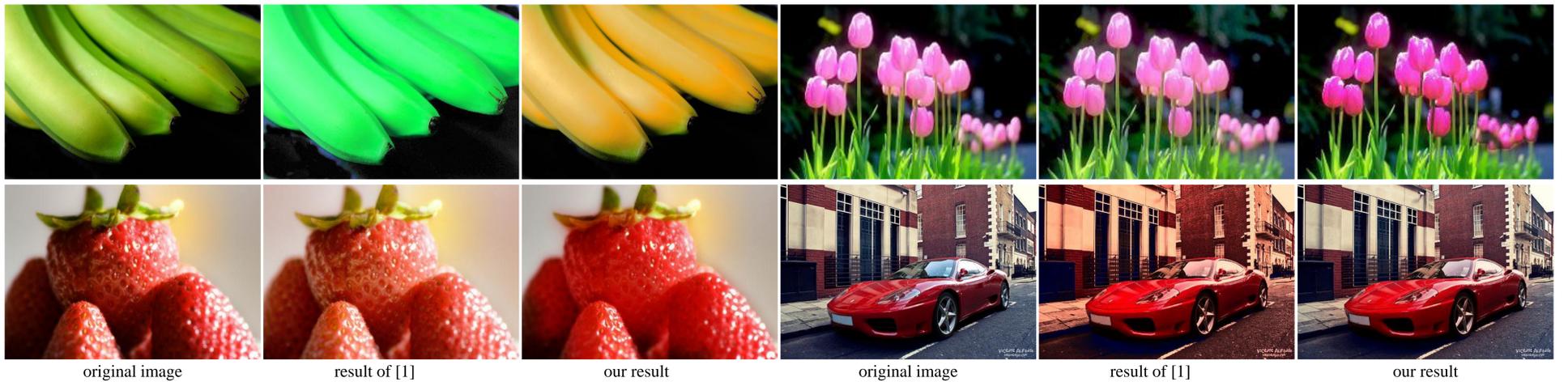


# KEYWORD-BASED IMAGE COLOR RE-RENDERING WITH SEMANTIC SEGMENTATION



## Keyword-Based Image Re-Coloring

We propose an image color re-rendering algorithm that selectively changes image colors for better appearance. The modifications are influenced by keyword related statistics [1]. Our approach allows for local and global changes.

