

Traffic Control System

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Abstract:

The work aims in developing an intelligent traffic controlling system. Traffic increases in proportion with the population especially in a developing country like India. Hence there is a great requirement to have well coordination of the traffic signals for control of traffic especially in busy traffic. The proposed work is to reduce traffic jams particularly when emergency vehicles are approaching towards the traffic junction. As the emergency vehicle approaches the traffic junction, IR sensors and App together studies the signal conditions, a green wave is indicated and hence the vehicle passes smoothly without getting stuck in jam. As the vehicle crosses the traffic signal point automatic change is observed in the signals. Work is implemented keeping in view a multi road traffic junction point.

Keywords—Public integrity auditing, dynamic knowledge, victor commitment, cluster signature, cloud computing.

I. INTRODUCTION

Traffic lights were designed and installed over the years with several existing methods since their inception in 1868 at London. The growth of industrialization and urbanization has result in associate huge increase within the population invariably leading to rise within the variety of vehicles on road. The ensuring traffic congestion and traffic jams are the most important hurdles for emergency vehicles like ambulance carrying important patients as these emergency vehicles aren't able to reach their destination in time, ensuing into a loss of human life. To solve this drawback to some extent we've got apparently come back up with Smart ambulance using IR sensors for ambulance. The proposed system clears the tie up by turning all the red

lights to green on the trail of the ambulance, hence helping in clearing the traffic and providing means towards its destination. The system consists of associate android application which registers the ambulance on its network. In case of emergency scenario, if the car halts on its means, the application sends associate emergency command to the traffic signal server and additionally the direction wherever it needs to move with this position with the assistance of world Positioning System (GPS). The closest signal is known based upon this position of the ambulance. And that particular signal is formed green until the ambulance passes by and later it regains its original flow of management. During this way it acts sort of a lifesaver project because it saves time throughout emergency by dominant the traffic lights.

1.PROBLEM INGREDIENTS:

The reduce traffic jams particularly when emergency vehicles are approaching towards the traffic junction. IR sensors are provided at signals which is highly intact and which is connected to a Android application.

2. Goals and Objectives

- This is because India doesn't have separate lanes. Keeping in view all these issues and to avoid the problems, an IR dependent vehicle control system is being introduced in this proposed work.
- Information of the emergency vehicle is received and transmitted to the traffic signal points using IR sensor

3. Scope

Scope of our project is as follows:

- The project has been designed to substantially enhance the performance by ensuring smooth mobility of ambulance.
- The system also reduces the workload of traffic police as it totally automates the whole prospect of traffic signaling which also greatly reduces the domain of error.

II. LITERATURE REVIEW

1] Paper name: Smart Traffic Control System Using ATMEGA328 Micro Controller And Arduino Software.

Authors: B.NagaJyothi,Vahedha.

Traffic increases in proportion with the population especially in a developing country like India. Developed so as to reduce traffic jams particularly when emergency vehicles are approaching towards the traffic junction. A Radio Frequency Identification Tag is provided to each vehicle. . A stolen vehicle is being detected as it crosses through a traffic signal point. Also survey suggests the drawback regarding disturbances causing the traffic control problems especially as the wave is disturbed due to one reason or the other.

2] Paper name: Development of Dynamic Platoon Dispersion Models for Predictive Traffic Signal Control.

Authors:Luou Shen, Ronghui Liu, Zhihong Yao , Weitiao Wu, and Hongtai Yan

The dynamic models are applied to predict the evolution of traffic flow, and further used to produce signal timing plans that account not only for the current state of the system but also for the expected short-term changes in traffic flows. We investigate factors affecting model accuracy, including time zone length, position of upstream traffic detection equipment, road section length, traffic volume, turning percentages, and computation time.

3] Paper name: Big Data Analytics in Intelligent Transportation Systems: A Survey

Authors: Li Zhu, Fei Richard Yu

Big data is becoming a research focus in intelligent transportation systems (ITS), which can be seen in many projects around the world. Intelligent transportation systems will produce a large amount of data. The produced big data will have profound impacts on the design and application of intelligent transportation systems, which makes ITS safer, more efficient, and profitable. Studying big data analytics in ITS is a flourishing field. This paper first reviews the history and characteristics of big data and intelligent transportation systems. The framework of conducting big data analytics in ITS is discussed next, where the data source and collection methods, data analytics methods and platforms, and big data analytics application categories are summarized.

