

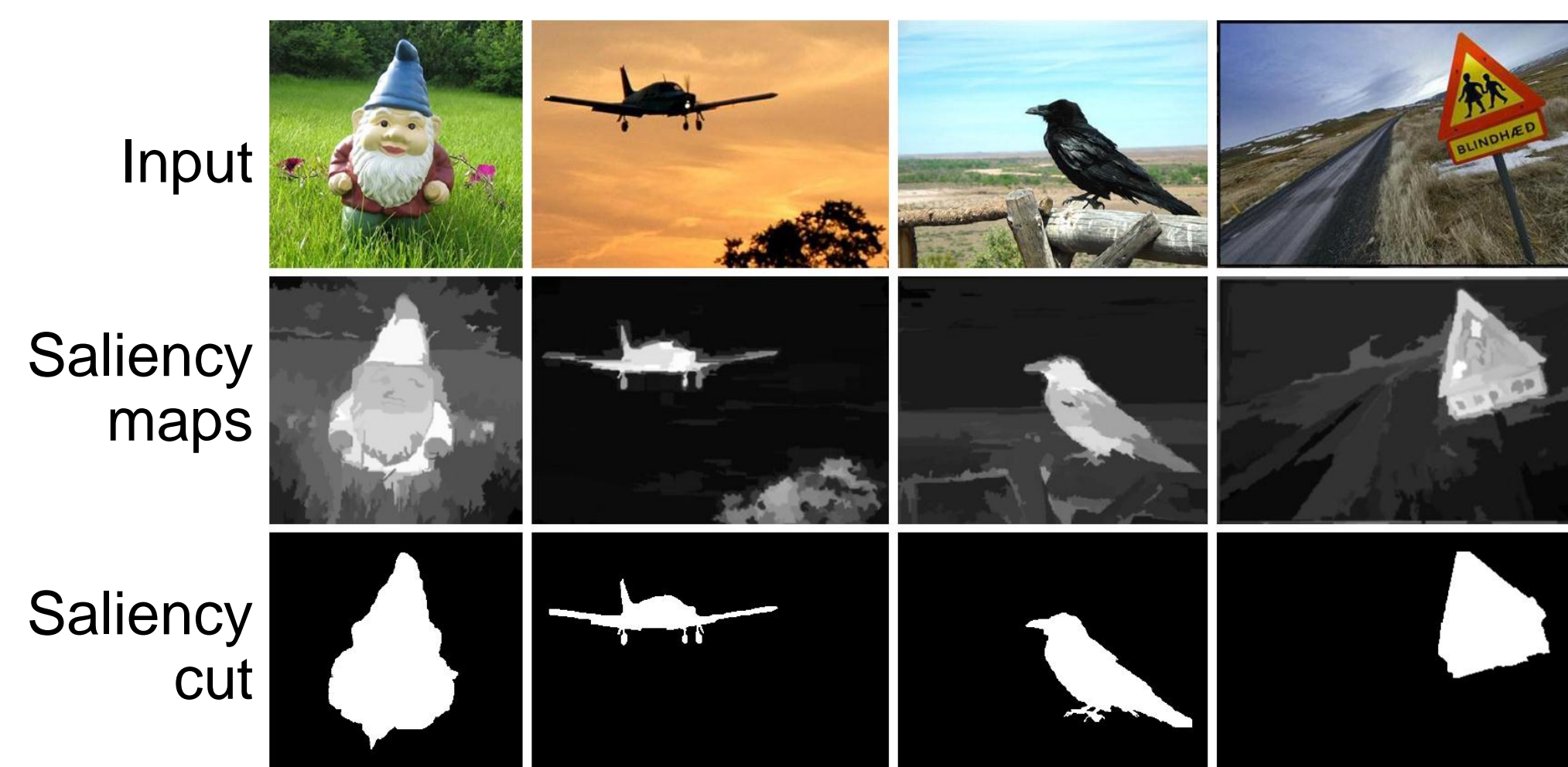
Global Contrast based Salient Region Detection

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Abstract

Reliable estimation of visual saliency is an important step in many computer vision tasks including image segmentation, object recognition, and adaptive compression. We propose a regional contrast based saliency extraction algorithm, which simultaneously evaluates global contrast differences and spatial coherence. Our algorithm consistently outperformed existing saliency detection methods, when evaluated using one of the largest publicly available data sets. We also demonstrate how the extracted saliency map can be used to create high quality segmentation masks for subsequent image processing.

