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TRAFFIC SIGNAL MANAGEMENT SYSTEM BASED ON DATA MINING TECHNIQUE

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Abstract - *Traffic flow prediction is a key part and core content of intelligent transportation system as well as the important basis for transportation information service, traffic control and guidance. Forecasting timely and accurately is premise of the intelligent transportation system realizing traffic management. Cross-road are the key component of transportation network. To solve the problem of predicting the short-time traffic flow in crossing, it proposes a mining algorithm which experimentally shows good performance in the real transportation dataset. We can implement this concept based on different kind of methods like WSN, VANET, LED, ZigBee network etc. But we are choosing LED method for further processing, time management system (TMS).*

***Key Words*: Sensors(WSN), Traffic Signals, Vehicles, LEDS.**

1. INTRODUCTION

Now a days traffic is increasing very fatally only because of population so lots of time is goes into traffic jam due to the mismanagement of traffic so only way to overcome that problem using Wireless sensor network. In recent year researchers focused on the possibilities to incorporate WSN in traffic system applications. Moreover, sensor nodes are cheaper and provide mechanisms to minimize power consumption and can be placed everywhere easily. Sensors offers in greater installation flexibility and lower maintenance cost than conventional systems. Now a days traffic is increasing very fatally only because of population so lots of time is goes into traffic jam due to the mismanagement of traffic so only way to overcome that problem using Wireless sensor network. In recent year researchers focused on the possibilities to incorporate WSN in traffic system applications. Moreover, sensor nodes are cheaper and provide mechanisms to minimize power consumption and can be placed everywhere easily. Sensors offers in greater installation flexibility and lower maintenance cost than conventional systems. Sensors can allow to collect the information about vehicles travelling on roads. Existing traffic control system having major drawbacks like static time allocation for signals. We proposed a system with dynamic time allocation for signal based on number of vehicles. We are implementing this concept based on different kind of methods are as using WSN, VANET, LED, ZigBee network etc. But we are choosing LED method for further processing, time management system (TMS) is an innovative design for the road that saves time for further driver. This solution creates a city of intelligence which can be controlled automatically through sensors. Based on the several transaction we will decide the delay time and waiting time of traffic signal.

2. Literature Survey

Zahra Zamani and Mahmoud Pourmand implemented system which was working 24 hours on historical data and generate daily TOD intervals and timing plans [1]. By using hierarchical clustering identified TOD intervals, based on that data its supports design of TOD signals control system. Through cluster analysis they calculated high resolution system state definition. That take advantage of se of sensors deployed in traffic signal system TOD signals are automatically generated by using hierarchical clustering algorithm, this type of system is suggested by Dr.S.Meenakshi Sundaram and M.S Divya Shree[2]. The problem of predicting short time traffic passing in cross roads, for solving this problem the use of BP neural network model is suggested by Xiaofeng Li and Weiwei Gao [3]. To reduce unnecessary delay in traffic system, the real time scanerio and its flexability is much more efficient than existing system this suggested by Sabhijiit Singh Sandu [4].

3. Proposed System

In this proposed system we are using sensors across crossroads for counting number of vehicles presented on

particular lane. According to number of vehicles on particular lane detected through sensors, then obtained information sends to server. Server then allocates particular time to signal. Then traffic light timing algorithm computes what color signal is to be shown by a traffic light and for what duration of time.

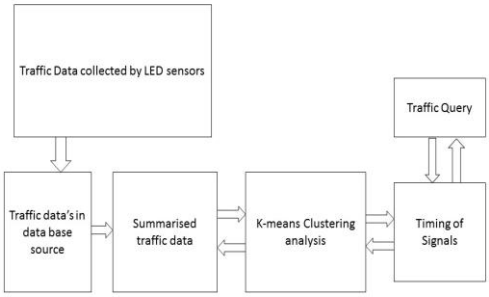

Fig. Architecture diagram

3.2 Mathematical Model

Let E be the set of all objects

E={D,S,U,P,SDB,DB,C}

D= {d1,d2,d3……,dn}

S = {S1,S2,S3,S4}

U={U1,U2,U3……,Un}

P={P1,P2,P3……..,Pn}

SDB={SDB1}

DB={DB1}

C={C1,C2,C3….,Cn}

A. DEVICES D = {d1,d2,d3……,dn}Where, D is shows as a set of devices and d1, d2, d3,dn are the number of devices.

B. S = {S1,S2,S3,S4} Where, S is represented as a set of Sensors and s1,s2,s3,s4 are the number of sensors .

C. U={U1,U2,U3……,Un}Where, U is represented as a set of Users and U1,U2,U3,…..Un are the no of users

P={P1,P2,P3……..,Pn} Where, P is represented as a set of Passwords and P1,P2,P3……..,Pn are the no of users

D. SDB={SDB1} where SDB1 is a Server Database.

C={C1,C2,C3….,Cn} where C represented as set of clients and C1,C2,C3….,Cn no of clients.

3.3 Data Mining Technique

By using Data mining technique we can enable to discover previously unknown data and relationship in large data set. In analysis tool includes machine learning methods, statistical model, mathematical algorithms. Including analysis and prediction data mining consist of collecting and managing data. Using data mining we can performed operation on unstructured data like textual, quantitative, multimedia forms. It uses variety of examine data like association , classification, clustering, forecasting, sequence or path analysis etc. data mining uses discovery approach in which algorithm used to examine multidimensional relationship simultaneously for identifying unique or frequently represented data. In knowledge discovery different phases are present such as data cleaning, data integration, data selection, data transformation, pattern evaluation, and knowledge representation etc. in public and private sector using different data mining techniques increased availability of information and decreasing cost of storing data.

3.4 Algorithm for traffic signal management

1. Start
2. Takes input for number of vehicles on particular lane (L1,L2,L3,L4)
3. Compare L1,L2,L3,L4
4. MAX(L1,L2,L3,L4)
   Set time >=60 sec.
5. Then compare remaining lane
6. Max (remaining lane) set time <50 sec
7. Repeat step 6
8. Stop

4 CONCLUSIONS

In this proposed system we are working on k means algorithm to solve the problem of existing traffic management system and making very efficient traffic signal system using LEDS.

REFERENCES

[1] Zahra Zamani and Mahmoud Pourmand, "Application of Data Mining Traffic Management," 978-1-4244-7406-6/10/$26.00©2010 IEEE.

[2] Dr.S.Meenakshi Sundaram and M.S Divya Shree, "Heirarchical Clustering Technique for Traffic Signal Decision Support",IJISET-International Journal of Innovative Science,Engineering and Technology,Vol.2 Issue 6 June 2015

[3] Xiaofeng Li and Weiwei Gao, "Prediction of Traffic Flow Combinition Model Based on Data Mining",International Journal of Database Theory and Application , Vol. 8,No.6(2015)

[4] Sabhijiit Singh Sandu, "Agent Based Intallegent Traffic Management System for Smart Cities," International Journal of Smart Home