

New Technique for Larger ROI Extraction of Hand Vein Images

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Abstract—Region of Interest (ROI) extraction is a crucial step in automatic hand vein biometric and biomedical systems. The aim of ROI extraction is to decide which part of the image is suitable for hand vein feature extraction. The majority vein patterns sometimes can be determined at different locations; left, right and centre of the back of hand. The existing methods have not been able to extract more vein patterns at the right and left borders of the ROI. This paper proposes a hand vein ROI extraction method which is robust at avoiding loss of vein patterns information along the right and left borders of the ROI. First, we determine the threshold value, which will be used to segment the hand region. Second, the hand image is traced using boundary tracing. Third, the Euclidean distance is measured between reference point and hand boundary. Fourth, the distribution diagrams are constructed for the feature points selection. Finally, four coordinates are determined prior to ROI extraction. The experimental results show that the proposed method can extract ROI more accurately and effectively compared with other methods.

Keywords— *peripheral intravenous; ROI extraction; hand vein imaging*