Abstract

Segmentation is one of the major steps in the analysis of medical images, as it outputs the attributes extracted from the input images. The need for automated width detection lies in analyzing the presence or absence of specific anomalies. The paper presents the segmentation of the Coronary artery tree from the angiographic images. This is done by extracting or segmenting the vessels and thereby detecting its width. The proposed algorithm consists of two main steps, namely the pre-processing and the segmentation. In the pre-processing step, the Hessian matrix analysis is done to track the coronary vessel structures from the original image and the Frangi 2D filter is used to enhance the angiogram image. In the
second step, the segmentation is done by morphing the filtered image and finally the width of the segmented blood vessel in the coronary angiogram image is determined. Also various parameters such as the Total Vessel Length (TVL), Total Input Image Area (TIIA), Segmented Image Area (SIA) and Vessel Image Percent (VIP), Sensitivity, Specificity, and the computational time are calculated for the performance evaluation and are compared with the existing methods. The results prove that the proposed method is very efficient than the existing methods.

References

Automated Segmentation of Angio Vessels


Index Terms

Computer Science

Hpc Applications
Keywords
Angiographic Image  Gabor Filter  Hessian Matrix Image Enhancement  Frangi 2d Filter
Morphology
Segmentation
Width Detection