Image Transformation using Modified K-means clustering algorithm for Parallel saliency map

Aman Sharma
M.Tech CSE Student, School of Computing Science & Engineering,
VIT University, Vellore, Tamil Nadu, India
amansharma1015@gmail.com

Natarajan P.
Associate Professor, Erode Sengunthar Engineering College, Thudupathi,
Perundurai, Erode, Tamil Nadu, India
palanisamynatarajan50@gmail.com

Prof. Swarnalatha P.
Assistant Professor Selection Grade, School of Computing Science & Engineering
VIT University, Vellore, Tamil Nadu, India
pswarnalatha@vit.ac.in

Prof. Balakrushna Tripathy
Senior Professor, School of Computing Science & Engineering
VIT University, Vellore, Tamil Nadu, India
tripathybk@vit.ac.in

Dr. N.Krishnan
Professor, Centre for Information Technology and Engineering,
MS University, Thirunelveli, Tamil Nadu. India
krishnancite@ieee.org

***Abstract*— to design an image transformation system is Depending on the transform chosen, the input and output images may appear entirely different and have different interpretations. Image Transformation with the help of certain module like input image, image cluster index, object in cluster and color index transformation of image. K-means clustering algorithm is used to cluster the image for better segmentation. In the proposed method parallel saliency algorithm with K-means clustering is used to avoid local minima and to find the saliency map. The region behind that of using parallel saliency algorithm is proved to be more than exiting saliency algorithm.**

Keyword- parallel saliency algorithm, Image Transformation, saliency map, K- means clustering algorithm, morphology.

I. INTRODUCTION

Parallel saliency algorithm is much better than exiting saliency algorithm in terms of performance. Parallel saliency algorithm implemented with the help of image signature as well as channel map for producing a saliency map. Image signature, within the region of signal mixing helps in approximating the foreground of an image. Then it is studied through various experiments whether this approximate foreground overlaps with locations, which are visually conspicuous. Parallel saliency algorithm playing the major role for image processing researches for developing new algorithms using saliency map, improving exiting algorithms using saliency mapping concept in parallel environment approach. In this paper Image transformation with clustering concepts and the results are retrieved from one by one image parallel saliency algorithm, which is finally produces a saliency map.

II. RELATED WORK

To design an image transformation system is depending on the transform chosen, the input and output images may appear entirely different and have different interpretations. Image Transformation with the help of certain module like input image, image cluster index, object in cluster and color index transformation of image. Repeating the clustering 3 times to avoid local minima and applying towards parallel saliency algorithm for finding saliency map because using the parallel saliency algorithm because the region behind that of using parallel saliency algorithm more efficient than exiting saliency algorithm. Behind proposed work is combining

multiple techniques and producing a new research for image processing researchers and animators. In the proposed work is combining multiple techniques and producing the new algorithm with the help of image transformation K means algorithm as well as parallel saliency algorithm. On the particular wall more objects are there so separation of the objects are major issue through the human eyes very easy to find the difference between foreground and background but using software and machine could be difficult. For solving object separation problem using parallel saliency algorithm in the terms of good performance. Apart from that image transformation using K-means algorithms all modules image results apply on the parallel saliency algorithm for finding the area of object whatever it might be.

III. METHODOLOGIES

A. K-means Algorithm with Image Transformation

Cluster is technique for converting large sets of group data into smaller sets of same kinds of group data. Same part dividing into subparts with same information in different form. Clustering algorithms are works on similar kinds of data splitting on small groups. The output from a clustering algorithm is basically a statistical description of the cluster centred with the number of components in each cluster. K-means algorithm assigns data elements to the closest cluster (centre).This algorithm able to minimise the sum of the within cluster variances. Cluster centred is the best way to represent the cluster. Some variations could be come during the time applying this algorithm like updating the clusters, Initialization which is select the number clusters and initial partitions and hill-claiming which is can trying to move an object to another cluster. Image transformation system consist of image label, colour image, cluster index, Negated morphology erode.

