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Wound Measurement using Digital Image Processing

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Abstract

Wound healing is important issue to doctor for getting the exact treatment. The wound is quantified by the late of change of wounds surface area. The portable area based on segmental digital image. Wound area measurement are in the form of perpendicular distance of wound border. The segmented wound area are can used active contour Algorithm or Snake.The Snake shows exact wound dimension or border of healing of wound. The result is calculate accuracy level of 90%.

Keywords: Wound segmentation, Wound healing.

Introduction

Wounds primarily consist of a non uniform mixture of black Necrotic Eschar, yellow Necrosis and Fibrin (slough), and red Granulation tissue which indicates the state of healing of different tissue types. These coloration differences adds to the complexity of area segmentation since the clarity of the wound border depends on the wound's inner hues and outer skin colors. It is evident that automated segmentation of wounds has been of interest among the research community. Through our work, we have sought both to automate the segmentation process using image processing.

Related work

The paper [1] presents a minimax principle to adaptively regularize the contour according to the local conditions in the wound image; wound healing. Measurement of the physical dimensions of wounds is an t way to record the progress of healing. For area measurements ruler-based assessment schemes, transparency tracings and photographic, including digital video methods are in use. Healing of deep ulcers usually begins at the base rather than the edge. Area measurements do not always reflect the early changes in wound shape and attempts have therefore been made to assess the volume of wounds using casts. Wounds manually check and the number of samples is limited. Dark or red spots near the boundary of the wound. [1]

The paper [2] presents The ability to photo-document and measure wounds quickly with no patient contact. The most widely used method for measuring wounds is the ruler based method. Maximum measurements in two perpendicular directions are taken using a simple ruler. This method of measurement models the wound as a rectangle. Low tech method is the transparency tracing method. Second method two sterile transparent sheets are laid on top of the wound, and the wound is outlined on the top transparency sheet. The lower sheet that is in contact with the wound is disposed. The sheet with the tracing is then placed over a grid, and the area is approximated by counting the number of squares on the grid covered by the wound outline. The area can also be estimated with the use of a planimeter. The overall goal is to design a dedicated hardware platform .This measurement dedicate operator to handle that device and depth measurement capability cannot be possible by projecting a laser line across the wound bed.[2]

The paper [3] presents a portable wound area measurement method based on the segmentation of digital images. . It is to provide a practical, fast and noninvasive technique for medical staff to monitor the healing process of chronic wounds. Segmentation is based on active contour models which identifies the wound border irrespective of coloration and shape. The initial segmentation can also be modified by the user, providing higher control and accuracy. Area measurements are semi automated segmentation .Average accuracy of up to 90%. [3]

The paper [4] presents formulation of the active contour model has been used due to its appropriateness for noisy images with either smooth or saw tooth contour

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profiles. However, it was found that this method fails to produce accurate results when the wound boundary is vague, includes narrow projections or contained complicated coloration where it produced multiple edge responses. Furthermore, major portions of the wound were sometimes omitted due to mismatching initializations. The semi-portable wound measurement system [4]

The paper [5] presents a explored color based segmentation of wounds using differential evolution algorithms for the clustering of pixels.
[5]

The paper [6] presents an energy minimizing discrete dynamic contour (Snake) is implemented in the segmentation process. Wound edges which do not contrast with the skin renders it difficult for filtering methods to identify the edge completely. Through the use of an active contour deformable model, it is possible to fill in these vaguely defined segments to acquire a. representation of the wound border, which can then be interpolated into a continuous contour. [6]

Proposed work

Up till now implementation on measurement of wound are only for limited sample and are not accurate. Image of wound capture camera is in perpendicular of wound image. Calibration the image for variations in camera distance, angle. Pre-Processing the wound, cropping is utilized for centering the wound. Segmentation the image for minimizing discrete dynamic counter using PSO technique. Area calculation of segmentation results in an enclosed contour over the area of the image plane. A histogram method is used to calculated area of pixels. The implementation result obtained through PSO technique and matlab tool.

Advantages

In this implementation bringing portability, objectivity and easy management in wound measurement and related data. Wild animal,

References

1. Tim D. Jones and Peter Plassmann, "An Active Contour Model for Measuring the Area of Leg Ulcers," Proc. of IEEE Intl. Conf**.** Transactions on medical image, vol. 19, no.12, December 2011
2. Hazem Wannous & Benjamin Albouy " Mapping Classification Results on 3D model: a Solution for Measuring the Real Areas Covered by Skin Wound Tissues ," in *IEEE* International Symposium in Intelligent Signal Processing, WISP, 2011
3. N.D.Hettiarachchi, R.B.H.Mahindaratne," Mobile Based Wound Measurement",IEEE Point-of-Care Technologies. Janauary 2013
4. M. Duckworth, N. Patel, A. Joshi, and S. Lankton, "ClinicallyAffordable Non-Contact Wound Measurement Device" in *RESNA*, Phoenix, 2007.
5. P. Plassmann and J. M. Peters, "Recording wound care effectiveness", Journal of Tissue Viability, Jan 2008
6. M. Kass, A. Witkin, D. Terzopulos. "Snakes: Active Contour Models" in International Journal of Computer Vision, 2010.