In this paper we present a novel approach for refining segmentation using saliency map. To achieve this, we first develop a new saliency detection method based on cues at various levels. Initially preprocessing step is done using non-linear anisotropic diffusion filtering in order to preserve the edge information in the foreground salient objects and smooth the background. Then we apply grab cut segmentation using saliency map as the input to get improved segmentation. Repeated application of the scheme is used for multi-object segmentation. The experimental results for the saliency technique show high precision and recall rates against the state-of-the-art methods.

**RESULTS**

ASD-1000 and SOD-300 database is used for experimentation. ASD dataset contains 1000 images from MSRA (Microsoft Research Asia) dataset. SOD dataset contains 300 images from BSD (Berkeley segmentation dataset).

**PROPOSED APPROACH**

The scheme consists of the following steps:

1. Preprocess image using non linear anisotropic scale space filtering.
2. Compute the saliency map of the preprocessed image using the modified saliency map.
3. Obtain global variance of the saliency map.
4. If \( \text{var} \geq \text{Threshold} \) goto step 5 else stop no further segmentation of the region is possible.
5. Binarize the saliency map and use the two regions as initial input for grab-cut segmentation.
6. Apply bounding box to the two regions and generate two images, each containing the pixels lying within the bounding box.
7. Repeat for the two images generated in step 6.

**CONCLUSION**

- Better segmentation results, we use non-linear anisotropic diffusion filtering which substantially reduces the time complexity for computation of saliency map and improves the performance rates.
- Target multi-object segmentation using different levels of cues of saliency.
- The proposed saliency map technique gives relatively high results (precision and recall rates) compared to the prior state-of-the-art methods.

**REFERENCE**