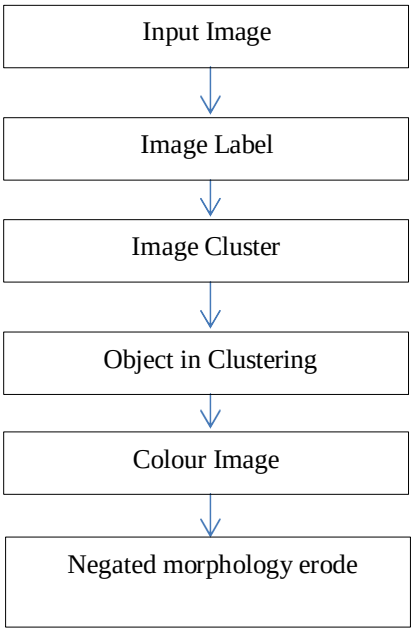


Figure 1: Image Transformation K-Means Algorithm

B. Parallel saliency algorithm

The proposed research work based on parallel saliency algorithm with image transformation technique with the help of image descriptor for finding the saliency map using image transformation. As well as various experiments we are focusing on parallel saliency algorithm. The separation of the objects from whole the wall that is refers to as FGS which is stands for Figure Ground Separation. Thus the propose work is making parallel saliency algorithm applying on image transformation for finding the saliency map using different modules like input image , RGB colour , channel map and saliency map using image descriptor. According to Parallel Saliency Algorithm where splitting the colour image into constituent channels then combing the output into saliency map. All the channel maps of parallel saliency obtained by transforming the channel to the DCTD that is Discrete Cosine Transform domain and takes signs all values in this domain for reconstructing the signs in the image domain for reconstructing the signs squaring each value, image domain and smoothing by convolution with a Gaussian-kernel. It is possible to parallelize the proposed algorithm even further by parallelizing the computation of the IDCT, DCT, convolution sign and squaring functions. This can be done by distributing the computation of each matrix across different cores. K-means Cluster algorithm using image transformation results applying on parallel saliency algorithm for finding the saliency map for each modules. The memory usage is also lesser as it uses only more one of the core to execute, other cores also work.

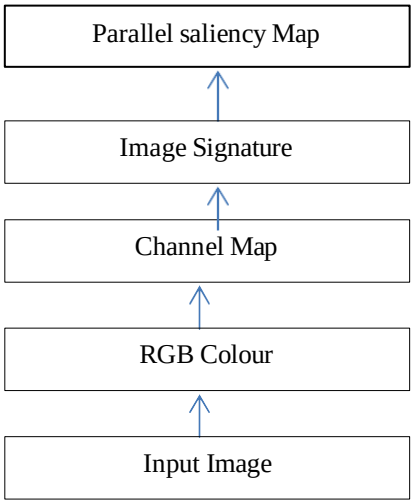


Figure 2: Architecture of Parallel Saliency Algorithm

C. Proposed K-Means with Parallel Saliency Algorithm

The architecture of proposed research work consists of Image transformation using K-Means algorithm and Parallel Saliency Algorithm. In the proposed work inputting the image for image labeling and clustering the objects using images and move to the Negated morphology erode and apply all the result images into RGB color, channel map using image signature for finding Parallel Saliency Map through Parallel Saliency Algorithm.

