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## Audio Assistance for Moving Object Detection

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**ABSTRACT:** The goal of the project is to recognize moving, stationary object, track them throughout their life spans and provide Audio output for detected objects to the specially disabled people. Our algorithm uses a combination of motion detection and image-based template matching to track the targets. Motion detection is determined by temporal conferencing and template matching is done only on the locations as guided by the motion detection stage to provide a robust target-tracking method. Results show robust object recognition in some tested images, perfect tracking for the input.

**KEYWORDS:** Object Detection, Hog, Background subtraction

### I. INTRODUCTION

There are two main goals to our project: to correctly recognize moving objects of interest, and to provide audio output for those objects. The problem facing the first task is noise: some of the moving pixels in the image may be due to camera motion or noisy background that is not of interest. We solve this problem using size constraint to filter out movements that are too small to be part of an object of interest. The problem facing the second task is how to correctly identify the objects of interest in all the image frames. Using motion detection alone to track the targets provides a poor method due to the noisy movements. Template matching alone is not robust against change in object orientation and tends to drift off when targets are in motion. Hence, we use a combination of the two by performing template matching only on the pixels that are moving. Results have shown this to be a robust method in both recognizing the objects as well as tracking them.

The rest of the report presents a brief literature review; a description of the experiment design and the program; presentation of the results; conclusion and discussion for future work. Appendix 1 shows the listing of the program. Appendix 2 gives the program documentation. Appendix 3 contains all the results of the test images.

### II. LITERATURE REVIEW

[1] S. Vasuhi, M. Vijayakumar, vijayakumar V. Vaidehi, "Real Time Multiple Human Tracking Using Kalman Filter" IEEE 3rd International Conference on Signal Processing, Communication and Networking 978-1-4673-6823-2015 S. Vasuhi, et al. proposes a reliable and robust approach for the detection for tracking of multiple human in complex environments. The main contribution of this paper is Fuzzy Inference System for background modeling KF for tracking and Hungarian Algorithm for person identification in. This method overcomes the problem of the occlusion. This method is useful to capable of handling the complex tracking problem and it also gives the solution of tracking of objects. The main disadvantage of this system is the problems regarding background variations, camera motions, including panning, tilt.

[2] JesúsMartínez del Rincón, DimitriosMakris, Carlos OrriteUruñuela, and Jean-Christophe Nebel, "Tracking Human Position and Lower Body Parts Using Kalman and Particle Filters Constrained by Human Biomechanics" IEEE Transactions On Systems, Man, And Cybernetics—Part B: Cybernetics, PP. 26-37 VOL. 41,NO. 1, FEBRUARY 2011

In JesúsMartínez et al. the Human motion analysis is the most advanced research area in the computer vision. This paper proposes a robust method of detecting the human movements using a kalman and particle filter. The main contribution of this paper is it uses a 2-d articulated model that is constrained by human biomechanics. The main

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advantage of this paper is it can handle the bipedal motion movements. The disadvantage of this method is pivot points should not be occlude.

[3] JaeyongJu, Daehun Kim, BonhwaKu, HanseokKoAnam-dong, Seongbuk-gu, Seoul, KoreaDavid K. Han “ Online Multi-Object Tracking based on Hierarchical Association Framework” IEEE Conference on Computer Vision and Pattern Recognition Workshops 978-1-5090-1437-8/16 IEEE DOI 10.1109/CVPRW.2016.161pp 1273- 1281 2016. JaeyongJu, Daehun et al. To track the object in the complex scenario is the very difficult task in the computer vision. The paper proposes a 4 stage hierarchical association framework to track the objects. This method handles the problem of track generation, progressive trajectory construction, track drift and fragmentation. The results shows the improves performance of the system compared to the other state of art methods.

[4] Abdul-LateefYussiff, Suet-Peng Yong, Baharum B. Baharudin “Human Tracking in Video Surveillance Using Particle Filter” International Symposium on Mathematical Sciences and Computing Research (iSMSC)978-1-4799-7896-0/15©2015 IEEE pp 83-88 2015

Abdul et al. Proposes a method in which in the real world i.e. in the indoor and outdoor surveillance video the accuracy of the kalman filter gets decrease. In this paper the so the author proposes the new technique which is the combination of two pretrained human detection models to locate the various position of the object i.e human in the dataset i.e. the videos. Then the particle filter is used to locate the object. The disadvantage of this method is it addresses the sample impoverishment which is a common problem to most particle filter and did not assume linear-gaussian assumption in which the kalman filter relies on the evaluation of the algorithm

[5] BimaSahbani ,WidyawardanaAdiprawita “Kalman Filter and Iterative-Hungarian AlgorithmImplementation for Low Complexity PointTracking as Part of FastMultiple Object Tracking System” 2016 IEEE 6th International Conference on System Engineering and Technology (ICSET) Oct 3-4, 2016 Bandung – Indonesia 978-1-5090-5089-5©2016 IEEE pp 109-115 2016

