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VEHICLE DETECTION AND COUNTING OF A VEHICLE USING OPEN CV

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Abstract

The increasing need for improving mobility and road safety has led developing countries to make In this paper the main focus is on detecting of vehicle and counting, particularly in traffic control. Vehicle detecting and also counting are becomes growing important in a area of highway regulators. However, because of the various structure of vehicles, their detections remain challenging which directly influence in accuracy of a vehicle count. This paper address a video-based techniques for vehicle recognition and counting based on OpenCV technologies. The proposed technique uses the background subtraction method to discover forefront objects in video sequel. Several OpenCV techniques, including of an thresholding, the adaptive morphology operations, and hole filling are later applied in the series of detecting moving vehicles more accurately. At last, vehicle counting is done by utilizing virtual identification zones. The outcome of an Experiment shows the accuracy of the proposed counting systems is around 96%.

Keywords : Vehicle detection, Vehicle counting, background subtraction, morphology operations, OpenCV.

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INTRODUCTION

Software Services, our services division, is focused on partnering with clients to deliver the right level of sourcing to achieve the stated client goals. Our focus is to co-source and develop in partnership with our client-partners the right solution. Working closely with our client-partners, we determine the right sourcing level required at each iteration in the project life cycle and support our client-partners on-site, off-site, near shore and offshore. By varying our on-site through off-shore presence throughout the project life cycle we provide greater value while overcoming the inherent problems in a project and in a client-vendor relationship. Leveraging our proven industry leading methodology we have successfully produced solutions including analytical solutions to facilitate financial decision making, electronic communication networks, collaboration management platforms, clinical research solutions, complex scheduling and logistics solutions and more.

Products, our Innovative Solutions division, is focused on designing and developing complete solutions and state-of-the-art intelligent building blocks that can be used to reduce time-to-market for our clients. Today, we are a leading provider of solutions to many industries nationwide. Today more than ever before successful implementation of information technology is complex due to rapidly evolving needs and the need to integrate with an ever growing information technology asset pool. Confronted by this situation, we strive to be a learning organization committed to challenging norms and improving our offerings with a single goal: to provide our client-partners with the best possible value with the right return on investments by leveraging the expertise and experience of our people, the right technology and right best practices. We believe that there can be but one yardstick to measure success: the value derived by the client-partner and we are steadfast in our goal to **innovating evolution** for our client-partners and us.

NEED OF THE STUDY

It enables the development of effective solutions for traffic management, road safety, traffic analysis, and intelligent transportation systems, leading to improved efficiency, safety, and sustainability in transportation networks.

STATEMENT OF THE PROBLEM

To develop a system for vehicle detection and counting using OpenCV. The system should be able to analyze video input and accurately detect vehicles in real-time. Additionally, it should provide a count of the total number of vehicles detected within the specified area of interest.

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OBJECTIVES OF THE STUDY

The objectives of the study were to:

- Detection of multiple vehicles in a video sequence.
- Tracking of the detected vehicles.
- Counting the total number of vehicles in videos.

RESULT

The goal of such a project is to accurately detect vehicles in video frames and count the number of vehicles present. It will depend on the specific implementation and the quality of the input data.

EXISTING SYSTEM

The trouble of getting the initial background there is the mistake of continuous background update and the trouble of controlling the update speed in moving vehicle location of traffic video. And with the expanding number of streets and traffic everywhere on the world, traffic observing and control utilizing current advancements has become a convincing necessity. The Vehicle detection is the key task in this area and counting of a vehicle plays an important role and this two are important applications.

DRAW BACKS

- More traffic and congestion occurs
- Vehicle tracking is tedious
- Less accuracy

PROPOSED SYSTEM

The method proposed in this research paper to detect, count different types of vehicles. This research paper aims to address an accurate and beneficial in moving vehicle recognition and counting technique that can be utilized in the perplexing traffic environment.

The methods like adaptive background subtraction, binarization, and morphological activities are used to detect a moving vehicle, obtain a foreground area and eliminate noise and shadow in a video. Finally, blob tracking was done to coordinate with vehicles in the current frame and those in the past outline.

This proposed method, firstly, utilize an adaptive background subtraction technology to recognize moving vehicle in a video. Besides, it played out a binarization interaction to obtained foreground

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area, followed by morphological activities to eliminate noise and shadow.

Thirdly, to restrict from an over Segmentation issue, the forefront image got from the last step was incorporated with the edge picture of a similar frame. A head to applying a further process. At that point, vehicles were recognized and counted by utilizing a detector virtually positioned on the streets.

CONCLUSION

This single project produces multi domain outputs. It can count and classify vehicles on highways by the methods mentioned above and help with highway management and toll collection, it can calculate traffic density on busy traffic roads for better monitoring. Some more work is needed in reducing the occlusions present in the image.

Since the population and transport system increase day by day, the demand for managing them increase at the same time. The world is getting populated so fast. The number of machines from any types including vehicles increased at the same time. That being said, new topics like traffic, accidents and many more issues are needed to be managed. It is hard to manage them with the old methods, new trends and technologies have been found and invented to handle each and every milestone that human kind is trying achieve.

One of these challenges is traffic in highways and cities. Many options like traffic light, sign, etc. deployed in order to deal with phenomena It seems that these options are not enough or not so efficient alone. New technologies like object detection and tracking are invented in order to utilize automated camera surveillance to produce data that can give meanings for a making process. The phenomena have been used for different kind of issues.

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