

Public Abstract

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Title:HIGH-ACCURACY SKIN LESION SEGMENTATION AND SIZE DETERMINATION

Melanoma is one of the most common skin cancers. Fortunately, this melanoma is highly curable if it is detected early. In order to detect skin lesions, the automated skin lesion segmentation and diagnosis system on the Android system is an outstanding program to use.

The goals and achievements of this thesis are to implement a function that captures images with the Android using camera properties, improve image segmentation and size estimation based on the previous prototype system on the Android platform with OpenCV. An image can be captured by a capturing function in this thesis and can be saved in a jpg file and a data xml file, which are used for image processing and camera features. In image processing, the watershed function is used for finding the lesion contour. In size estimation, two methods, which are reference method and camera distance method, are used. Reference method is when the system can estimate the area of a lesion by comparing reference pixels and lesion pixels. Camera distance method is when the system can estimate the area of a lesion according to camera distance properties, which are near, optimal, and far camera distance values. With these two methods, the system can estimate real area of a lesion without rulers instead of counting the number of pixels. Contour detection is improved to 98%. Reference size estimation and camera focus distance size estimations are 1.04% and 8.23%