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## Extracting Novel Features for Skin Burn Image Classification

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The initial burn treatment provided to patients is usually based on the first evaluation of the skin burn injury by determining the burn depth. The depth of the burn sometimes cannot be easily defined through visual examination, especially when there is a mixed burn depth appearance. Medical practitioners with limited experience or even an experienced burn specialist can sometimes make mistakes on their evaluation of the skin burn depths. A wrong evaluation of burn depth or wrong initial burn treatment can lead to other complications or in more severe cases, it can be fatal. In this paper, the objective is to propose the extraction of novel features for the classification of different burn depths by using an image mining approach. Image mining, as shown in Figure 1, consists of several processes, which are image acquisition, image pre-processing, feature extraction, classification and finally, interpretation and evaluation.

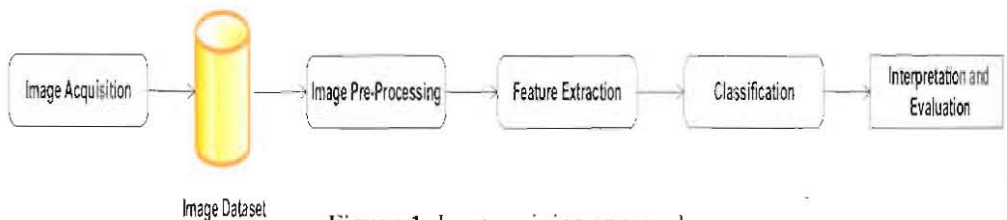


Figure 1. Image mining approach

Colour and texture were the two most important burn characteristics studied by the previous research works for the classification of skin burn depths. Both colour and texture features were studied in this paper on a skin burn dataset comprising skin burn images categorized into three burn depths by medical experts as according to [1], colour and texture are the characteristics observed by experts in order to differentiate the burn depths and to make a diagnosis. The skin burn depths considered in this paper are second degree burn and third degree burn, specifically superficial partial thickness burn (SPTB), deep partial thickness burn (DPTB) and full thickness burn (FTB). Based on Figure 2, SPTB involves the entire epidermis and the upper layer of the dermis (papillary layer), DPTB affects the entire epidermis and most of the dermis while FTB destroys all the layers of the skin and some may extend into muscle and bone [2]. The collected images in the dataset used were taken with no