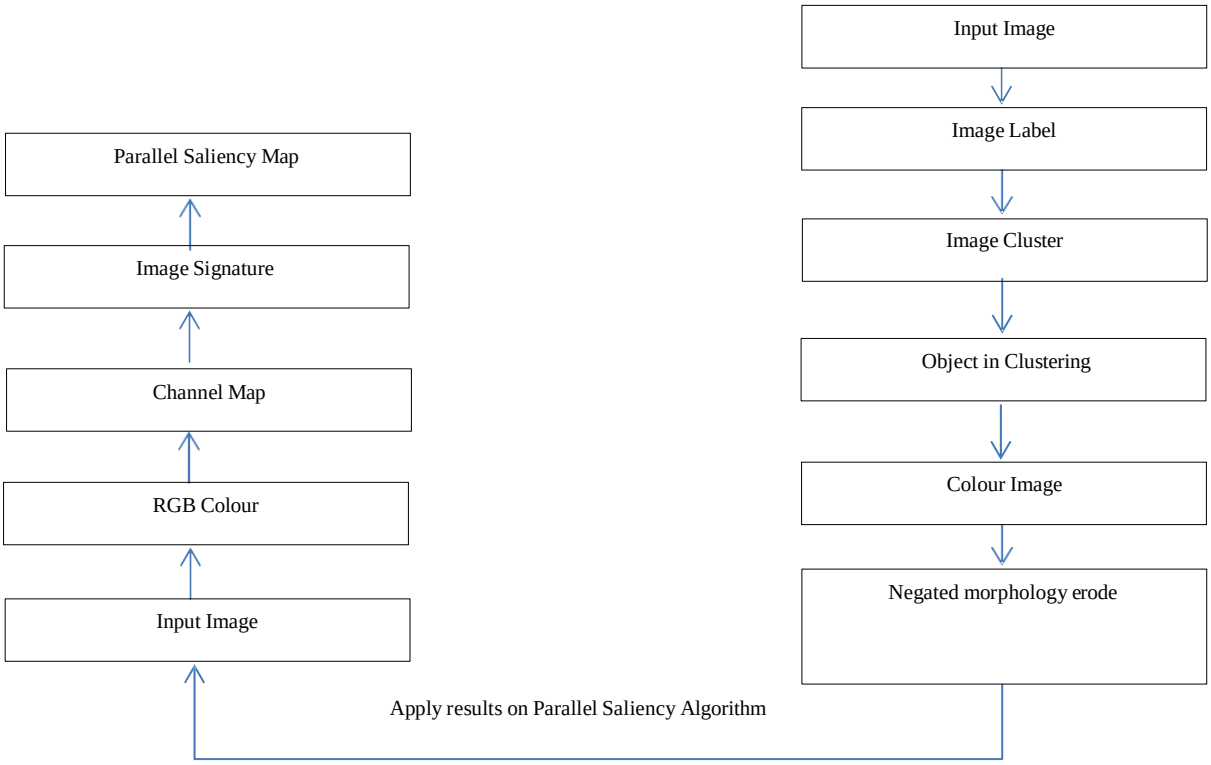
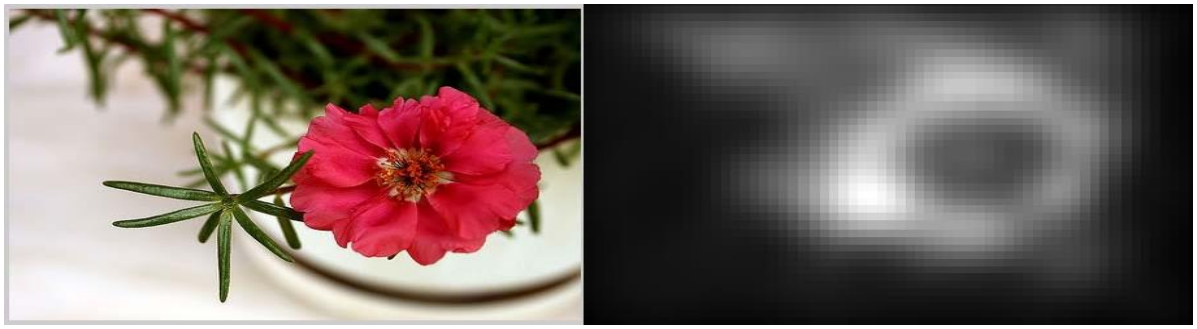


