

AI -BASED LOCALIZATION AND CLASSIFICATION OF SKIN DISEASES WITH ERYTHEMA

Introduction

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. 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.

Literature Review

[1] This proposed system describes skin disease recognition by using neural network which based on the image analysis. In general, these diseases have similarities in pattern of infection and symptoms such as redness and rash. Diagnosis and recognition of skin disease take a very long term process because it requires patient's history, physical examination and proper laboratory diagnostic tests. Computer algorithm which contains few steps that involves image processing, image feature extraction and classification of data have been implemented with the help of classifier such as artificial neural network (ANN).

Advantages: The ANN can learn patterns of symptoms of particular diseases and provides faster diagnosis and recognition than a human physician. Thus, the patients can do the treatment for the skin disease faced immediately based on the symptoms detected.

Disadvantages: Not only do artificial neural networks, but also the statistical models can be trained with only numeric data, so it makes it very difficult for ANN to understand the problem statement

[2] This proposed system examine the use of AI methods for detecting erythema against the most clinically relevant skin conditions that may be “confusers”. Early detection of erythema , and diagnosis and treatment of Lyme disease, avoids potential neurologic, rheumatologic, and cardiac complications. So they develop the most extensively curated dataset thus far for this challenging problem. We evaluate several deep learning models against various problems of growing complexity and on public domain and clinical images. Results suggest that AI can help in prescreening and referring individuals to physicians for earlier diagnosis and treatment.

Advantages : These results suggest that a DL system can help in prescreening and referring individuals to physicians for earlier diagnosis and treatment, in the presence of clinically relevant confusers, thereby reducing further complications and morbidity.

Disadvantages : It requires very large amount of data in order to perform better than other techniques. It is extremely expensive to train due to complex data models.

[3] A method of skin disease detection using Image Processing and machine learning” has proposed early detection method on image processing based on Convolutional neural network (CNN) to feature extraction and then using color to identify the features.

Advantages: CNNs can expand the advantages of SVMs, such as robustness in noisy datasets without the need for optimal preprocessing, by capturing image context and extracting high-level features through down-sampling. CNNs can interpret the pixels of an image within its own image-level context, as opposed to viewing each pixel in a dataset-level context.

Disadvantages: CNNs can have trouble generalizing to new domains or by learning unwanted correlations (like the background of an image for example) rather than the desired classes (the foreground).

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