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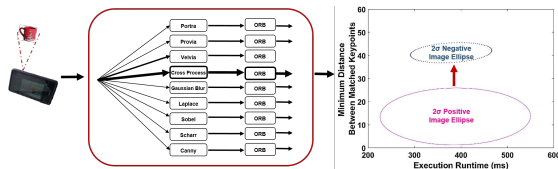
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Graphical Abstract (Optional)

A comparison of prefilters in ORB-based object detection

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In this paper, we study the effects of prefiltering on Oriented Fast and Rotated BRIEF (ORB)-based object detection. Specifically, we examine the trade-off between execution runtime and the minimum Hamming distance between matched feature descriptors, since ORB uses the minimum distance to determine whether the object is present. Furthermore, we introduce a covariance-based method of choosing the Hamming distance thresholds for each of the prefiltered ORB detectors which compares the minimum Hamming distance values for both positive and negative training images. We also use the same method to assess the prefilter performance.

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