from a decrease in capacity, for example accidents on the road or roads being closed. Bad road layouts can also restrict capacity. Increased traffic, for example by many cars leaving a sports stadium at the same time, can also cause congestion.

Population increase in urban areas has led to a exponential increase in the number of vehicles on road. Vehicular traffic is one of the most important social and economic issues faced today resulting in congestion. To solve traffic congestion problem Vanet is used.

Traffic congestion has been one of major issues that most metropolises are facing. It is believed that identification of congestion is the _rest step for selecting appropriate mitigation measures. Congestion - both in perception and in reality - impacts the movement of people .Traffic congestion wastes time, energy and causes pollution.

III. VEHICULAR ADHOC NETWORKS

Vehicular ad-hoc network (VANET) is a technology that uses moves cars as nodes in a network to create a mobile network VANET is a growing technology that assists in Intelligent Transport Systems. VANETs enable communication between vehicles as well as fixed infrastructure called Road Side Units (RSU).Vanet are used for communication between vehicles and roadside equipment. Intelligent vehicular ad hoc networks are a kind of artificial intelligence that helps vehicles to behave in intelligent manners during vehicle-to-vehicle collisions, accidents. Communication between vehicle to vehicle (V2V), vehicle to infrastructure (V2I) are ad-hoc in nature. V2I are based on OBU(on board unit) and RSU(Road side unit). In vehicle to vehicle there are only OBU which communicate to each other to exchange traffic information.

IV.VEHICULAR TRAFFIC MANAGEMENT SYSTEM:

The vehicular traffic management system consists of a Traffic App installed in the driver's smart phone and a remote server. The GPS in the driver's smart phone detects the location of the vehicle. The Traffic App extracts this location information and sends it periodically to a remote server. This location information obtained from the smart phone is logged into a database periodically using GPRS. This location information is used to calculate traffic congestion.

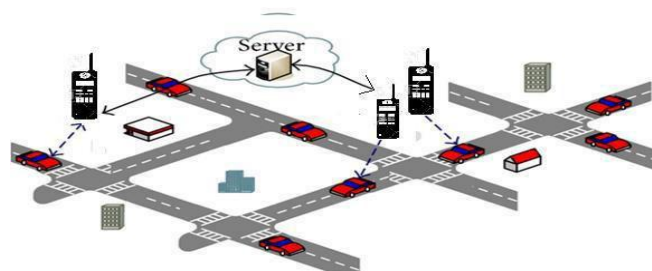


Fig 1: Traffic management system

Traffic congestion management consists of three module namely; User, RSU and Server.

USER:

In this user module ,an traffic app is install in drivers smart phone and once this traffic app is initialize it obtains the traffic information and enables the location sensors of smart phone. the information is updated for every 15 seconds.