Figure 3: Architecture of proposed K-Means with Parallel Saliency Algorithm

IV. Research Analysis & Discussion

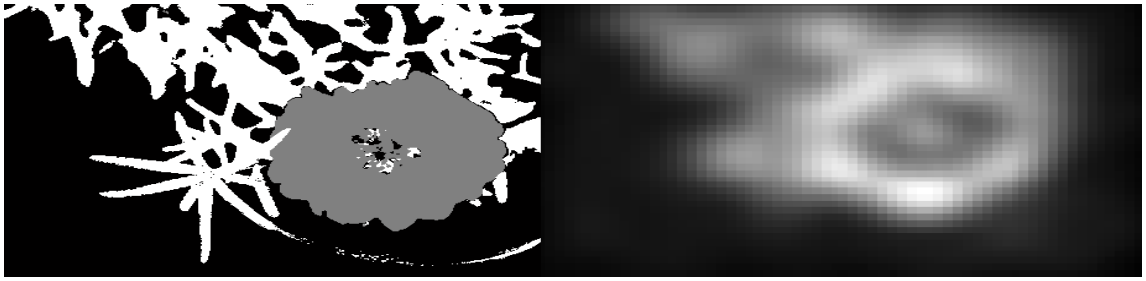
The colour image of k-means output images as an input. The k-means Image transformation applied below images one by one and finding different saliency map in parallel environment for k-means image transformation.

Image Transformation K means (Input Image) Parallel Saliency Algorithm (Output Image)



(i) Input Image applying on Parallel Saliency Algorithm for getting saliency map

After inputting simple colour image giving output in the shape of black & white image which is Parallel saliency map Algorithm. Saliency map able to provides exact location of the object whatever it might be.

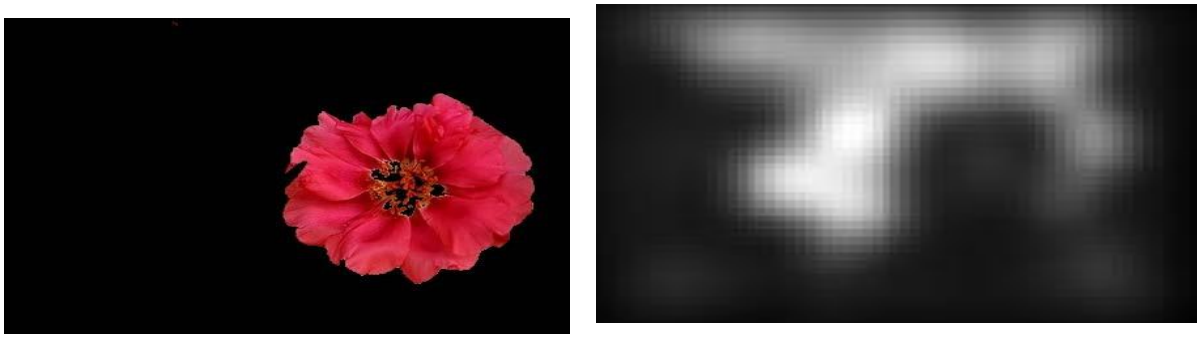


(ii) Image labelled by cluster Index applying on Parallel Saliency Algorithm for getting saliency map

Again Parallel saliency Algorithm applying for Image labelled by cluster Index module. Colour Index image is method to achieve digitalized image colours in a restriction fashion, in order to save system data storage during the time of showing the speedup for refreshing and data transferring that is known as VQC that is stands for vector quantization compression.

(iii) Object in cluster 1 image applying on Parallel Saliency Algorithm for getting saliency map

Object based segmentation using fuzzy clustering able to remove clustering with both quantities and quantitative results confirming the improved overall segmentation performance able to secure better initial shape representation control the scaling of original shape.

