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Review on Traffic Analysis using Uninterrupted Flow at two major crowded location in Amravati

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ABSTRACT: Traffic flow can be divided into two primary types. Understanding what type of flow is occurring in a given situation will help you decide which analysis methods and descriptions are the most relevant. The first type is called uninterrupted flow, and is flow regulated by vehicle-vehicle interactions and interactions between vehicles and the roadway. For example, vehicles traveling on an interstate highway are participating in uninterrupted flow. The second type of traffic flow is called interrupted flow. Interrupted flow is flow regulated by an external means, such as a traffic signal. Under interrupted flow conditions, vehicle-vehicle interactions and vehicle-roadway interactions play a secondary role in defining the traffic flow. In this project various case studies are analyzed with traffic volume data and effective solutions are made using questioner survey.

KEYWORDS: Urban Traffic Network, Uninterrupted Flow, Traffic Flow ,

I. INTRODUCTION

Congestion of traffic is a solemn experience faced by the traffic users who travel on urban roads. Due to traffic congestion, traffic commuters spoil valuable time, fuel and money. Congestion on urban roads can be mitigated by creating additional infrastructure, however, it is sometimes not feasible or possible to create additional infrastructure due to several reasons, such as unavailability of required fund, unbreakable permanent structure and so on. However, the existing infrastructure may be slightly modified to minimize the congestion on urban roads. As for an example, creation of a bypass over a city may decrease the number of vehicles entered in the city, and thus minimizing traffic loads on urban roads. Congestion sometimes occurs due to unorganized flow of vehicles on urban roads and an organized traffic flow may lead to minimization of congestion. Information and communication technology (ICT) have been used to analyze the vehicle density on roads and can be used to minimize road traffic congestion. Wireless sensors, Mobile phone networks, Vehicular adhoc networks, GPS and GIS systems are few examples which are blended with ICT to control the traffic on urban roads. Urban Traffic Network (UTN) can be considered as a directed graph with finite number of vertices and edges. Once a UTN is represented as a graph, we can find out different paths for the graph as well for the UTN. Random distribution of traffics at different paths of an urban traffic may cause traffic breakdown at the peak hours. Therefore, an optimized allocation of paths is necessary to mitigate the traffic breakdown. A traffic stream is a group of vehicles those are to pass towards a road trough a junction. In general, the traffic stream, when flows through a junction, the flow can be categorized as free flow, merged flow and a crossing. A free flow refers the streams of vehicles without any interruption, which generally available at the left hand directions at the junctions from one road to another road. A merged flow refers to merge of two or more streams of vehicles at the road junction, which are merged together to become a single stream towards another road. However, a crossing may be described as a stream of vehicles which has to wait for another stream which is flowing through the junction.

A. Types Of Traffic Flow

Traffic flow can be divided into two primary types. Understanding what type of flow is occurring in a given situation will help you decide which analysis methods and descriptions are the most relevant. The first type is called uninterrupted flow, and is flow regulated by vehicle-vehicle interactions and interactions between vehicles and the roadway. For example, vehicles traveling on an interstate highway are participating in uninterrupted flow. The second type of traffic flow is called interrupted flow. Interrupted flow is flow regulated by an external means, such as a traffic signal. Under interrupted flow conditions, vehicle-vehicle interactions and vehicle-roadway interactions play a secondary role in defining the traffic flow.

Why uninterrupted flow required

- Road Safety
- Faster Transportation Will Help Economy
- Less Pollution.

II. STATE OF DEVELOPMENT

Hasan Omar Al-Sakran et. al. In recent years popularity of private cars is getting urban traffic more and more crowded. As result traffic is becoming one of important problems in big cities in all over the world. Some of the traffic concerns are congestions and accidents which have caused a huge waste of time, property damage and environmental pollution. This research paper presents a novel intelligent traffic administration system, based on Internet of Things, which is featured by low cost, high scalability, high compatibility, easy to upgrade, to replace traditional traffic management system and the proposed system can improve road traffic tremendously. The Internet of Things is based on the Internet, network wireless sensing and detection technologies to realize the intelligent recognition on the tagged traffic object, tracking, monitoring, managing and processed automatically. The paper proposes an architecture that integrates internet of things with agent technology into a single platform where the agent technology handles effective communication and interfaces among a large number of heterogeneous highly distributed, and decentralized devices within the IoT. The architecture introduces the use of an active radio-frequency identification (RFID), wireless sensor technologies, object ad-hoc networking, and Internet-based information systems in which tagged traffic objects can be automatically represented, tracked, and queried over a network. This research presents an overview of a framework distributed traffic simulation model within NetLogo, an agent based environment, for IoT traffic monitoring system using mobile agent technology.

