

1. **Title of paper** : AI-based localization and classification of skin disease with erythema
Year of Publication : 05th March 2021
Journal Name : Scientific reports
Author Name : Ha Min Son , Woocho Jeon , Jinhyun Kim , ChanYeong Heo , Hye JinYoon , Ji-Ung Park & Tai-Myoung Chung
Theme of the paper : In this paper, they present a method to sequentially combine two separate models to solve a larger problem. In the past, skin disease models have been applied to either segmentation or classification. In this study, they sequentially combine both models by using the output of a segmentation model as input to a classification model.
Inference : It provides a solution to classify multiple diseases within a single image. With higher quality and a larger quantity of data, it will be viable to use state-of-the-art models to enable the use of CAD in the field of dermatology.
2. **Title of paper** : Skin Disease Recognition Method Based on Image Color and Texture Features.
Year of Publication : 26th August 2018
Journal Name : Hindawi
Author Name : Li-sheng Wei , Quan Gan, and Tao Ji
Theme of the paper : In this paper, the analysis method of vertical image segmentation is employed to identify three common skin diseases. A number of irrelevant variables can be reduced through image filtering, image rotation, and Euclidean distance transformation applied in image preprocessing.
Inference : Skin images were preprocessed to remove noise and irrelevant background by filtering and transformation. Then the method of grey-level co-occurrence matrix (GLCM) was introduced to segment images of skin disease. The texture and color features of different skin disease images could be obtained accurately. Finally, by using the support vector machine (SVM) classification method, three types of skin diseases were identified.

Title of paper : Skin disease detection using artificial intelligence

Year of Publication : 2002

Journal Name : AIP conference Proceedings

Author Name : S.Kuzhaloli, L.M. Varalakshmi, Kamal Gulati, Makarand Upadhayaya, Narinder Kumar Bhasin, and Vijayakumar Peroumal.

Theme of the paper : In this paper, Artificial intelligence (AI) algorithms for automated classification of skin diseases are available to the consumer market. Studies of their diagnostic accuracy are rare. We assessed the diagnostic accuracy of an open-access AI application for recognition of skin diseases. The AI algorithm classified the images giving 5 differential diagnoses, which were then compared to the diagnoses made clinically by the dermatologists and/or histological. The level of diagnostic accuracy varied considerably for diagnostic groups. The online application demonstrated low diagnostic accuracy compared to a dermatologist evaluation and needs further development. Input signs have been developed to classify the disorder.

Inference : With the aid of experts in the area, we received symptoms of 10 skin diseases. The symptom data were trained by various classifiers. We observed that high quality AI-based support for clinical decision making enhances the accurate diagnosis of either AI or doctors alone and that less skilled physicians are better served by AI.

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Theme of the paper : In this paper, computer-aided diagnosis (CAD) is used to improve the quality of diagnosis in various medical fields such as mammography and colonography, it is not used in dermatology, where noninvasive screening tests are performed only with the naked eye, and avoidable inaccuracies may exist. This study shows that CAD may also be a viable option in dermatology by presenting a novel method to sequentially combine accurate segmentation and classification models. Given an image of the skin, we decompose the image to normalize and extract high-level features. Using a neural network-based segmentation model to create a segmented map of the image, we then cluster sections of abnormal skin and pass this information to a classification model.

Inference : Current state-of-the-art CNN models can outperform models created by previous research, through proper data preprocessing, self-supervised learning, transfer learning, and special CNN architecture techniques. Furthermore, with accurate segmentation, we gain knowledge of the location of the disease, which is useful in the preprocessing of data used in classification, as it allows the CNN model to focus on the area of interest.