

A Salient Region Detector for Structured Images

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Abstract—Finding correspondences between two images of the same scene, taken from different viewpoints and under different illumination conditions, is a challenging task. It becomes even more challenging when the detected identifying features should reflect the human saliency perception. This is often required when analyzing scientific imagery of structured type, for example in ecology.

This paper proposes a Data-driven Morphology Salient Regions (DMSR) approach for detecting salient regions in structured images. A new binarization algorithm creates a single image representation that is then analyzed for saliency using morphology. The binarization threshold is derived directly from the data. The DMSR detector has comparable repeatability to the renowned Maximally Stable Extremal Regions (MSER) detector on generic structured images. At the same time it shows better invariance to lighting and blur on several benchmarks and also on a newly introduced dataset. The DMSR also performs equally well on images with increasing resolution unlike the MSER and other generic detectors. This is achieved via significantly fewer detected regions, leading to better scalability- a much desired property in the big data era.

Some preliminary results in the animal and plant biometrics domain, indicate that DMSR is a very suitable detector when analyzing scientific imagery. The detector is able to automatically identify meaningful regions in images used for the photo-identification tasks in wild-life biometrics, where the generic detectors fail.

The paper also introduces OxFrei, a new dataset for transformation-independent detection evaluation. The well-documented dataset, software and results from all experiments are made available online.

1. Introduction

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2. Conclusion

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Acknowledgments

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References

- [1] H. Kopka and P. W. Daly, *A Guide to L^AT_EX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.