

A Comparative Performance Evaluation for Object Segmentation and Object Tracking

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ABSTRACT

Segmentation of background play important role in video tracking system. In object tracking the loss of frame and data are very important part, now various authors and researchers work on feature based object segmentation for object tracking. The background subtraction algorithm requires a relatively small computation time and shows robust detection in good illumination conditions. In this paper we show the comparative study of empirical results for video segmentation using Neural Network and other techniques.

Keywords:- Object Segmentation, Object Tracking, Object Tracking Stations, Frame Rate, Frame loss.

INTRODUCTION

The history of video surveillance consists of three generations of systems which are called 1GSS, 2GSS and 3GSS. The first generation surveillance systems (1GSS, 1960-1980) were based on analog sub systems for image acquisition, transmission and processing. They extended human eye in spatial sense by transmitting the outputs of several cameras monitoring a set of sites to the displays in a central control room. They had the major drawbacks like requiring high bandwidth, difficult archiving and retrieval of events due to large number of video tape requirements and difficult online event detection which only depended on human operators with limited attention span. The next generation surveillance systems (2GSS, 1980-2000) were hybrids in the sense that they used both analog and digital sub systems to resolve some drawbacks of its predecessors. They made use of the early advances in digital video processing methods that provide assistance to the human operators by filtering out spurious events.

The rest of this paper is organized as follows in section II we discuss about the problem statement and issues found during literature study. In section III we discuss about the comparative study of object segmentation methods with performance parameters evaluation in detailed And finally in section IV we define the overall conclusion of this comparative study.

II PROBLEM FORMULATION

In the process of review we found that some performance affected problem related to the video object detection. These problem are affected the performance and accuracy of video object tracking and result overcome in fact of loss of frame. The segmentation region increase, decrease the accuracy and performance of object tracking. There are some problems which we faced during the rich literature survey and we try to find out the solution for this mentioned problems are mentioned here [4, 6, 9,10]. The Challenges and issues are occurred during the experimental process these are such as Segmentation errors, Change of lighting conditions, Shadows and False frame hit etc.

III COMPARATIVE PERFORMANCE EVALUATION STUDY ANALYSIS

In this section we discussed the comparative study of image segmentation methods for the object tracking, to getting the results we used evaluate the performance of neural network with other techniques of video background segmentation and object tracking is implemented in MATLAB 7.8.0. The proposed video background segmentation method based on RBF neural network filter.

Method	Segmented Area (%)	Frame Loss
GMM	80	30.75
GMM-RBF	85	29.62

Table 1: gives the computational value estimated by segmentation area of birthday party video for frame loss

Method	Segmented Area (%)	Estimated error (%)
GMM	80	6.45
GMM-RBF	85	4.56

Table 2: give the computational value estimated by segmentation area of birthday party video estimated error.



Fig 1: shows that children dance video processing for different segmented area of background segmentation process for tracking of object trajectory.

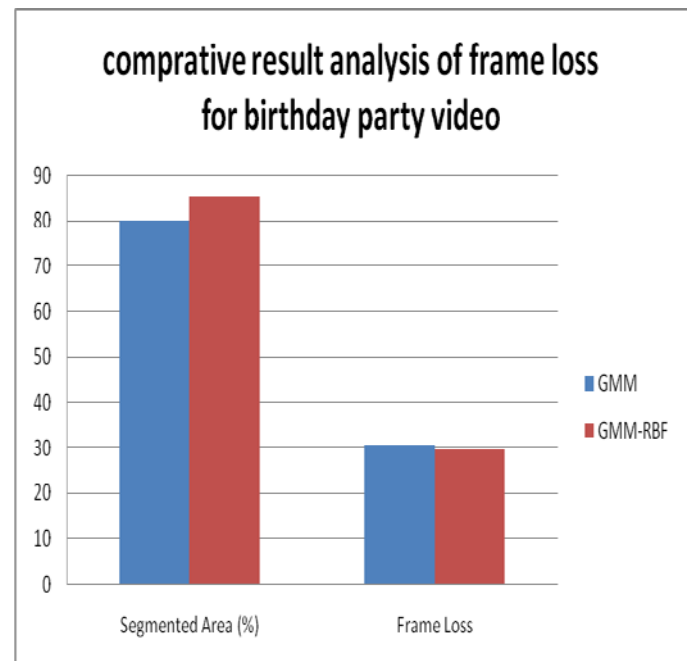


Fig 2: shows that comprative result analysis of frame loss and estimated value of segmented are using GMM and GMM-RBF model.

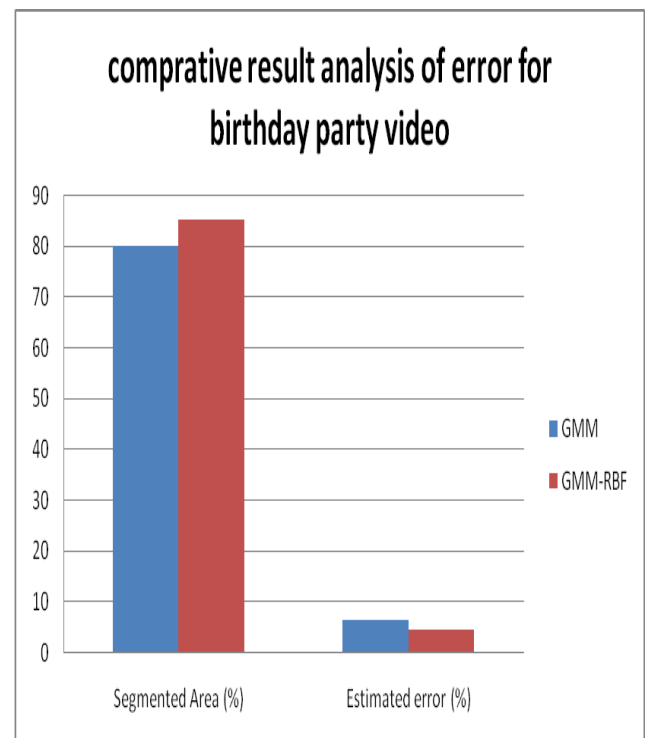


Fig 3: shows that comprative result analysis of Error and estimated value of segmented are using GMM and GMM-RBF model.

IV CONCLUSION

The increasing rate of multimedia data and transmission facility induces some problem of data loss and delay of delivery. Now in the process of video object detection background updating is important factor for analysis. For the background updating used segmentation process and segmentation used clustering technique. In this paper we compare RBF neural network model with GMM techniques for the segmentation process to reduce the loss of frame and video data during object tracking process.

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