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OBJECT TRACKING IN STATIC BACKGROUND

Kaveri Pandey
Department of Computer Science & Engineering
Krishna Engineering College
Ghaziabad, Uttar Pradesh

Komal Kaushal
Department of Computer Science & Engineering
Krishna Engineering College
Ghaziabad, Uttar Pradesh

Maneesh Narayan
Department of Computer Science & Engineering
Krishna Engineering College
Ghaziabad, Uttar Pradesh

Mayank Rajput
Department of Computer Science & Engineering
Krishna Engineering College
Ghaziabad, Uttar Pradesh

Aditya Tandon
Department of Computer Science and Engineering
Krishna Engineering College
Ghaziabad, Uttar Pradesh

ABSTRACT- Object tracking is a critical and challenging task in computer vision applications such as surveillance, vehicle navigation, and human tracking. Object tracking decreases human endeavors and gives effectiveness. One of the numerous so-called objectives of 'AI' or machine learning is to portray a scene as absolutely as a human being. In this paper, we proposed a robust question following utilizing different algorithms such as Background Subtraction method. Using advanced feature matching, we propose a low-complexity and reliable object tracking method for real-time environments in this paper. Our research shows that our method is faster and more effective than traditional methods and that it can reliably monitor artifacts in a variety of environments.

Keywords- Background Subtraction method, Object tracking, Static background, Threshold amount.

1 INTRODUCTION

Object Tracking is an educated interior computer vision, which focuses to track objects as they move over a course of action of video frames. Objects are mostly people, but may as well be animals, vehicles, or other objects of interest.
Object Tracking could be a major stage included in numerous inaccessible detecting applications. It is used to track an object (or different objects) over a grouping of pictures. It can be characterized as a procedure of sectioning the desired object from a video scene and keeping track of its movement, impediment, introduction, etc to extricate the valuable data. In this paper, we proposed a robust question following utilizing different algorithms such as Background Subtraction method. One of the most important strategies for tracking moving objects is background subtraction. The segmentation of objects is done using subtraction in this process. Faster transmission and less bandwidth become important factors for data transmission in video surveillance of borders across countries. Background Subtraction aids in segmenting the person of interest by ignoring the background, reducing bandwidth data even

further. This data is then transmitted at a much faster rate through a surveillance device.
Object tracking features a wide assortment of applications like human-computer interaction, human behavior understanding, video surveillance, accident prediction and detection, traffic video monitoring, motion-based recognition, etc. In expansion, the steady dangers from terrorist attacks at open and secured places increment the require for effective reconnaissance frameworks with an embedded question following subsystems. Encourage, the headway in computing innovation and the accessibility of high-quality cameras at low cost has expanded the use of object tracking in numerous applications.

2 POTENTIAL APPLICATION

Object tracking algorithms have been applied in many different scenarios and have various applications which are listed below.

I. **Traffic Control-** In rapidly rising cities, traffic management is becoming one of the most important concerns. Many man-hours are lost as a result of poor traffic management. Increased highway congestion, as well as issues with existing detectors, has sparked interest in vehicle detection technology like video image processing. Automated motion detection and monitoring is a difficult job in traffic surveillance. The content of each frame is read and the context is calculated in the tracking algorithm. To improve the operation, the tracking system is focused on optical flow estimation and the application and combination of various related computer vision and image processing techniques.

II. **Surveillance-** Surveillance is the detection of someone's actions, activities, or information with the intention of collecting information, manipulating, controlling, or guiding them. This can involve remote surveillance using automated devices such as closed-circuit television (CCTV), as well as interception of electronically transmitted data such as Internet traffic. Easy technological approaches such as human intelligence collection and postal interception may also be used. Extracting the feature, context subtraction, and identification of the extracted object are the main components of tracking for surveillance systems.

III. **Industrial Inspection-** Inspection and testing are vital components of the manufacturing process because they assist in quality management, cost reduction, and the detection of reasons for faulty product development. Since customer demand is growing, the ability to visually detect a product's quality is one of the most critical issues for the manufacturing industry. This method is usually carried out by human experts; however, experts often make mistakes because this process can be repetitive and exhausting even for the most experienced operators. Using computer vision and digital image processing techniques, object tracking will automatically check the quality of an object.

IV. **Robotics-** Robotics is a discipline that incorporates science, engineering, and technology to build devices called robots that perform (or mimic) human behavior. While the robotics industry is still in its infancy, it has already made incredible progress. Robots are performing activities that humans could never hope to accomplish. The accuracy and efficiency of machine vision can be used to identify object tracking methods used for robotics equipment. They operate by removing image segments that do not correspond to a predefined entity.

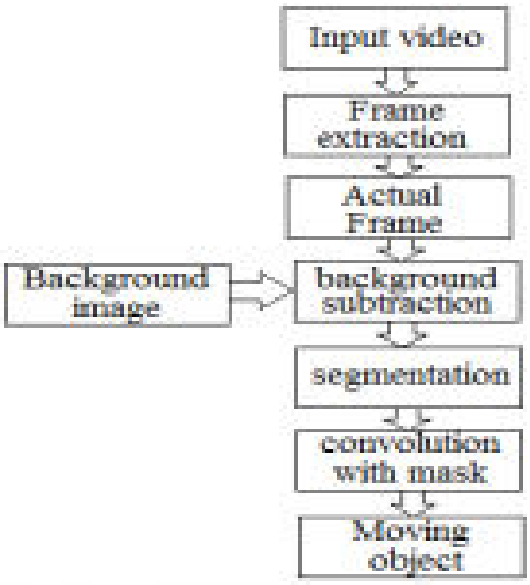
3 PROPOSED WORK/METHODOLOGY

In terms of processing time, the proposed technique is both effective and reliable. The algorithm used in this study is based on the background subtraction object tracking algorithm. Background subtraction is the most common method of motion detection. It's a motion detection system that uses the difference between the current image and the background image to detect motion and can typically provide data like object information.

