WAVELET BASED REAL−TIME SMOKE DETECTION IN VIDEO (TueAmOR1)

Author(s) :

B. Ugur Töreyin (Bilkent University, Turkey)
Yigithan Dedeoglu (Bilkent University, Turkey)
A. Enis Cetin (Bilkent University, Turkey)

Abstract :

A method for smoke detection in video is proposed. It is assumed the camera monitoring the scene is stationary. Since the smoke is semi−transparent, edges of image frames start loosing their sharpness and this leads to a decrease in the high frequency content of the image. To determine the smoke in the field of view of the camera, the background of the scene is estimated and decrease of high frequency energy of the scene is monitored using the spatial wavelet transforms of the current and the background images. Edges of the scene are especially important because they produce local extrema in the wavelet domain. A decrease in values of local extrema is also an indicator of smoke. In addition, scene becomes grayish when there is smoke and this leads to a decrease in chrominance values of pixels. Periodic behavior in smoke boundaries and convexity of smoke regions are also analyzed. All of these clues are combined to reach a final decision.

Menu