

# **Abstract**

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## **Wavelet Approximation-Based Invariant Shape Representation Functions**

In this paper, new wavelet-based affine invariant functions for shape representation are presented. Unlike the previous representation functions, only the approximation coefficients are used to obtain the proposed functions. One of the derived functions is computed by applying a single wavelet transform; the other function is calculated by applying two different wavelet transforms with two different wavelet families. One drawback of the previously derived detail-based invariant representation functions is that they are sensitive to noise at the finer scale levels, which limits the number of scale levels that can be used. The experimental results in this paper demonstrate that the proposed functions are more stable and less sensitive to noise than the detail-based functions.