عنوان مقاله:

An Efficient Edge Detection Model Based on Multi-Scale and Multi- Directional Analysis in the Human Visual System

محل انتشار:

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خلاصه مقاله:

Edge detection is one of the most commonly used operations in image analysis and machine vision. This means that if the edges in an image can be identified accurately andlocalized properly, all of the objects and elements can be located and basic properties such as area, perimeter, and shapecan be measured. One new trend in edge detection starts from knowledge about the Human Visual System (HVS) in order to mimic some of its properties. In this paper we propose abiologically inspired model for efficient edge detection. Ourmodel combines the Gabor filters and the traditional Canny operator .The model consists of applying Multi-Scale and Multi- Directional(MSMD) Gabor filter to the input image, whichmimics the processing by simple cells in the primary visual cortex (V1),and can be used to model receptive fields in the retina and primary visual cortex to perform edge detection incomputer vision. The proposed method is in good agreement with some classical results in human vision, such as Weber's law and Ricco's law

کلمات کلیدی:

Edge detection, Multi-scale and Multi- Directional, Model, Human Visual System, Canny operator