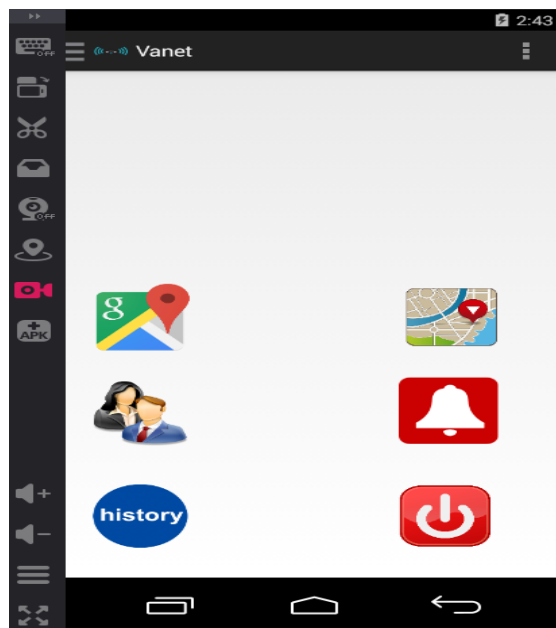


Fig.2: Android Traffic App

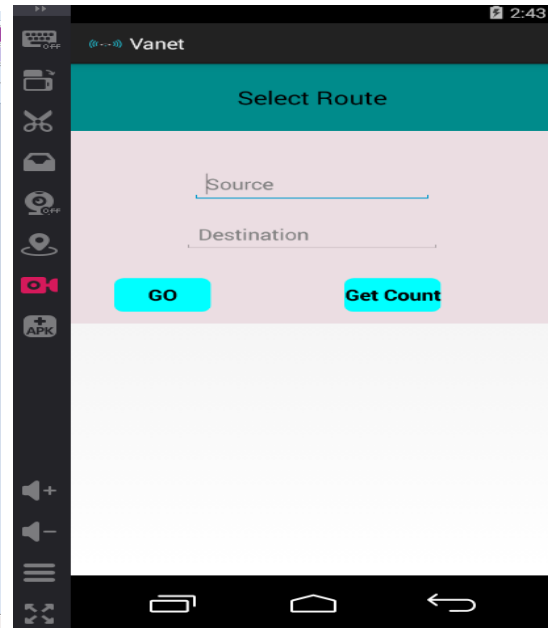


Fig.3:Select location of the vehicle

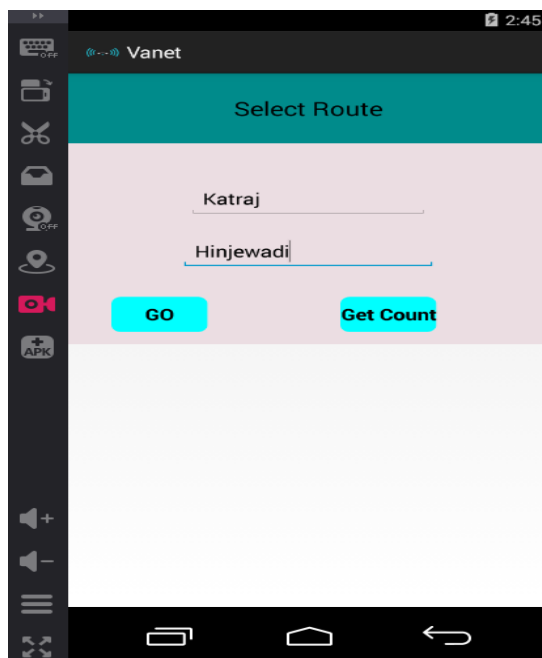


Fig.4: Location of the vehicle

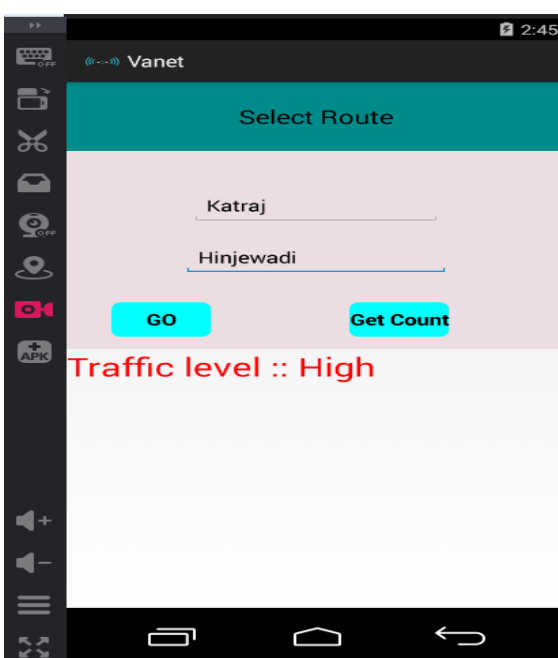


Fig.5 Congestion information displayed on the App

V. CONCLUSION

A classification of traffic congested roads and traffic less roads can be obtained. Also, the alternate routes for traffic congested routes suggested by RSU's can be used to direct traffic flow in all possible routes equally.



Overall, too many cars for too few road have lead to severe congestion in the city. However, if the municipal authorities encourage residents to use public transport. Saving Fuel Consumption And Avoid Pollution. Avoid Delays; we reach at the time of our work.

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