BimaSahbani et al. In this paper following points are concluded. The first point express that base on the framework testing Hungarian algorithm with Euclid remove parameter has been effectively executed in information partner and additionally for particular case handler (Occlusion). The second one state that statistically, it is known that the edge an incentive for information affiliation is 2 meter for each casing and 6 meters for each casing for impediment limit. The third conclusion point express that two methodologies have been utilized as a part of the execution of the different point following such as probabilistic approach utilizing Kalman Filter, and non probabilistic approach without Kalman Filter. The Probabilistic strategy tentatively more strong in execution than non-probabilistic one. The last point state that computational asset requirement for processing per edge is around 26KB this condition will exceptionally expected that this numerous question following calculation could be executed in the framework with less computational asset than Personal Computer.

[6] Malik M. Khan, Tayyab W. Awan, Intaek Kim, and YoungsungSoh “Tracking Occluded Objects Using Kalman Filter and ColorInformation ” International Journal of Computer Theory and Engineering, Vol. 6, No. 5, V6.905 PP 438 -442. October 2014.

Malik M. Khan, et al. In this paper the multi object tracking is done using a EKF with past information of objects when there were halfway impeded and furthermore vanished and returned by poor foundation displaying. At the point when the items were exceedingly impeded, invariant properties like shading and size were incorporated to EKF with past data to determine various difficulties

### III. PROBLEM STATEMENT

Without vision it can be challenging for a specially disabled person to navigate through a room or a road without bumping into obstacles. Develop a device that would assist specially disabled users to sense objects without touching the object or carrying a stick in their hand.

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## IV. SOLUTION

The proposed system detects an object of interest and sends feedback in the form of speech warning message via an earphone. The system will results achieving correct detection accuracy on humans and cars detection for real-time testing with blind. The system does the preprocessing of the real time image using techniques such as erosion, dilation, opening, closing, gamma normalization. After that we do the grey scaling and the result output is given to the HOG algorithm. Background Subtraction is the other algorithm used in the system. System Architecture is given in the below diagram.

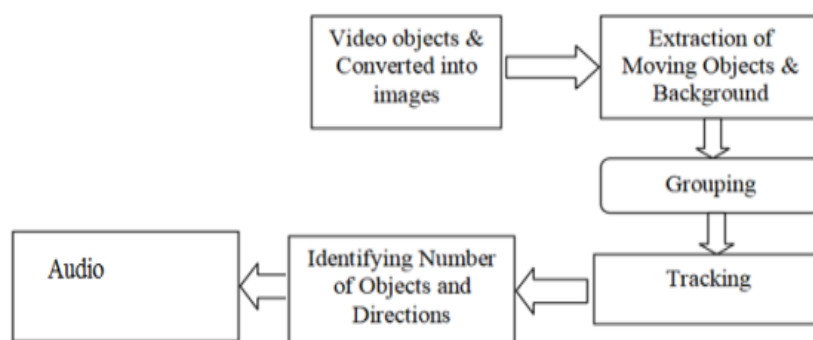


fig. 1 system architecture

**Pre-processing-**In most computer vision systems, simple temporal and/or spatial smoothing is used in the early stage of processing to reduce camera noise. Smoothing can also be used to remove transient environmental noise such as rain and snow captured in outdoor camera. For real-time systems, frame-size and frame-rate reduction are commonly used to reduce the data processing rate. If the camera is moving or multiple cameras are used at different locations, image registration between successive frames or among different cameras is needed before background modelling. Another key issue in pre-processing is the data format used by the particular background subtraction algorithm.

**Enhancements-** Image enhancement is basically improving the interpretability or perception of information in images for human viewers and providing 'better' input for other automated image processing techniques. The principal objective of image enhancement is to modify attributes of an image to make it more suitable for a given task and a specific observer. During this process, one or more attributes of the image are modified. The choice of attributes and the way they are modified are specific to a given task.

### ALGORITHMS:

**Histogram of Gradient-**The histogram of oriented gradients (HOG) is a feature descriptor used in computer vision and image processing for the purpose of object detection. The technique counts occurrences of gradient orientation in localized portions of an image. This method is similar to that of edge orientation histograms, scale-invariant feature transformation descriptors, and shape context, but differs in that it is computed on a dense grid of uniformly spaced cells and uses overlapping local contrast normalization for improved accuracy.

**Background subtraction-** Identifying moving objects from a video sequence is a fundamental and critical task in video surveillance, traffic monitoring and analysis, human detection and tracking, and gesture recognition in human-machine interface. A common approach to identifying the moving objects is background subtraction, where each video frame is compared against a reference or background model. Pixels in the current frame that deviate significantly from the background are considered to be moving objects. These "foreground" pixels are further processed for object

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localization and tracking. Since background subtraction is often the first step in many computer vision applications, it is important that the extracted foreground pixels accurately correspond to the moving objects of interest.

