Artificial Intelligence Based Analysis of Melanoma Diagnosis

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DESCRIPTION

Skin cancer remains one of the world's biggest health problems. Early diagnosis is paramount to effectively curing cancer, but current treatments require the involvement of a skin oncologist, making them expensive and readily available in developing countries. Due to the shortage of skin cancer specialists, the development of automated diagnostic systems is needed. In this context, techniques based on artificial intelligence have been proposed. These systems help detect skin cancer early, resulting in reduced morbidity and thus associated mortality. Machine learning and deep learning are fields of AI that do statistical modelling and inference, learning incrementally from given data to predict desirable goals and characteristics. Automated skin cancer diagnosis is discussed in comparison to widely available datasets and popular review articles. This study also describes the findings and lessons learned from previous studies. This research will determine future direction and scope to help address the challenges of automated diagnosis of skin cancer.

Artificial intelligence is widely applied in the medical field, including dermatology. Machine learning is a branch of Artificial intelligence that includes statistical models and algorithms that can be iteratively learned from data to predict properties of new samples and perform desired tasks. Despite playing a key role in skin cancer detection, dermatology has lagged behind radiology in the adoption of Artificial intelligence. Due to its continued popularity, use, and new technology, AI is becoming more widely available to the general public. AI can help detect skin cancer early. For example, the use of deep convolutional neural networks can help develop systems that evaluate skin images for the diagnosis of skin cancer. Early detection is key to effective treatment and better skin cancer outcomes. A specialist can accurately diagnose cancer. However, due to the limited number of patients, there is a need to develop automated systems that can efficiently diagnose the disease in order to save lives and reduce patient health and economic burden. Machine learning can be very helpful in this regard. This article discusses the basics of Machine learning and its potential to help diagnose skin cancer. The use of artificial intelligence is progressing in the medical field. AI shows great potential, especially in image-based diagnosis of skin cancer. However, there is a significant disconnect between the expectations and actual relevance of AI in current dermatology practice. A selective literature search was performed for current relevant studies. The included research uses machine learning, specifically convolutional neural networks, which have proven to be particularly effective at classifying image data.

In many studies, computer algorithms were able to distinguish between pigmented and non-pigmented skin growths with a high level of accuracy comparable to that of dermatologists. A combination of medical assessment and AI showed the best results. Computer-based diagnostic systems enjoy a high level of acceptance among patients and physicians. However, computer-based diagnostic systems have so far only been tested in laboratory settings and are not yet available in routine clinical practice. Moreover, many of the digital diagnostic criteria that help artificial intelligence classify skin lesions are still unclear. This lack of transparency has yet to be remedied. Additionally, clinical studies on the use of AI-based assistive systems are needed to prove their applicability in routine dermatological practice.

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CONFLICT OF INTEREST

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