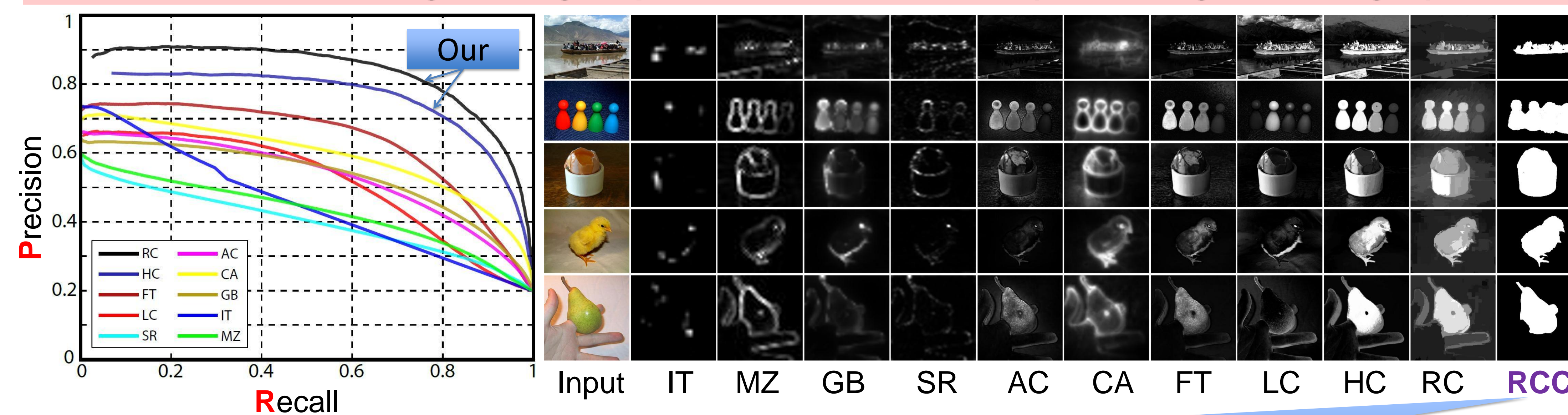
Sample results



C++ <http://cg.cs.tsinghua.edu.cn/people/~cmm/>

free!

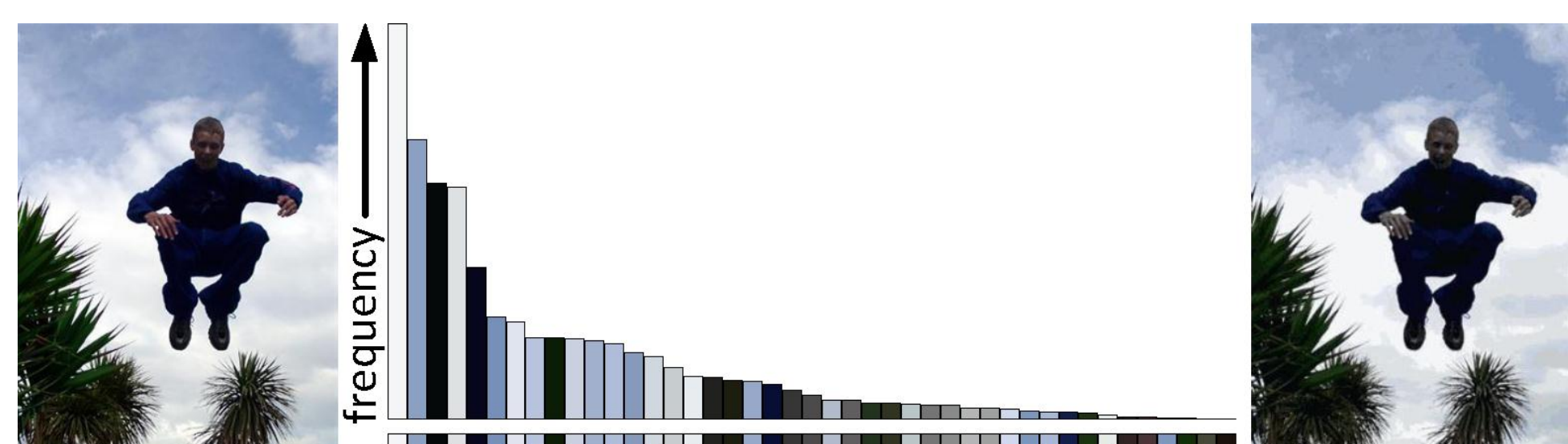
Evaluation using the largest public available dataset (containing 1000 images)



