IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 1, October 2023

Dermacure – An Advanced Skin Disease Detection using Deep Learning Algorithm

Mr. Bharath G[1], Mr. Bharath K[2], Dr.Venkatesh Sugumar[3]
Department of Computer Science[1,2,3]
SRM Valliammai Engineering College, Chennai, Tamil Nadu, India
bharath03112001@gmail.com[1], bharathkannan.b47@gmail.com[2], venkateshs.cse@srmvalliammai.ac.in[3]

Abstract: *Skin diseases are common and can cause discomfort, pain, and even disfigurement if left untreated. Unfortunately, many people do not seek treatment due to a lack of knowledge about them. To address this issue, raising awareness and providing access to resources are essential. Recent advances in deep learning techniques have shown promising results in detecting skin diseases from images. Combining this technology with a user-friendly application can help to provide preliminary diagnosis and connect patients with qualified dermatologists for in-person or remote consultation. The proposed application will allow users to upload images of their skin ailments and receive an immediate diagnosis using deep learning techniques. The application will be equipped with a user-friendly interface and will be capable of detecting any type of skin disease such as allergies, viral infections, cancer, etc. Once the diagnosis is made, the application will then integrate the patient with a qualified dermatologist for further consultation. The application will provide various options for the patient to connect with the doctor, including call, chat or appointment scheduling. The doctor will have access to the patient's medical history and images of their skin condition, enabling them to make an informed diagnosis and provide appropriate treatment. In addition, a fundraising campaign will be conducted for patients who require financial assistance for their treatment. Public health campaigns and community outreach programs can also help to increase awareness about skin diseases and encourage people to seek treatment when necessary. By doing so, we can improve the overall health and well-being of our communities.*

Keywords: Skin diseases, Deep learning, Diagnosis, Dermatology, Medical history, Treatment.

I. INTRODUCTION

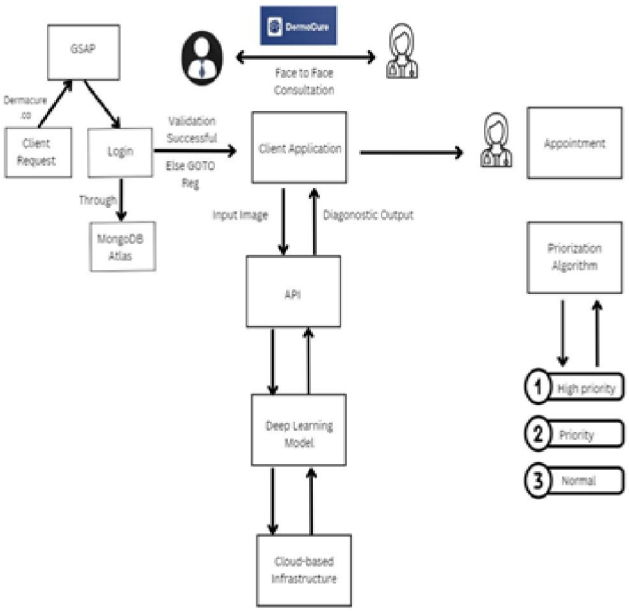
The increasing prevalence of skin diseases and the barriers to accessing appropriate treatment have become significant global health issues. To address this problem, recent advances in deep learning techniques have shown promising results in detecting skin diseases from images, and these technologies can be integrated into user-friendly applications for preliminary diagnosis and consultation with qualified dermatologists. In addition to technological solutions, community outreach programs and public health campaigns can also raise awareness and encourage people to seek treatment when necessary. This paper proposes the development of such an application, which has the potential to revolutionize the way skin diseases are diagnosed and treated, leading to better outcomes and improved quality of life for patients. Furthermore, this paper suggests conducting fundraising campaigns to ensure that everyone, regardless of their financial status, has access to the necessary treatment. This paper presents a comprehensive framework for utilizing technological advancements and community-based interventions to address the global health challenge of skin diseases.

