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Abstract

The use of medical images has increased dramatically, including medical surveillance and diagnosis, and there is a growing need for accurate data access. Edge and boundary detection plays an essential role in the analysis and interpretation of image contents and is one of the goals in computer vision. The object of the boundary detection basically is to find the objects in the images i.e. the boundaries of the objects in the image are located. Detecting the right boundary in the noisy images is still a very difficult task. There were several ways to resolve this issue, such as ACM models, but it is still difficult to process images in concave boundaries and noisy areas. A new system for detecting edges and boundary following in noisy images has been introduced. It has been applied to a variety of medical MRI images.

The proposed system consists of two models: the edge detection model and the boundary following model. Prior to each pre-processing model, a set of processing were included for the purpose of image preparation the main purpose of this pre-processing is to use the discrete curvelet transform to enhance the images, much more efficient than traditional transformations

to improves the vision and deletes noise. The first model in the proposed system detects the edges of the objects in the image, depending on the texture feature image and Edge Mapping.

The second model of the system is in the process of following the boundaries, The following process was based on the :- first, finding the average vector ,the most important features of this process eliminates random directions will give better results and more accurate and increases the clarity of the edges in the image. Second, find the starting point of the boundary using the idea of the density of the edge length and calculate the values of the connection to each point and then starting the moving algorithm work from the starting point of the boundary and move on the boundary points by choosing the appropriate point of the transition points.

The efficiency and effectiveness of the proposed system can be analyzed through the results of experiments that showed that the performance of the system is very good and gives excellent and more accurate results ,by comparing the results of the detection model with the traditional methods of edge detection such as sobel, prewitt and canny and compare the following model with ACM models. The results showed that the proposed system gives better and faster performance than these models. The running time of the proposed system, the edge detection model took about (13.9020) seconds. The following model took (0.3649) seconds and the total running time of the system was approximately (19.3919) seconds.

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Keywords

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