Inner edge detection of PET bottle opening based on the Balloon Snake

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Abstract	Edge detection of bottle opening is a primary section to the machine vision based bottle opening detection system. This paper, taking advantage of the Balloon Snake, on the PET (Polyethylene Terephthalate) images sampled at rotating bottle-blowing machine producing pipelines, extracts the opening. It first uses the grayscale weighting average method to calculate the centroid as the initial position of Snake and then based on the energy minimal theory, it extracts the opening. Experiments show that compared with the conventional edge detection and center location methods, Balloon Snake is robust and can easily step over the weak noise points. Edge extracted thorough Balloon Snake is more integral and continuous which provides a guarantee to correctly judge the opening.
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