II. METHODOLOGY

The methodology for the proposed skin disease diagnosis and treatment application would involve the following steps:

1. Data collection: A large dataset of skin images of various skin diseases will be collected and curated. This dataset will be used to train the deep learning model to accurately identify and diagnose skin diseases.
2. Deep learning model development: A deep learning model will be developed using convolutional neural networks (CNNs) to analyze skin images and classify them into various skin diseases.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 1, October 2023



3. Application development: A user-friendly application will be developed that allows patients to upload images of their skin ailments. The application will use the deep learning model to provide an immediate diagnosis of the skin disease and connect the patient with a qualified dermatologist for further consultation
4. Dermatologist consultation: The dermatologist will have access to the patient's medical history and images oftheir skin condition, enabling them to make an informed diagnosis and provide appropriate treatment. The doctor will have various options to connect with the patient, including call, chat or appointment scheduling.
5. Fundraising campaign: A fundraising campaign will be conducted for patients who require financial assistance for their treatment. The campaign will be aimed at raising funds to help those who cannot afford the necessary treatment.
6. Public health campaigns and community outreach programs: Public health campaigns and community outreach programs will be conducted to increase awareness about skin diseases and encourage people to seek treatment when necessary.
7. Continuous improvement: The deep learning model will be continuously improved by updating the dataset and retraining the model with new images to improve accuracy and reliability.
Overall, this methodology will enable the accurate and timely diagnosis and treatment of skin diseases, while also increasing awareness and access to resources for individuals suffering from these conditions

III. RESULTS

As this is a proposed project, there are no actual results to report. However, the potential outcomes and benefits of the proposed skin disease diagnosis and treatment application can be discussed.
The application has the potential to revolutionize the way skin diseases are diagnosed and treated, leading to better outcomes and improved quality of life for patients. By utilizing deep learning techniques and latest technological advancements, we can help to increase awareness and provide access to resources for people suffering from skin diseases.
The proposed application would allow patients to receive an immediate diagnosis of their skin condition, followed by a consultation with a qualified dermatologist. This would eliminate the need for patients to wait for an appointment with a dermatologist, which can often take weeks or even months, especially in areas where there are a limited number of dermatologists.
Furthermore, the application would provide patients with various options to connect with the doctor, including call, chat, or appointment scheduling. This would enable patients to receive the necessary treatment quickly and conveniently, without having to take time off work or travel long distances.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 1, October 2023

In addition, the fundraising campaign aimed at raising funds to help those who cannot afford the necessary treatment would ensure that everyone has access to the necessary treatment, regardless of their financial status. This would help to reduce the disparities in healthcare and improve the overall health and well-being of communities.

Overall, the proposed application has the potential to significantly improve the diagnosis and treatment of skin diseases, increase awareness and access to resources, and reduce healthcare disparities, leading to better outcomes and improved quality of life for patients.

IV. CONCLUSION

In conclusion, by utilizing deep learning techniques and latest technological advancements, we can help to increase awareness and provide access toresources for people suffering from skin diseases. The proposed application has the potential to revolutionize the way skin diseases are diagnosed and treated, leading to better outcomes and improved quality of life for patients. By conducting fundraising campaigns, we can ensure that everyone has access to the necessary treatment, regardless of their financial status.

REFERENCES

International Status

Skin disease detection using deep learning - January 2023

This work provides an automated image-based method for diagnosing and categorizing skin problems using machine learning classification. Computational approaches will be used to analyze, process, and relegate picture data to consider the many different characteristics of the photos that are being processed. Skin photographs are first filtered to remove undesirable noise and then processed to enhance the picture's overall quality. This application will be more efficient and reliable than the conventional method and may be a reliable real-time teaching tool for medical students enrolled in the dermatology stream at a university studying dermatology.

Baraa Riyadh Altahan, Ahmed Nabih Zaki Rashed

https://www.sciencedirect.com/science/article/abs/pii/S0965997822002629

Skin Disease Detection for Kids at School Using Deep Learning Techniques – 2022

This study investigates the factors that could help in early detection of skin diseases, such as chickenpox, impetigo, scabies, infectious erythema, skin warts, and other infectious skin diseases. It builds a system of skin disease detection using CNN and a pre-trained VGG19 model. Data augmentation techniques such as zooming, cropping, and rotating were used to train the model, and the Adamax optimizer was used to obtain high accuracy and required results. The system achieved a high accuracy of 99% compared to other similar researchs, and can be integrated into smart schools as part of IOT systems.

