

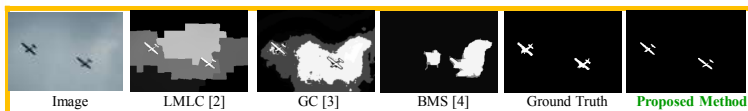


## Salient Object Detection via Global Contrast Graph



### Abstract

We present an unsupervised bottom-up method which formulates salient object detection problem as finding salient vertices of a graph. Global contrast is extracted in a novel graph-based framework to determine localization of salient objects. Saliency values are assigned to regions in terms of nodes degrees on graph. The proposed method has been applied on SED2 [1] dataset. The qualitative and quantitative evaluation of the proposed method show that it can detect the salient objects appropriately in comparison with 5 state-of-art saliency models.



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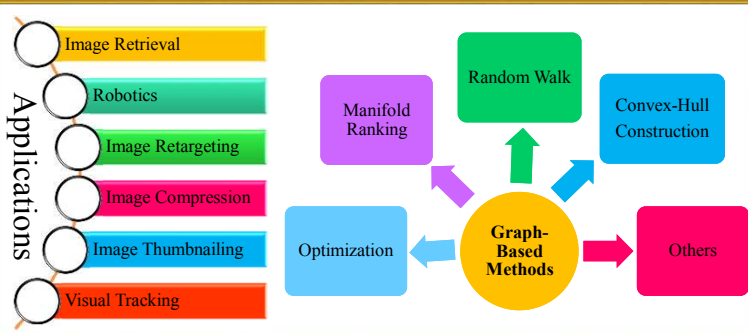
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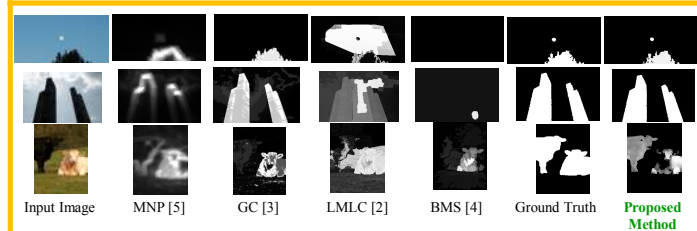
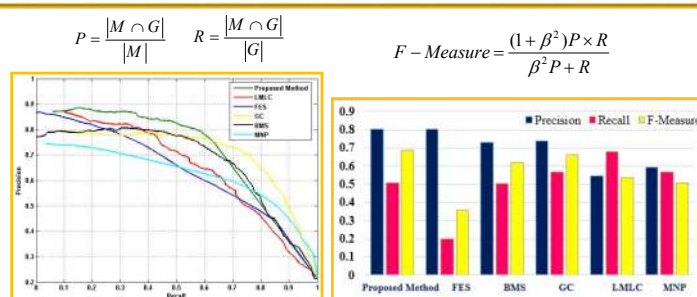
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Saliency, Salient Object Detection, Bottom-up Method, Graph Theory.

### 1- Introduction



### 3- Results



### 2- Proposed Method

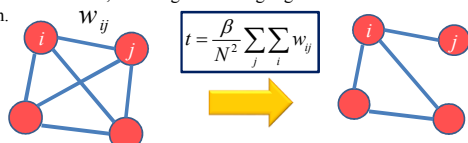
**I. Pre-processing.** In first step, input image partitioned into superpixels and color labels for each superpixel are generated.



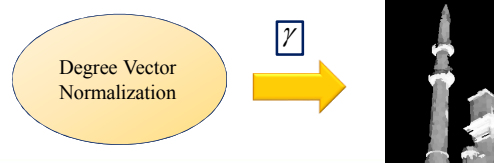
**II. Feature Extraction.** The global contrast between superpixels are obtained to produce weight matrix.

CIE Lab Color Distance Computation  $\rightarrow w_{ij} = \exp\left(-\frac{Dist(i, j)}{\sigma^2}\right)$

**III. Graph Generation.** By considering superpixels as nodes and W as weight matrix, complete weighted graph is produced. Then, each edge with weight greater than t were eliminated to create global contrast graph.



**IV. Salient Object Detection.** Degree vector of global contrast graph is normalized and degrees lower than gamma are omitted. Finally, resulted degree vector rescaled to [0,255] to construct saliency map.



### 4- Conclusion

- We proposed a salient object detection method which eliminates redundant data from a complete weighted contrast graph to create saliency maps.
- Node degrees of contrast graph are normalized, rescaled and assigned to regions as saliency values.
- The proposed method has better performance on PR curve, precision and F-measure over 5 methods.
- It is significant to mention that proposed method works better while uses only one global feature.
- The proposed method is learning-free and has less complexity in comparison with existence methods.

### 5- References

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