**Audio Output-** Audio assistance makes the system more operable for specific purpose. The detection of objects will trigger the output of the audio. The audio files for particular objects will be present in the dataset and will be used whenever the specific objects is been detected.

### V. RESULT AND ANALYSIS

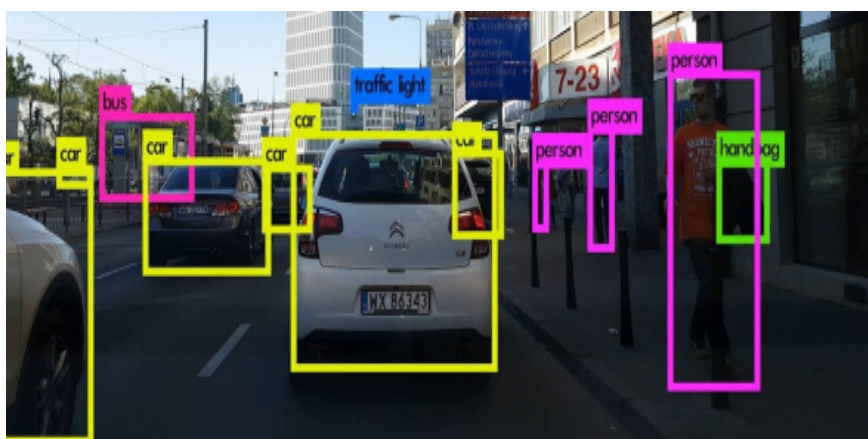


Fig. 2 Result

The output will be real time object detection with audio output of the object present in the frame. Multiple objects can be detected and output be generated. Noise is cancelled using preprocessing so the accuracy is intended to increase.

### VI. CONCLUSION

We achieve an object-tracking program that can automatically track multiple objects. We add intelligence to our program to track moving object automatically without being specified by users. It detects the motion, segments moving objects, and then tracks them in the frames. Tracking accuracy is quite good based on the result that moving objects are correctly tracked through the whole sequence. The audio assistance is provided for the multiple moving objects.

### REFERENCES

- [1] Osman Ibrahim, HazemElGendy, and Ahmed M. ElShafee "Speed Detection Camera System using Image Processing Techniques on Video Streams" International Journal of Computer and Electrical Engineering, Vol. 3, No. 6, December 2011
- [2] ArashGholami Rad, Abbas Dehghani and Mohamed RehanKarim "Vehicle speed detection in video image sequences using CVS method" International Journal of the Physical Sciences Vol. 5(17), pp. 2555-2563, 18 December, 2010
- [3] Ms. PurvajaDevendraGulhane Ms. KajalRajendraNagrале Dr. P. M. Pandit, "An Image Processing Approach for Moving Vehicle Speed Detection by Speed Camera" IETE Zonal Seminar "Recent Trends in Engineering & Technology" - 2017 Special Issue of International Journal of Electronics, Communication & Soft Computing Science and Engineering, 36
- [4] Mangala A.G1 , Dr. Balasubramani R "A Review On Vehicle Speed Detection Using Image Processing"
- [5] ArashGholami Rad, Abbas Dehghani and Mohamed RehanKarim, "Vehicle speed detection in video image sequences using CVS method" International Journal of the Physical Sciences Vol. 5(17), pp. 2555-2563, 18 December, 2010 Academic Journals Full Length Research Paper
- [6] Mrs. M. Maheshwari, V. Ramani, A. Ramya, R. Nandhini, "Vehicle Speed Detection and Monitoring Using Feature Extraction" International Journal of Advance Engineering and Research Development Volume 5, Issue 03, March -2018 @IJAERD-2018,
- [7] Asif Khan, Imran Ansari, Dr.MohammadShakowatzamanSarker and SamjhanaRayamajhi "Speed Estimation of Vehicle in Intelligent Traffic Surveillance System Using Video Image Processing" International Journal of Scientific & Engineering Research, Volume 5, Issue 12, December-2014 1384 ISSN 2229-5518 IJSER 2014



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- [8] DanangWahyuWicaksono and Budi Setiyono “Speed Estimation On Moving Vehicle Based On Digital Image Processing” International Journal Of Computing Science And Applied Mathematics, Vol. 3, No. 1, February 2017 21
- [9] Ms. Bhagyashri MakwanaI Prof. PraveshKumarGoel “Moving Vehicle Detection and Speed Measurement in Video Sequence” International Journal of Engineering Research & Technology (IJERT)Vol. 2 Issue 10, October – 2013
- [10] Devender Kumar, Preeti Singh Rathour, Aakash Gupta, “A Model for Multiple SVehicle Speed Detection by Video Processing In Matlab”, Volume 3 Issue VI, June 2015 IC Value: 13.98 ISSN: 2321-9653 International Journal for Research in Applied Science & Engineering Technology (IJRASET) 2015 936