Khyati Zalawadia et. al. Traffic management is a crucial part of our life. In order to travel from one place to another in least time one should have idea about amount of traffic flow in a specific area. And Internet is one the medium through which one can get such information easily without any human intervention. This paper gives idea about different existing modes through which traffic can be controlled and its limitation and advantages. And discuss briefly about one of the cost effective and used worldwide systems to detect traffic.

Made Oka Widyantara et. al. This research intends to determine the design of the implementation of the Internet of Things (IoT) for intelligent traffic monitoring system (ITMS) in the Denpasar city, Bali, Indonesia. The goal was to get a monitoring system that was able to visualize the traffic on the Web-based GPS/GPRS. IoT implementation focused on three main components, namely the acquisition of traffic by leveraging the capabilities of GPS as a sensor, GPRS-based data transport, and the design of a Web/GIS-based traffic monitoring software. The results show was possible to interconnect the GPS tracker, GPRS and Internet networks as IoT scheme for building ITMS in Denpasar. This research has proposed the implementation of IoT for ITMS of Denpasar city. Network architecture based GPS/GPRS proposed has the ability to process traffic data into traffic information, such as road density category. Furthermore, visualization of road density category will be displayed to the public through a Web/GIS-based media. With this media, road user will have accurate information about traffic, so as to manage adventures.

J. Sherly et. al. world to the virtual world, and enables anytime, anywhere connectivity for anything that has an ON and OFF switch. It constitutes to a world where physical objects and living beings, as well as virtual data and environments, interact with each other. Large amount of data is generated as large number of devices are connected to the internet. So this large amount of data has to be controlled and converted to useful information in order to develop efficient systems. In this paper, we focus on to an urban IoT system that is used to build intelligent transportation system (ITS). IoT based intelligent transportation systems are designed to support the Smart City vision, which aims at employing the advanced and powerful communication technologies for the administration of the city and the citizens. This paper presents a real time traffic monitoring system to solve the problem of real time traffic controlling and monitoring. The proposed system provides a new way of traffic control by the better utilization of resources. The traffic administration department can use this real time traffic monitoring information to detect the dangerous situations on the road and thereby react by imposing immediate actions. On the whole IoT will play an important role in traffic monitoring by improving the efficiency of traffic safety and travelling costs.

Shilpa Telang et. al. No way had day's traffic flow control become a major problem in transportation and city traffic management system. The pollution level is increase due to uneven traffic management and from also number of vehicles waiting at the junction than the driving vehicles. The main purpose of this work is to reduce

the carbon dioxide level which is emitted by vehicles at the junction. In order to reduce the city traffic light management and at the same time is to control traffic flow. We proposed traffic light management based on pollution sensing by the MQ7 sensor which implemented over IoT architecture. The proposed system states that the traffic light timing is adjusted based on observed pollution value using MQ7 sensor. This work integrates that traffic simulation framework is provide based on real time pollution sensing mechanism. The result shows that reduce the pollution level with the traffic light control and also reduce the overall traffic congestion in city. In this work, we have proposed a not only reducing the pollution level of city traffic as well as reducing traffic congestion and make the traffic flow smoothly. This is achieved by using a novel IoT technology which helps in managing real time traffic flow control and same time reducing pollution level.

Mr.Hemant S. Badodekar et. al. The urban traffic is becoming crowded day by day because of number of private cars increasing .As result traffic is becoming one of important problems in big cities in all over the world. Traffic congestion and accidents are caused because of large number of vehicles running in any area. This creates problem for people they get stuck in traffic this causes a huge waste of time, property damage and environmental pollution. This paper presents intelligent traffic administration system, based on Internet of Things, which is featured by low cost, high scalability, high compatibility, easy to upgrade, to replace traditional traffic management system and the proposed system can improve road traffic tremendously. The internet of factors is primarily based at the internet, Wi-Fi sensor network and detection technology to comprehend the wise popularity on the tagged site visitors automobiles, monitoring, monitoring, dealing with and processed mechanically. The paper presents an architecture that integrates net of factors with agent technology into a single platform in which the agent generation handles powerful communiqué inside the IoT. The architecture introduces the use of an lively radio-frequency identity (RFID), wireless sensor technology, item ad-hoc networking, and net-based totally records systems wherein tagged traffic gadgets can be routinely represented, tracked in the network

