

Universiti Teknologi MARA

**Texture-Based Wound Tissue
Classification Using Multi-SVM**

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STUDENT DECLARATION

I certify that this thesis and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

The current practical method of wound assessment requires the clinicians to measure and classify the wound areas based on visual evaluation by tracing the transparent papers to estimate. Texture-based wound classification model is a prototype to classify slough, granular and necrosis wound tissues based on the texture properties. However, this is difficult to identify and classify the wound tissues due to their inhomogeneity intensities between the wound tissues. The other problem is the different anatomical of the wound tissues for each images. There are four phases conducted which are data collection, pre-processing (i.e image segmentation), processing (i.e texture extraction and wound classification) and post processing (i.e test and evaluation). The data has been collected from the Medetec Wound Database and Dermatology Image Library. The wound image acquired is segmented by using a free segmentation tool. The segmented wound image is then converted from RGB plane to HSV plane. Then, the results of V plane is used for feature extraction. A set of texture feature describing slough, granular and necrotic tissues in the segmented image are extracted by using the texture properties of mean, standard deviation and smoothness. Finally, multi Support Vector Machine (SVM) is applied to classify all the three tissues of wound tissue images. The experimented results are evaluated by ground truth images labeled by the clinical expert. The multi SVM is identified as promising method with the accuracy rate of 87.5%, 35.16% and 81.82% for slough, granular and necrosis tissues, respectively. Results proved that it significantly works on wound image classification. Hence, this prototype will significantly benefit to the users who are involved in medical areas such as researchers, surgeons and clinicians.

Keywords: Texture-Based Extraction, Wound Tissues Classification, Image Classification, Multi-SVM, Wound Images

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