

REAL TIME TRAFFIC DETECTION AND RELEASED SIGNALS AS PER VEHICLES ARRIVED

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Abstract - Traffic congestion is becoming major issues in cities and metropolitan areas in most countries. The road traffic volume is main criteria in the traffic management. In previous signal system vehicles can be released as per statically in which their was fixed time for every signal at every point. In our system, we present a real time traffic detection and released signal as per vehicles arrived. Our approach is based on the image processing to detect the vehicles. Using image processing we get a count of vehicles, we can released signal dynamically where the highest count detected. This makes efficient economical and fast traffic solution for today's world.

1. INTRODUCTION

Image processing plays an important role in various real time applications ranging from medical imaging to pattern and object recognition for different purposes. One such application is object detection of mobile targets in a particular environment. Vehicle detection on roads is an example of such object detection which is used for traffic analysis, monitor and control. Hence, an initial step for traffic controlling is vehicle detection and classification using traffic measuring techniques. Image processing based techniques are one of the most widely used techniques which achieve this objective. Many algorithms have been proposed connected with vehicle detection and classification. In, image segmentation and edge detection methods are employed. In, background extraction and estimation techniques are used to isolate the vehicles of interest. Similarly vehicle detection can be achieved with the help of vehicle shadows. This approach becomes difficult if shadows of other objects like overhead bridges overlap with the shadows of Classification of vehicles based on their sizes or shapes plays an important role in traffic management and flow control. Irrespective of the algorithm or technique being employed, camera positioning and the quality of camera play an important and critical role in vehicle detection. High altitude aerial camera is an example of camera positioning which is often used due to its wide area coverage.

1.1 PROBLEM STATEMENT

Traffic signal works on fixed time interval. It is inefficient when there is no or low vehicles density on the road. This problem solved by releasing signal dynamically which depends on the number of vehicles arrived and speed of vehicle.

1.2 LITERATURE SURVEY

1. Object Detection Using Image Processing:

Author: Fares Jalled

Description:

An Unmanned Ariel vehicle (UAV) has greater importance in the army for border security. The main objective of this article is to develop an OpenCV- Python code using Haar Cascade algorithm for object and face detection. Currently, UAVs are used for detecting and attacking the infiltrated ground targets. The main drawback for this type of UAVs is that sometimes the object are not properly detected, which thereby causes the object to hit the UAV. This project aims to avoid such unwanted collisions and damages of UAV. UAV is also used for surveillance that uses Voilajones algorithm to detect and track humans. This algorithm uses cascade object detector function and vision. train function to train the algorithm. The main advantage of this code is the reduced processing time. The Python code was tested with the help of available database of video and image, the output was verified.

2. PRESENT AND FUTURE METHODOLOGY FOR THE IMPLEMENTATION OF DECISION SUPPORT SYSTEMS FOR TRAFFIC MANAGEMENT

Author: Jordi Casas,, Alex Torday , Josep Perarnau , Martijn Breen and Aleix Ruiz de Villa:

Description:

Real-time predictions are an indispensable requirement for traffic management in order to be able to evaluate the effects of different available strategies or policies. The combination of predicting the state of the network and the

evaluation of different traffic management strategies in the short term future allows system managers to anticipate the effects of traffic control strategies ahead of time in order to mitigate the effect of congestion. This paper presents the current framework of decision support systems for traffic management based on short and medium-term predictions and includes some reflections on their likely evolution, based on current scientific research and the evolution of the availability of new types of data and their associated methodologies.

3. Development of a Sensor System for Traffic Data Collection
 Author: Mahesh Atluri, Mashrur Chowdhury, Neeraj Kanhere, Ryan Fries, Wayne Sarasua Jennifer Ogle:

Description:

Although many types of traffic sensors are currently in use, all have some drawbacks, and widespread deployment of such sensor systems has been difficult due to high costs. Due to these deficiencies, there is a need to design and evaluate a low cost sensor system that measures both vehicle speed and counts. Fulfilling this need is the primary objective of this research. Compared to the many existing infrared-based concepts that have been developed for traffic data collection, the proposed method uses a transmission-based type of optical sensor rather than a reflection-based type. Vehicles passing between sensors block transmission of the infrared signal, thus indicating the presence of a vehicle. Vehicle speeds are then determined using the known distance between multiple pairs of sensors.

4. Vehicle Detection and Counting Method Based on Digital Image

Processing in Python

Author: Reha Justin1 , Dr. Ravindra Kumar

Description:

Vehicle counting process provides appropriate information about traffic flow, vehicle crash occurrences and traffic peak times in roadways. An acceptable technique to achieve these goals is using digital image processing methods on roadway camera video outputs. This paper presents a vehicle counter classifier based on a combination of different video image processing methods including object detection, edge detection, frame differentiation and the Kalman filter. An implementation of proposed technique has been performed using python programming language. This paper describes the methodology used for image processing for traffic flow counting and classification using different library and algorithm with real time image.

2.SYSTEMS ARCHITECTURE

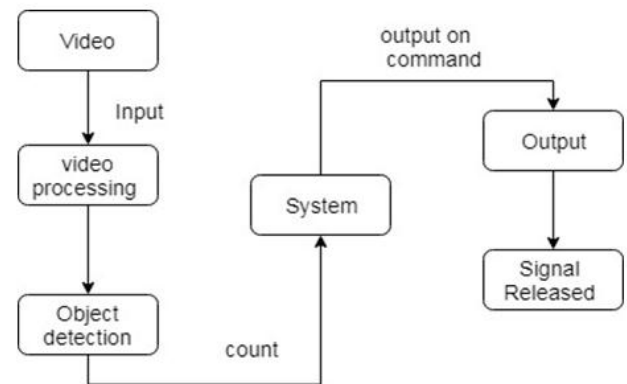
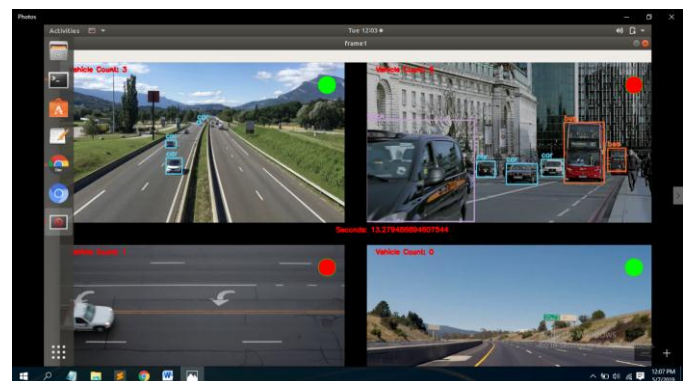


Figure: Architecture Diagram

3.EXPERIMENTAL RESULT



4. APPLICATION

1. Fire station emergency entrance
2. Medical emergency entrance
3. Exit of car washes
4. Ramp mattering

5. CONCLUSIONS

We can integrate our system with an application for analyzing the official traffic signal, so as to capture traffic condition in real-time. Thus, our system will be able to signal traffic-related events in the worst case at the same time of the result display on the screen. Further, we are investigating in feature scope the integration of our system into a more complex traffic detection infrastructure.

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