Rahmi Akcelik et. al. The author (Akçelik 2002a,b) discussed the speed-flow models given in the US Highway Capacity Manual (TRB 2000; Reilly, et al 1990; Schoen, et al 1995) for basic freeway segments, multilane highways and urban streets, and suggested that the HCM speed-flow models have some features not consistent with expected traffic flow characteristics related to in-stream vehicle interaction and queuing considerations. The HCM models imply that the rate of reduction in speed with increased flow is greater, in other words, traffic delays are larger and increase at a faster rate, for higher-quality facilities. This characteristic of the HCM speed-flow models is in contrast with travel-time - flow models for different road classes used for transport planning purposes (Akçelik 1991, 1996). Higher traffic delays for higher-quality facilities do not appear to be consistent with queuing mechanisms inherent to in-stream vehicle interactions (Blunden 1971, 1978; Davidson 1966). It is expected that such physical - environmental characteristics as wider lanes, a larger number of lanes, more lateral clearance and lower interchange or access point density represent higher-quality facilities with lower frequency (intensity) of delay-producing elements and situations.

The average uninterrupted travel speed can be expressed as:

$$v_u = 3600 / t_u = 3600 / (t_f + d_{tu})$$

Where,

v_u = uninterrupted travel speed at a given flow rate (km/h),

t_u = uninterrupted travel time per unit distance,

$$t_u = t_f + d_{tu} \text{ (seconds/km),}$$

d_{tu} = traffic delay (uninterrupted travel delay) per unit distance (seconds/km),

t_f = free-flow travel time per unit distance (seconds/km):

$$t_f = 3600 / v_f$$

v_f = free-flow speed (km/h)

III. CONCLUSION

This research is solely discussed in terms of a literature review. This paper gives idea about different existing modes through which traffic can be controlled and its limitation and advantages. And discuss briefly about one of the cost effective and used worldwide systems to detect traffic. At a traffic convergence, the automobile overload is for the most part in the early morning and in night. Most traffic issues of the intersection are happened by huge vehicle and leaving and passerby, and to determine issues of traffic the flyover, tram ought to be given or the width of the street ought to be expanded. For furthers study of the research is to understand the

uninterrupted flow and interrupted flow of the Sai Nagar Square and Gandhi Chowk Amravati mid-square area and suggest effective system to control traffic interrupted flow for the particular area.

REFERENCES

- [1] Chattaraj Ujjal, Chakroborty Partha and Seyfried Armin, Some Empirical Studies on Evacuation from Halls, Proceedings of the 9th Conference on Traffic and Granular Flow, held on 28th September to 1st October, 2011 at Moscow, Russia.
- [2] Hankin BD, Wright RA (1958) Passenger Flow in Subways, Operational Research, Quarterly, Vol 9, No 2, pp 81-88.
- [3] Mori M, Tsukaguchi H (1987) , A New Method for Evaluation of Level of Service in Pedestrian Facilities, Vol 21 A, No 3, pp 223-234.
- [4] Navin FPD, Wheeler RJ (1969), Pedestrian Flow Characteristics. Traffic Engineering , Vol 39, pp30-36.
- [5] Seyfried A, Passon O, Steffien B, Boltes M, Rupprecht T, Klingsch W (2009), New Insights into Pedestrian Flow Through Bottlenecks, Vol 43, No 3, pp 395-406.
- [6] Young SB (1999), Evaluation of Pedestrian Walking Speeds in Airport Terminals. Transportation Research Record 1674 ,pp 20-26.
- [7] A.F. Iyınam, S. Iyınam and M. Ergun (1997) , Analysis of Relationship Between Highway Safety and Road Geometric Design Elements: Turkish Case , Online Publication, Technical University of Istanbul.
- [8] Alan Nicholsonl et al. (1998), Superelevation, Side Friction, and Roadway Consistency , Journal of Transportation Engineering (ASCE), Vol. 124, No.5, Paper No. 15158.
- [9] Y. Hassan and S. M. Easa (2003), Effect of Vertical Alignment on Driver Perception of Horizontal Curves , Journal of Transportation Engineering (ASCE), Vol. 129, No. 4.
- [10] Yulong Pei and Ji Ma (2003), Countermeasures for Traffic Accidents Due to Road Conditions in China , Journal of IEEE.
- [11] Darren J. Torbic, Douglas W. Harwood and David K. Gilmore (2004), A Guide for Reducing Collisions on Horizontal Curves , Transportation Research Board, Volume 7- Nchrp Report 500.



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