The following points describe the algorithm used to construct this object tracking in static background:
1.Add a video
2. Take out the picture
3. Calculate the absolute difference between the present and background images.
4. To transform a subtracted image into a binary image, choose the appropriate threshold amount.
5. Foreground is defined by 6.B(x, y)=1.
6. Background is represented by B(x, y)=0.

Proposed Object Detection Output

The proposed algorithm's flowchart is as follows :



4 SIMULATION SCREENSHOTS

The following images 1 and 2 show the output of the proposed procedure.

Image 1:

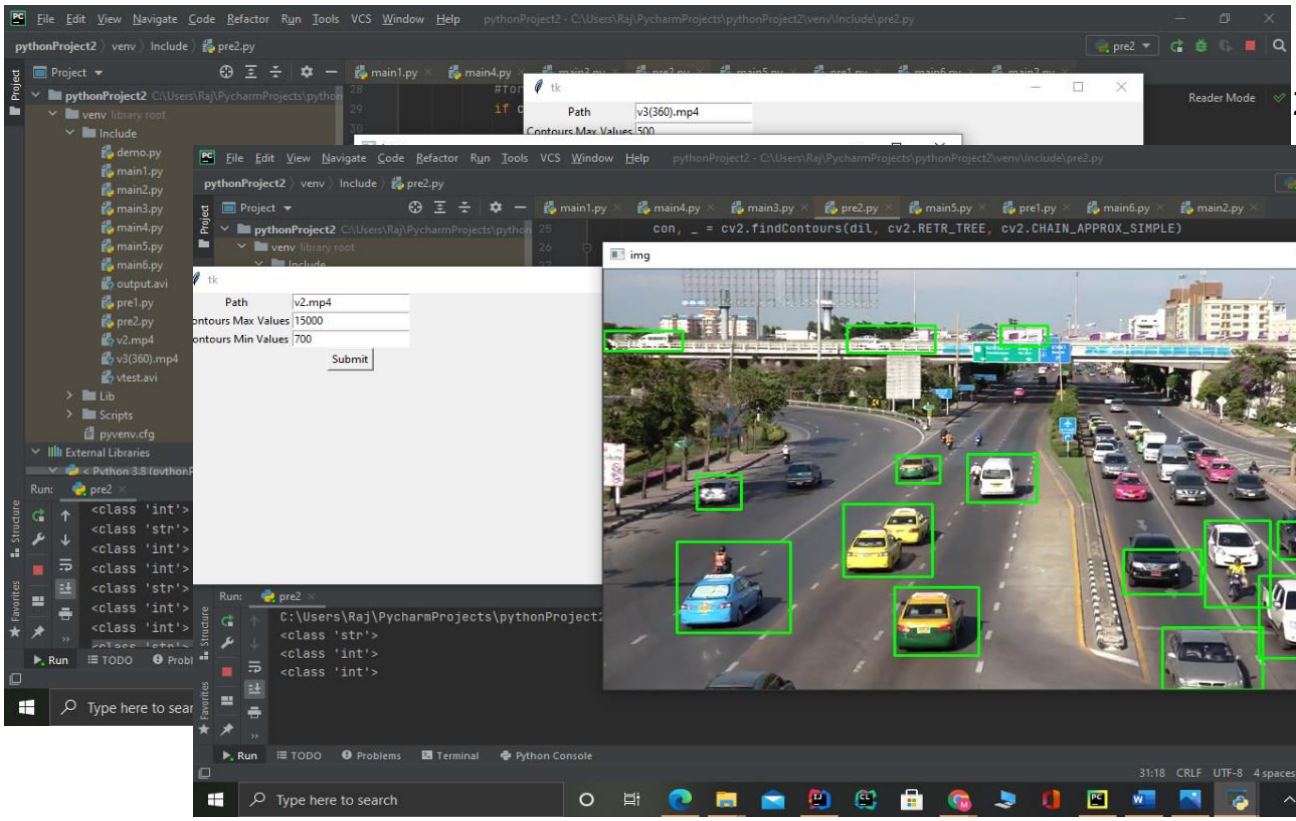


IMAGE 2:

5 CONCLUSION

The identification of moving objects using modified background subtraction and adaptive threshold techniques is proposed in this paper. Since it is easy and multiplier-free, the proposed technique will be able to detect the object faster than current architecture, and the area used by the proposed method is substantially less than that of existing architecture. The proposed moving object detection algorithm could be improved to detect multiple target objects in video sequences.

Our research shows that our approach is more efficient and reliable than conventional methods, and that it can accurately monitor objects in a variety of environment. In future research, our system would need to monitor objects in a simple and consistent manner.

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