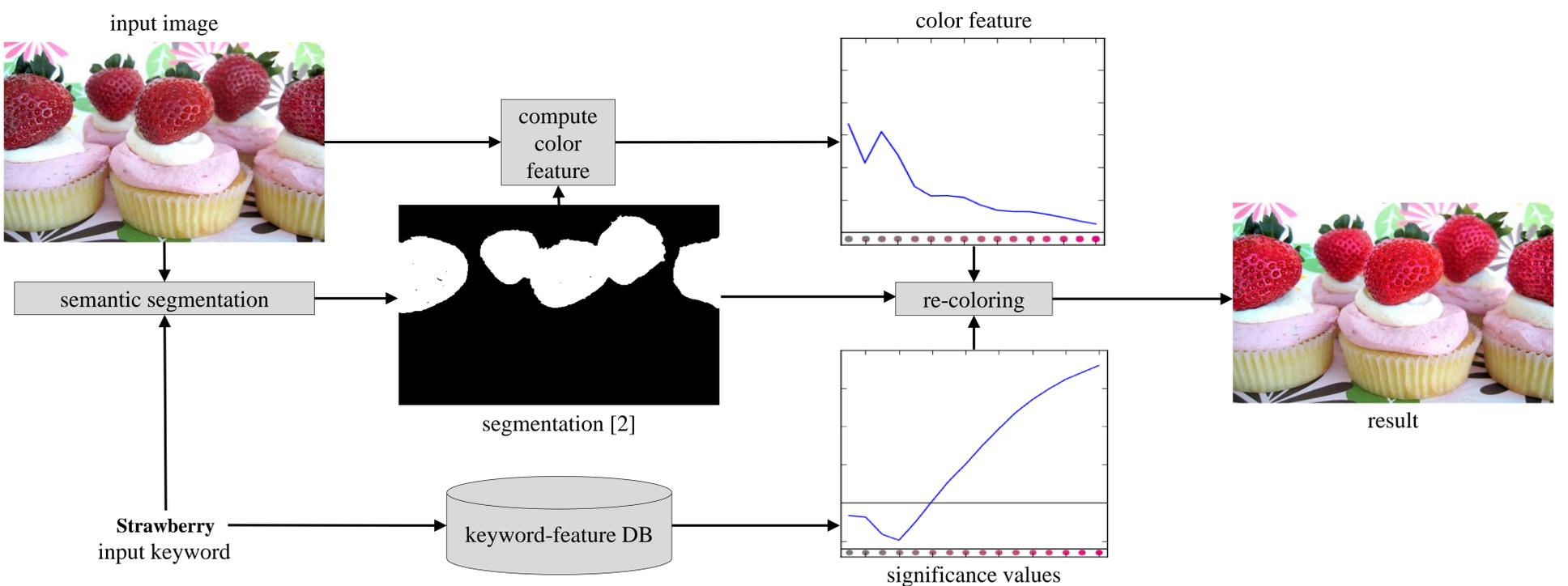


Fig. 1. Image color re-rendering pipeline

## Local Significance Values

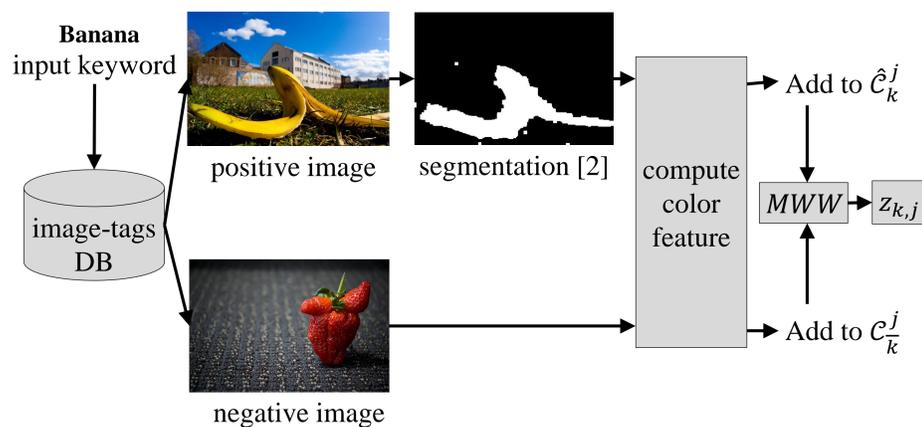


Fig. 2. Computing significance values for keyword *banana*

The contrast between  $\hat{C}_k^j$  and  $C_k^j$  indicates the keyword-feature correlation. We measure it using the Mann-Whitney-Wilcoxon ranksum test [3].  $z_{k,j}$  reflects the strength and direction of the correlation.

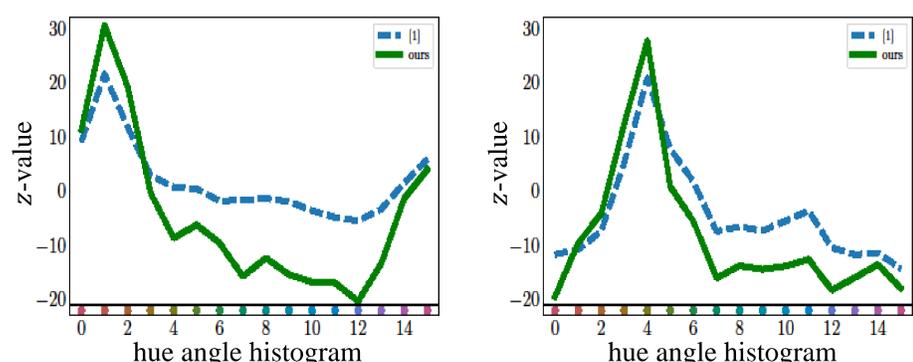


Fig. 3. z-values for hue angle feature and keywords *strawberry* and *sunflower*

## Local Color Re-Rendering

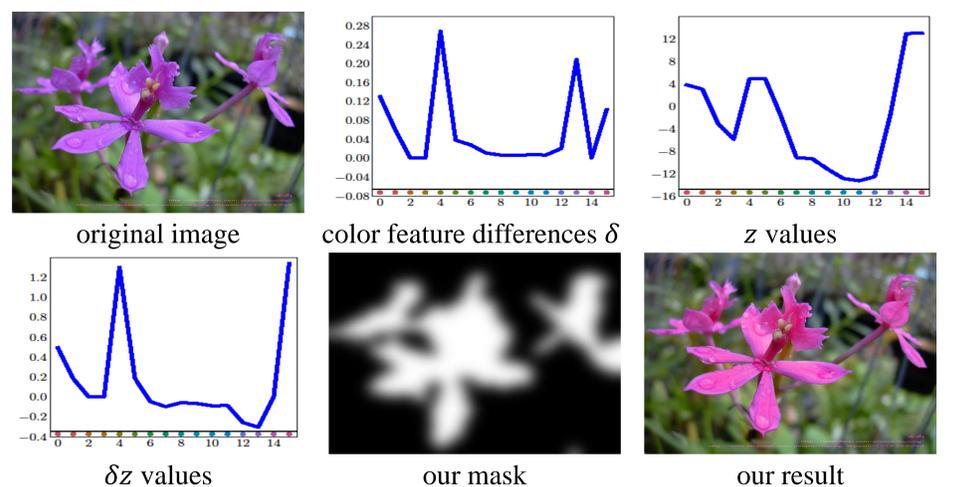


Fig. 4. Local color re-rendering example for *orchid*

## Conclusion

Our keyword-based image color re-rendering algorithm integrates semantic segmentation with color re-rendering operations. Our method achieves more significant keyword statistics and notably better re-rendering results than the state-of-the-art [1].

## References

- [1] Albrecht Lindner, Appu Shaji, Nicolas Bonnier, and Sabine Süsstrunk, "Joint statistical analysis of images and keywords with applications in semantic image enhancement," ACM International Conference on Multimedia, pp. 489–498, 2012.
- [2] Bin Jin, Maria V Ortiz Segovia, and Sabine Süsstrunk, "Webly supervised semantic segmentation," IEEE International Conference on Computer Vision and Pattern Recognition, 2017.
- [3] Frank Wilcoxon, "Individual comparisons by ranking methods," Biometrics bulletin, vol. 1, no. 6, pp. 80–83, 1945.