Interactive Image Segmentation using Hybrid Segmentation Method

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Abstract:- **Unsupervised image segmentation algorithms have matured to the point where they generate reasonable segmentations, and this can begin to be incorporated into larger systems. A system designer has more available algorithm choices. This paper presents an evaluation of two segmentation algorithms; first one is mean shift-based segmentation algorithm and second is graph-based segmentation scheme. In this project we also consider a hybrid method which combines the other two methods. This evaluation is made possible by proposed measure of segmentation correctness, the Normalized Probabilistic Rand (NPR) index, which allows comparison between segmentations created by different image segmentations. For each algorithm, we consider its correctness as measured by the NPR index, and its stability with respect to changes in parameter settings and with respect to different images. An algorithm which produces correct segmentation results with a wide array of parameters on any one image, as well as correct segmentation results on multiple images with the same parameters, will be a useful, predictable and easily adjustable pre-processing step in a larger system. These algorithms will compares all use of the same image features (position and colour) for segmentation, thereby making their outputs directly comparable.**

1. INTRODUCTION

The goal of Image segmentation is to cluster pixels into salient image regions, i.e., regions corresponding to individual surfaces, objects, or natural parts of objects. It can identify the regions of interest in a scene or annotate the data. Each of the pixels in a region are similar with respect to some characteristic or computed property, such as color, intensity, or texture. Image segmentation is useful in many applications such as Medical Imaging (Tumor Detection), Face Recognition, Machine Vision etc. The problems of image segmentation and grouping remain great challenges for computer vision. It has been known that

perceptual grouping plays a powerful role in human visual perception. A wide range of computational

vision problems could in principle make good use of segmented images, were such segmentations reliably. Image segmentation is the first step in image analysis and pattern recognition. It is a critical and essential component of image analysis and or pattern recognition system is one of the most difficult tasks in image processing and determines the quality of the final result of analysis. Image segmentation is a process of dividing an image into different regions.

2. PROBLEM DEFINITION

In the present system we first performs the first stage of mean shift-based segmentation, mean shift filtering, and then applies the graph-based segmentation scheme, as an attempt to create an algorithm which preserves the correctness of the mean shift-based segmentation but is more robust with respect to parameter and image choice. But it will not give improvement in stability. Thus, we wouldn't choose to incorporate this method into a larger system.

In existing system there are many issues are located. Main issue of the existing approaches is accurate extraction of segment with accurate boundary of the image. Other issue is Cost expensive is high while comparing the proposed approach. As Image Segmentation problem is a well-studied in literature, there are many approaches to solve it.

2.1 EXISTING SYSTEM

Unsupervised segmentation algorithm that can be accurately applied to all, or even many, types of images is not straight forward. This is mainly because automatic image segmentation is known to be an ill-posed problem in the sense that images can be segmented differently depending on hard-to specify high level goals. For example, in a street image, the user might desire to segment cars or buildings depending on the underlying application: urban traffic or architecture respectively. Alternatively, supervised algorithms are provided with training sets to learn what the user wants to segment. This strategy, although not as tedious as manual segmentation, still requires the user to do the laborious task of fully labelling

a sufficient number of training images to assure generalization over the full class of images of interest.

2.2 PROPOSED SYSTEM

Hybrid segmentation method:

How to overcome the problems?

All three algorithms had the potential to perform equally well on the dataset given the correct parameter choice. On average over the parameter set, however, the hybrid algorithm performed slightly better than the mean shift algorithm, and both performed significantly better than the graph-based segmentation.

In this comparison, the hybrid algorithm showed less variability when its parameters were changed than the mean shift segmentation algorithm. Although the amount of improvement did decline with increasing values of k, the rate of decline was very slow and any choice of k within our parameter set gave reasonable results. Although the graph-based segmentation did show very low variability with k = 5, changing the value of k decreased its stability drastically.
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3. METHODOLOGY

Five fundamental steps have to be performed in Segmentation:
Step I. Read the Input image.
The system will use a single, colour camera mounted above a computer screen. The output of the camera will be displayed on the monitor.
Step II. The Algorithm will then ask to do manual segmentation.
Once manual segmentation is done the code must store the result.
Step III. Now by using Hybrid method and Learning process it must segment the remaining similar images given as input.
Step IV. The segmentation is done automatically for all the images based on the stored result from the manual segmentation.
Step V. The Segmented image is shown as output.

4. BLOCK DIAGRAM
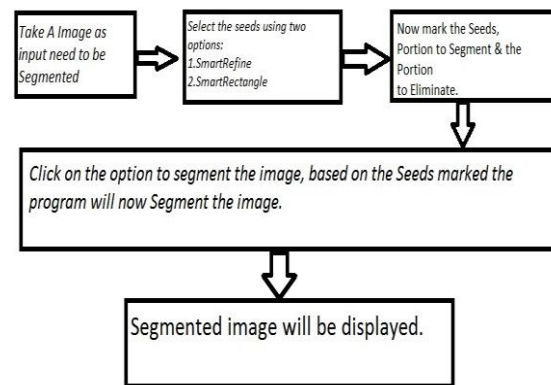
CONCLUSION

The project concept is segmenting particular part of image with boundary. Segmenting is done by both manual and system. Economical wise the proposed system is good, because it requires only less cost for segmentation process. Results are excellent while comparing the existing approaches. Using filtering technique the segmented image will be corrected like increase the clarity and accuracy. Encoding the colour image is possible with proposed system.

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