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Patch-based local histograms and contour estimation for static foreground classification

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This speech is about an approach to classify static foreground blobs in surveillance scenarios. Possible application is the detection of abandoned and removed objects. In order to classify the blobs we developed two novel features based on the assumption that the neighborhood of a removed object is fairly continuous. In other words, there is continuity, in the input frame, ranging from inside the corresponding blob contour to its surrounding region. Conversely, it is usual to find a discontinuity, i.e., edges, surrounding an abandoned object. We combined the two features to provide a reliable classification. In the first feature, we used several local histograms as a measure of similarity instead of previous attempts that used a single one. In the second, we developed an innovative method to quantify the ratio of the blob contour that corresponds to actual edges in the input image. A representative set of experiments shows that the proposed approach can outperform other equivalent techniques published recently.

Biography

Alex Lopes Pereira is a Computer Engineer who started his career as a tech entrepreneur. He co-founded a company Monity, Brazil that developed technology for video surveillance just after obtaining his undergraduate degree from the Brazilian Technological Institute of Aeronautics. Currently he works in research and development at the Brazilian Ministry of Defense. He received his Master's degree in Electronic and Computer Engineering in 2008 and received his Doctor of Science degree in 2015. His main research interests are image and video processing, embedded systems, Linux and machine learning.

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