Several case studies of big data analytics applications in intelligent transportation systems, including road traffic accidents analysis, road traffic flow prediction, public transportation service plan, personal travel route plan, rail transportation management and control, and assets maintenance are introduced. Finally, this paper discusses some open challenges of using big data analytics in ITS.

4] Paper name: Emergency Traffic-Light Control System Design for Intersections Subject to Accidents

Authors: Liang Qi, Manchu Zhou, Fellow, IEEE, and Waning Luan

Petrinets(PNs)are well utilize dasavisualand mathematical formalism to model discrete-event systems. This paper uses deterministic and stochastic PNs to design an emergency traffic-light control system for intersections providing emergency response to deal with accidents. According to blocked crossing sections, as depicted by dynamic PN models, the corresponding emergency traffic-light strategies are designed to ensure the safety of an intersection. The cooperation among traffic lights/facilities at those affected intersections and roads is illustrated

5] Paper name: A Survey of Traffic Control with Vehicular Communications

Authors: Li Li, Senior Member

During the last 60 years, incessant efforts have been made to improve the efficiency of traffic control systems to meet ever-increasing traffic demands. Some recent works attempt to enhance traffic efficiency via vehicle-to-vehicle communications. In this paper, we aim to give a survey of some research frontiers in this trend, identifying early-stage key technologies and discussing potential benefits that will be gained. Our survey focuses on the control side and aims to highlight that the design philosophy for traffic control systems is undergoing a transition from feedback character to feed forward character. Moreover, we discuss some contrasting preferences in the design of traffic control systems and their relations to vehicular communications. The first pair of contrasting preferences are model-based predictive control versus simulation-based predictive control.

III. SURVEY of PROPOSED SYSTEM

- Considering the drawbacks observed in the earlier works of the literature survey, robust methods are introduced in the proposed system. Three prominent applications possible with the proposed system includes
 - a. Automatic vehicular signal control.
 - b. Clearance to emergency vehicle/fire car.

ADVANTAGES OF PROPOSED SYSTEM:

- Ambulance service will no longer be affected by traffic jams.
- Over a wide range applicability.
- One time investment cost.
- Life of people can be saved.

IV. Phases of SDLC

Systems Development Life Cycle is a systematic approach which explicitly breaks down the work into phases that are required to implement either new or modified Information System.