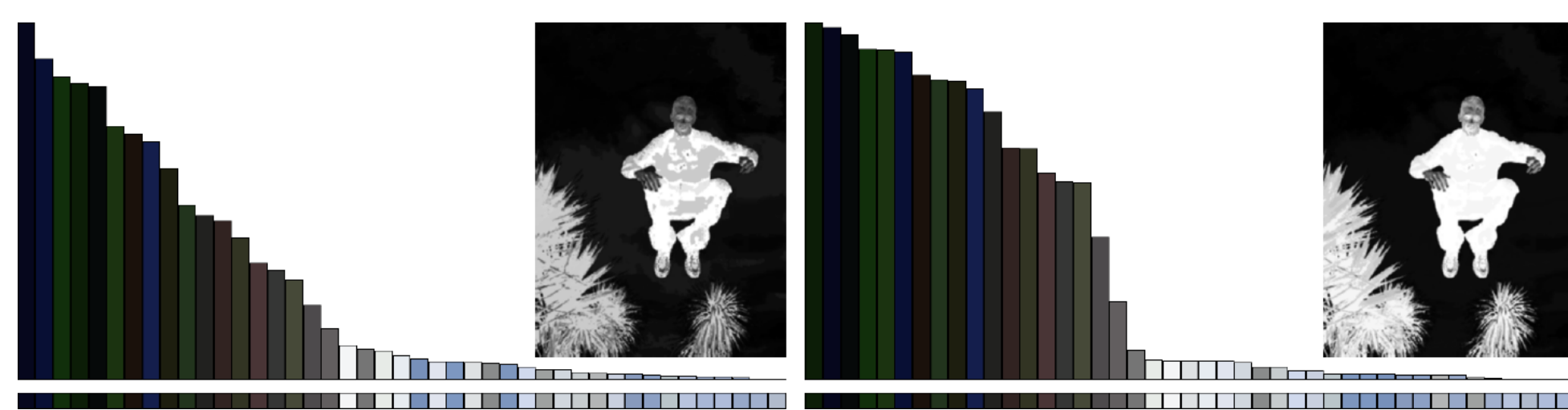
Our RC based saliency Cut achieves $P = 90\%$, $R = 90\%$, compared to previous best results $P = 75\%$, $R = 83\%$ on this dataset.

Histogram Based Contrast (HC)

$$S(c_l) = \sum_{j=1}^n f_j D(c_l, c_j)$$



Histogram based speed up



Color space smoothing

Region Based Contrast (RC)



