Universiti Teknologi MARA

Colour-Based Wound Assessment Application for Android Smartphone

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ABSTRACT

This study focuses on the subject of chronic wounds and the associated wound assessment. The high cost of medical expenses coupled with the overall difficulties in properly assessing a wound has proven to be a major problem associated with chronic wounds. The aim of this study is to create a functional application that would help healthcare workers to capture wound images using their smartphones and assess wound stages based on wound colour from the acquired image. Data on real wound images obtained over the internet were processed using the proposed application to gauge its accuracy in assessing the wound stage. A usability test was also conducted to obtain data about the application's performance. GrabCut is chosen as the algorithm for image segmentation because of its easy-to-use algorithm and HSV colour model is chosen as the main colour model in assessing wound colour. The application overall performed to its minimum expectation, whereby it can detect wound colours and assign stages albeit with rather low accuracy. Based on the result, it can be concluded that the application can perform its function but it will need more calibration and tweaking in order for it to accurately assign the appropriate wound stage.

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CHAPTER 1

INTRODUCTION

This chapter provides background and rationale for the study. It describes the basis for the research such as the issues and problems faced and other significance that led to this research.

1.1   Background

Chronic wounds represent a significant burden on today's population especially for doctors, healthcare workers and the patients themselves. Affecting millions of people worldwide, treating patients with chronic wounds proves to be a demanding task for both doctors and healthcare workers. Constant medical check-ups, careful monitoring and the overall costs of treating these wounds are some of the few major problems faced by today's population. Therefore a well-developed wound assessment system is needed in order to assess the chronic wound.

Collins, Hampton and White (2002) defined assessment as the information gathered from studying, questioning and from clinical examinations and investigations. This is done as a means to establish the basis for planning interventions. The capability of a healthcare worker in taking a holistic as well as systematic approach in handling an assessment is vital in order the wounds to be effectively managed. Bale and Jones (1997) states that an assessment should include the nature of the wound, factors affecting its healing as well as the patients themselves and the environment in which he/she currently lives in.It is imperative that the patients journey be monitored closely in order to ensure the patient receives management of the highest standard (Timmons, 2007).