

Accurate Ellipses Detection based on Co-clustering Algorithm

Abstract—Circles are important structures in computer vision since they play as a common feature for especially human-made objects, and they expose more information than points or lines of an object. In this survey, we are devoted to reviewing the detection of the perspective projection of human-made perfect circles, which are accurate ellipses, based on the co-clustering algorithm. To speed up and drop redundant information, we first extract arc segments from source images with an efficient and accurate arc-support line segment detection method. After some connecting are done among the little arcs we gain from last steps, we define a 5D metric space that can express the ellipse-relationship among those arcs and conduct co-clustering algorithm to determine the number of ellipses in the source image and specify which arcs are from the same ellipse. Afterwards, we have a validation procedure to ensure what we detect is an accurate ellipse and visualize the result.

Index Terms—Ellipse, co-cluster

APPENDIX A

PROOF OF THE FIRST ZONKLAR EQUATION

Appendix one text goes here.

APPENDIX B

Appendix two text goes here. [1]

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REFERENCES

- [1] S. J. Ahn, W. Rauh, and M. Recknagel, "Ellipse fitting and parameter assessment of circular object targets for robot vision," in *Proceedings 1999 IEEE/RSJ International Conference on Intelligent Robots and Systems. Human and Environment Friendly Robots with High Intelligence and Emotional Quotients (Cat. No. 99CH36289)*, vol. 1. IEEE, 1999, pp. 525–530.