Segmentation $\sigma_s^2 \rightarrow \infty$ $\sigma_s^2 = 0.4$

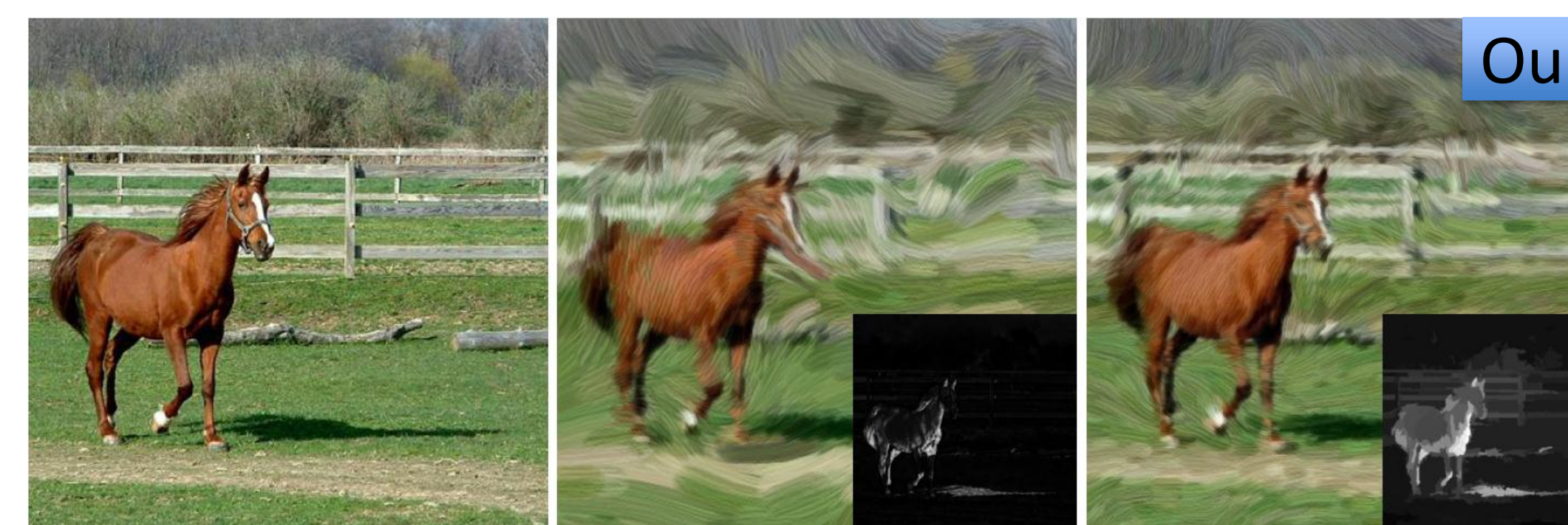
Spatial weighting

Region size

$$S(r_k) = \sum_{r_i \neq r_j} \exp\left(-\frac{D_s(r_k, r_i)}{\sigma_s^2}\right) \omega(r_i) D_r(r_k, r_i)$$

Region contrast by sparse histogram comparison.

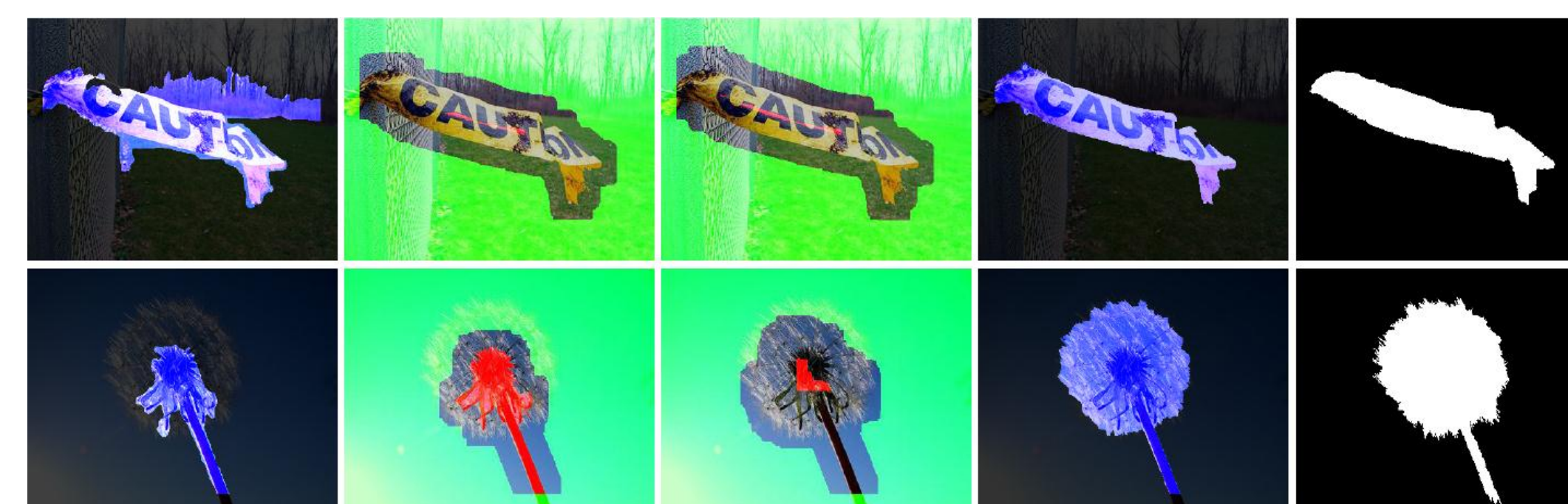
Application: Non-Photorealistic Rendering



Application: Content Aware Image Resizing



Application: Saliency Cut



Limitations Examples