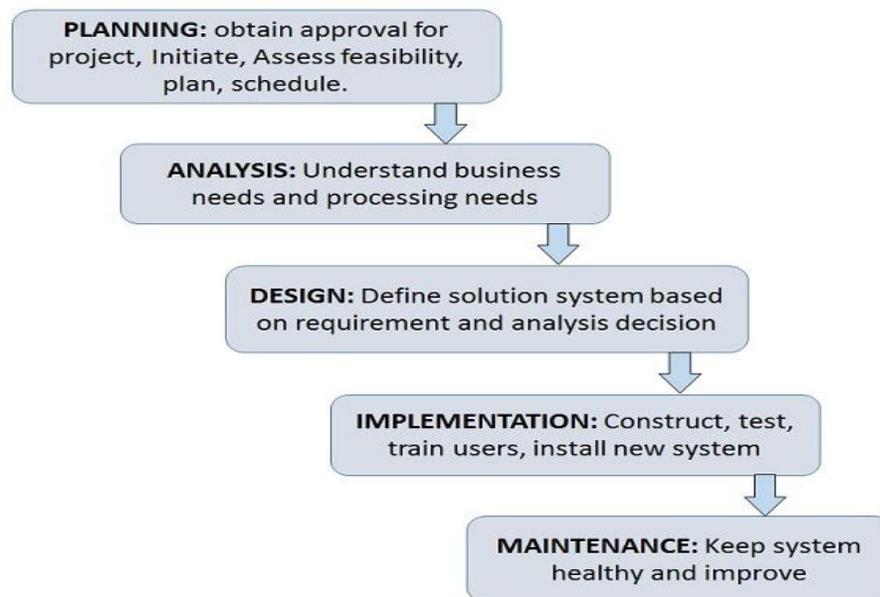
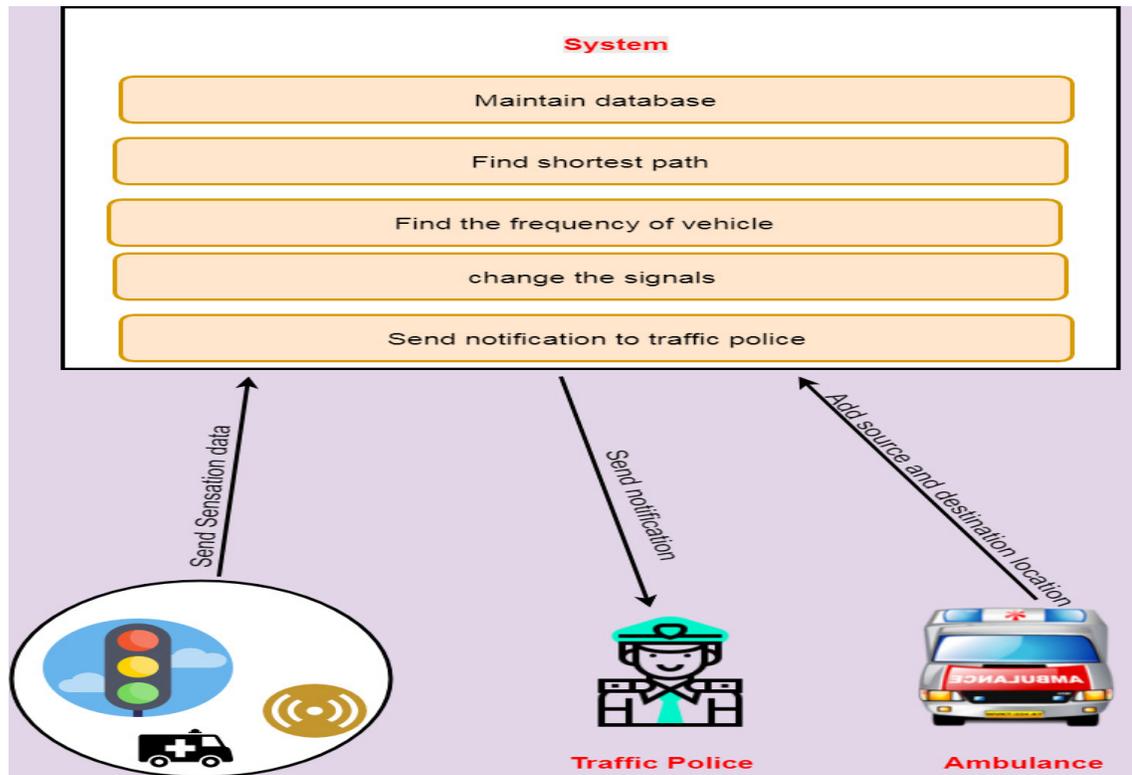


Figure: Phases of SDLC

V. SYSTEM ARCHITECTURE



System Architecture

Fig.:

VI. Other Specifications

Advantages

- Ambulance service will no longer be affected by traffic jams.
- Over a wide range applicability.
- One time investment cost.
- Life of people can be saved.

Applications

The system also reduces the workload of traffic police as it totally automates the whole prospect of traffic signaling which also greatly reduces the domain of error.

VII. Mathematical Model:

Let S be the system

$S = A, T, I$

Where,

o Where, A is the no of Ambulance registered

$A = A_1, A_2 \dots A_n$

o T is the no of traffic police registered

$T = T_1, T_2 \dots T_n$

o I is the no of sensors on the road

$I = I_1, I_2 \dots I_n$

Procedure:

Step 1: The ambulance driver is registered to an application. Whenever the times occur the driver will mention his source and destination location to system. The system will show him best short route using dijkstra algorithm.

Step2: The IR sensor will sense the no of vehicles passing on the road. The system will evaluate the data and turns the signal green until the ambulance cross the signal. The ambulance is detected when its comes in the range with IR Sensors.

Step 3: The traffic police will allocate himself at the system where signal are not present. The system will notify police whenever the ambulance is comes near the point Output: Predict shortest path, predict the nearest signal, Monitors the traffic

VIII. CONCLUSION AND FUTURE WORK

The proposed technique is designed, implemented and targeted directly for effective management of traffic such that vehicles of emergency moving on road can proceed in a smooth manner without getting stuck in traffic jam until they arrived to the point of destination without taking much time and human involvement. The proposed system is also effective in controlling the congestion of traffic.

IX. REFERENCES

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