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**

I. Method/Ellipse Detector

In this section, what we indroduce is an ellipse detection method with probability control and based on the co-clustering scheme. The whole picture comprises mainly: (1) Arc-segment Detection; (2) Generation of Candiates Field; (3) Correlation (4) Co-clustering and (5) Validation. Details are elaborated upon in the following sections.

A. Arc-segment Detection

Most arc, but most canny [1], [2].

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References

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