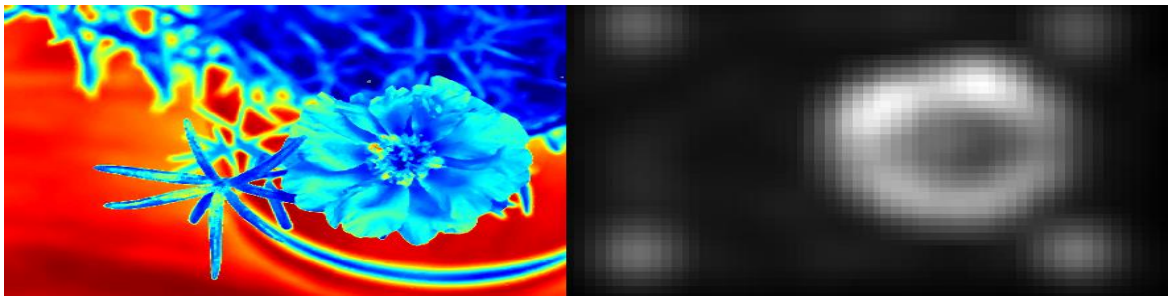


(iii)Object in cluster 2 image applying on Parallel Saliency Algorithm for getting saliency map

Need of doing second time clustering to avoid minima and improve overall performance of image segmentation using clustering.

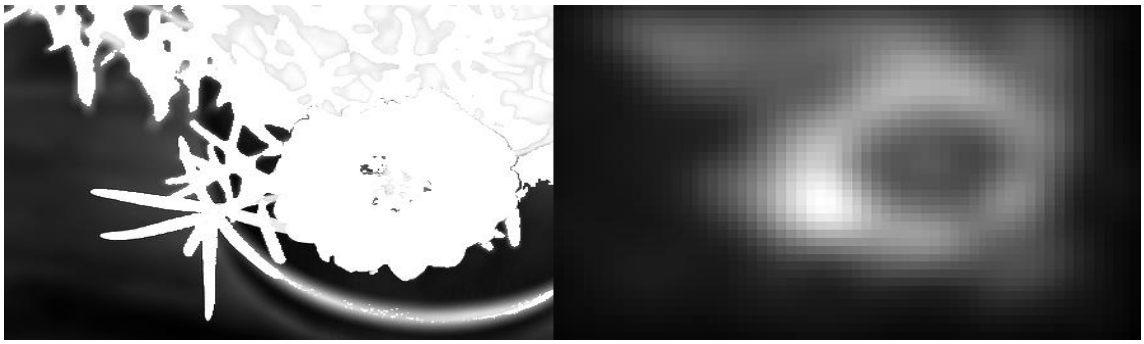
(v)Object in cluster 3 image applying on Parallel Saliency Algorithm for getting saliency map

Again repeating three times clustering to removing local minima and producing excellent performance with image segmentation using clustering.



(v)Colour Image transform image applying on Parallel Saliency Algorithm for getting saliency map

The original image of flower was decomposed into brightness, hue and saturation by YHS model. The picture "maximum saturation with hue" shows colours preserving original hue with maximum saturation. Where the original saturation was zero, the hue is not defined and whir colour is used. Then, the histogram was optimized in RGB (red, green, blue) coordinates, can shows the hue is distorted, the histogram was optimized in YHS coordinates, the visibility of the foreground was enhanced without distortion of colours.



(vi)Negated morphology erode applying on Parallel Saliency Algorithm for getting saliency map

Able to analyse the numerical characteristics of impulse noise images, resolve the spreading-noise problem result through eroding images base on mathematical morphology and dilating.

V. CONCLUSION

The parallel saliency map algorithm could be applicable for other algorithm also. For merging algorithm and producing new research using parallel saliency map which gives satisfactory performance compare to exiting saliency algorithm. The image transformation using K-means algorithm will be helpful for researchers, students and scientist those who are involved in computer science research and development.

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