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Multiple-target detection by using joint transform correlator with compressed reference images

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Abstract

Effects of JPEG compression of reference image on multiple-target detection by using joint transform correlator are quantitatively studied by using computer simulation. Two types of images with different spatial-frequency contents are used as test scenes in the presence of noise in the input plane and the contrast difference. The results show that in comparison with the use of the compressed reference with high spatial-frequency contents, the multiple-target detection by using the joint transform correlator with the compressed reference with low spatial-frequency contents produces better detection performance in that it is robust to noise and contrast difference for a wide range of compression qualities. While in the presence of noise and contrast difference, the compression of the reference image with high spatial-frequency contents may cause false alarms.

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