CHAPTER-8

CONCLUSIONS AND FUTURE ENHANCEMENT

The traditional wound monitoring systems involved in analysing the wound remotely by capturing the wound image. Capturing of the exact status of the wound and analysing the captured wound by the doctor is cumbersome. Various monitoring tools involves in manual analysis of the status. The wound images captured from the environmental conditions decides the status of the wound.

The present research work concludes that an innovative and more effective transformation technique known as Colourlet Transformation has been proposed and compared to the traditional approaches. In this method the colours of a wound is preserved and the noise is reduced drastically. Further it is also observed that to improve the performance of the required filtering for wound, segmentation is carried out by adapting filter bank method which filters the images. This filtering method is much superior compared to the earlier methods. Using Gabor filtering which captures only the boundaries of the wound and further segmentation of the wound is performed using Kernel Graph Cut method which considers various features such as colour, intensity, pixel relationship etc. Additionally this thesis enables us to perform the classification of the wound using either K-NN or Fuzzy classifier. The results obtained clearly shows
that the K-NN classifier is performing very effectively and labels the wound in the assessment of the wound healing process.

Further, fine tuned classification is carried out using colourlet technique for removal of air bubbles and hair on and around the low contrast wound region. From this segmented image the features were taken out and subjected to “One against All SVM” classifier to classify the wound based on the type of tissues present in it. However a new classifier for classifying the wound not based on the type of wound but on its severity level such as ‘0’ or ‘1’ or ‘2’ but on the intensities of the tissue colour is very much required which resulted in the development of WIAC classifier. A novel classifier to classify the wound images based on severity level and applying transparent overlay techniques on the boundaries of the wound and reduces the severity of the wound in order to determine the severity level. The WIAC technique is very efficient when compared to SVM and K-NN on the measurement of classifier parameters like sensitivity, specificity, success rate and accuracy. Scalability is defined as the upgradation of the technique in achieving high success value and accuracy in the proposed WIAC classifier. In future scope of the work, It is expected to have capability of analyzing the performance of the Classifier by considering the video frames of burn injuries.

At present the assessment of wound to carry out the healing process is done for the wounds external to the human body and wound is considered in two dimensional view. In future, it is very
much needed to acquire the image of the wound present inside the human body for the assessment of wound healing process in three dimensional view.