

HISTOGRAM ANALYSIS FOR MELANOMA DISCRIMINATION IN REAL TIME IMAGE

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Abstract - Melanoma is one of the deadliest forms of cancer, hence, great effort has been put into development of diagnosis methods for this disease. In this paper, we present a novel framework for melanoma image recognition via both K-means clustering, support vector Machine. Automated Melanoma recognition is a very challenging task due to the low contrast of skin lesions, the huge intra class variation of melanomas, the degree of visual similarity between melanoma and non melanoma lesions and the existence of many artifacts in the image. In order to meet these challenges, we propose a method for melanoma recognition by leveraging very support vector machine. Compared with existing methods employing either low level hand-crafts features, our substantially SVM and K-means can acquire richer and more discriminative features for more accurate recognition.

Key Words: Melanoma, k-means, Support Vector Machine, artifacts in the images, skin lesions.

1. INTRODUCTION

Melanoma skin cancer is one of the most rapidly increasing and deadliest cancers in the world, which accounts for 75% of skin cancer deaths[1-3]. Early diagnosis is of great importance for treating this diseases as it can be cured easily at early stage [1-4]. To improve the diagnosis of this disease, dermoscopy has been introduced to assist dermatologists in clinical examination since it is a non-invasive skin imaging technique that provide clinicians.

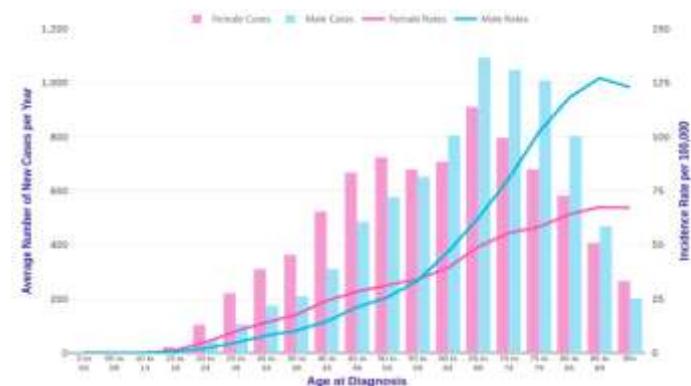


Fig.1. General statistics of Melanoma

Automated melanoma recognition from dermoscopy images is however a very challenging task. First, the huge intraclass

variation of melanomas in terms of color, texture, shape, size and location in the dermoscopy images as well as the high degree of visual similarity between melanoma and non melanoma

Lesions make it difficult to discriminate melanomas from non-melanoma skin lesions. Second, the relatively low contrasts and obscure boundaries between skin lesions (especially at their early stages) and normal skin regions make the automated recognition task even harder. Finally, the presence of artifacts, either natural (hairs, veins) or artificial (air bubbles, ruler marks, color calibration charts, etc.) may blur or occlude the skin lesions and further aggravate the situation. In this paper, we propose a novel method based on K-means and Support vector machine with a set of effective training schemes in order to meet the challenges of automated melanoma recognition. Similar to some previous works, we propose to first segment the skin lesions from dermoscopy images and then classify them into melanoma ones and non-melanoma ones so that the classification stage can extract more specific and representative features within the lesion regions instead of performing it in the whole dermoscopy images. We employ very deep networks (more than 50 layers) for both the segmentation and the classification stages in order to obtain more discriminative features for more accurate recognition.

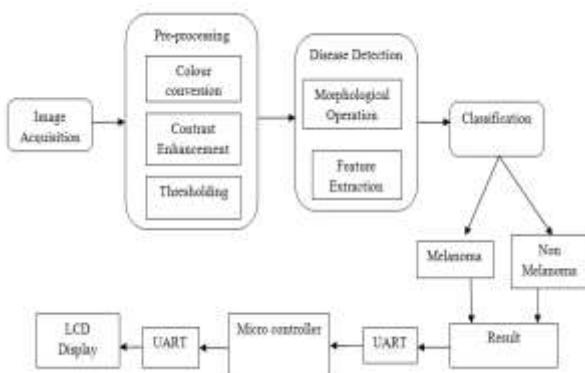


Fig 2 Less Affected



Fig 3 Highly Affected

2. Methodology



3. CONCLUSION

The proposed model of this paper helps to detect the early stage of malignant melanoma by using Digital Image Processing.

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REFERENCES

- [1] O. Abuzaghleh, B. d. Barkan, and M. Faezipour, "SKINcure; A real time image analysis system to aid in the malignant melanoma prevention and early detection" in Proc. IEEE Southwest Symp. Image Anal. Interpretation (SSIAI), Ar. 2014, p.85_88.
- [2] M. Silveira, J. C. Nascimento, J. S. Marques, A. r. Marc ,al, T. Mendonc, a, S. Yamauchi, J. Maeda, and J. Rozeira, "Comparison of segmentation methods for melanoma diagnosis in dermoscopy images," Selected Topics in Signal Processing, IEEE Journal of, Vol. 3, no. 1,pp.35-45, 2009.
- [3] N. K. Mishra and M. E. Celebi, " An overview of melanoma detection in dermoscopy images using image processing and machine learning," arXiv preprint arXiv:1601.07843, 2016.
- [4] N.Codella, J. Cai, M. Abedini, R. Garnavi, A. Halpern, and J.r. Smith, " Deep Learning, Sparse coding, and svm for melanoma recognition in dermoscopy images," in Machine Learning in Medical imaging. Springer, 2015.,118-126.
- [5] A.F Jerant, J.T Johnson, C.Sheridan, T.J. Cffrey, et al, "Earlydetection and treatment of skin cancer,;; American family physician,vol.62,no.2, .357-386, 2000.
- [6] Patwardhan, s.V., Dhawan, A.P., Relue, P.A.: 'Classification of melanoma screening system with dermatologist-like tumor area extraction algorithm', comput. Med. Imaging Graph, 2008, 32,(7),pp. 566-579
- [7] Iyatomi, H., oka, H., celebi, M.E.: 'An improved internet-based melanoma screening system with dermatologists-like tumor area extraction algorithm', Comput. Med. Imaging Graph, 2008, 32,(7),pp.566-579
- [8] V.Terushkin et al., "Transillumination as a mns to differentiate melanocytic lesions based on their vascularity", Archives of dermatology, vol. 145, no. 9, pp. 1060-1062, 2009.
- [9] H: A. Almubarak et al."Fuzzy color Clustering for Melanoma Diagnosis in Dermoscopy Images," information,vol. 8, no. 3, p. 89, 2017.
- [10] F. Ercal et al. "Neural network diagnosis of malignant melanoma from color mages,"IEEE Transaction on biomedical engineering, vol. 41, no. 9,pp. 837-845, 1994.