Alghieth, Manal

International Journal of Online & Biomedical Engineering

Deep Learning and Machine Learning Techniques of Diagnosis Dermoscopy Images for Early Detection of Skin Diseases – December 2021

This study evaluated the performance of machine learning and deep learning techniques on two datasets (e.g., the International Skin Imaging Collaboration (ISIC 2018) and Pedro Hispano (PH2). The proposed system was based on hybrid features extracted by three algorithms and classified using artificial neural network (ANN) and feedforward neural network (FFNN) classifiers. The FFNN and ANN classifiers achieved superior results compared to the other methods, with accuracy rates of 95.24% and 97.91% respectively. Convolutional neural networks (CNNs) were applied to diagnose skin diseases using the transfer learning method.

The ResNet-50 model fared better than AlexNet, with an accuracy rate of 90% for diagnosing the ISIC 2018 dataset and 95.8% for the PH2 dataset.

Dr. Ibrahim Abunadi, Mr. Ebrahim Mohammed Senan

https://www.mdpi.com/2079-9292/10/24/3158

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 1, October 2023

Skin disease diagnosis with deep learning: A review - November 2021
This paper presents a review of deep learning methods and their applications in skin disease diagnosis. It presents a brief introduction to skin diseases and image acquisition methods in dermatology, introduces the conception of deep learning, reviews popular deep learning architectures and frameworks, and reviews performance evaluation metrics. It then reviews the literature involving deep learning methods for skin disease diagnosis from several aspects according to the specific tasks, discusses the challenges faced in the area, and suggests possible future research directions. The major purpose of this article is to provide a conceptual and systematic review of the recent works on skin disease diagnosis with deep learning.
Hongfeng Li,Yini Pan, Li Zhang, Jie Zhao
https://www.sciencedirect.com/science/article/abs/pii/S0925231221012935

Machine Learning and Deep Learning Methods for Skin Lesion Classification and Diagnosis: A Systematic Review - July 2021
This paper reviews, synthesizes and evaluates the quality of evidence for the diagnostic accuracy of computer-aided systems for skin lesion diagnosis. It includes 53 articles using traditional machine learning methods and 49 articles using deep learning methods. The work identified the main challenges of evaluating skin lesion segmentation and classification methods such as small datasets, ad hoc image selection and racial bias.
Dr. Mohamed A. Kassem
https://www.mdpi.com/2075-4418/11/8/1390

Diagnosis of skin diseases in the era of deep learning and mobile technology – July 2021
Deep learning methods have provided objectivity and high accuracy in the diagnosis of skin diseases, providing accurate, cost-effective and timely treatment. However, lightweight network architectures have been proposed in the literature, but only a few types of skin diseases have been addressed. This study proposes a novel model using MobileNet, a modified-MobileNet architecture, and a user-friendly interface. Results showed that the proposed technique can diagnose skin diseases with 94.76% accuracy.
Evgin Goceri
https://www.sciencedirect.com/science/article/abs/pii/S0010482521002523

An Adaptive Federated Machine Learning-Based Intelligent System for Skin Disease Detection: A Step toward an Intelligent Dermoscopy Device - February 2021
This study proposes an adaptive federated machine learning-based skin disease model (using an adaptive ensemble convolutional neural network as the core classifier) in a step toward an intelligent dermoscopy device for dermatologists. The proposed architecture consists of intelligent local edges (dermoscopy) and a global point (server). Experiments were carried out in a simulated environment using the International Skin Imaging Collaboration (ISIC) 2019 dataset to test and validate the model's classification accuracy and adaptability. In the future, this study may lead to the development of a specialized dermoscopy-based (hardware) device to assist dermatologists in skin tumor diagnosis.
Dr. Manzoor Ahmad Hashmani
https://www.mdpi.com/2076-3417/11/5/2145

Multi-class multi-level classification algorithm for skin lesions classification using machine learning techniques - March 2020
Skin diseases are a major cause of disability worldwide and contribute approximately 1.79% of the global burden of disease measured in disability-adjusted life years. In the UK, 60% of the population suffer from skin diseases during their lifetime. This paper proposes an intelligent digital diagnosis scheme to improve the classification accuracy of multiple diseases. A Multi-Class Multi-Level (MCML) classification algorithm inspired by the "divide and conquer" rule is implemented using traditional machine learning and advanced deep learning approaches. The proposed algorithm is evaluated on 3672 classified images and the diagnostic accuracy of 96.47% is achieved. To verify the

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 1, October 2023

performance of the algorithm, its metrics are compared with the Multi-Class Single-Level classification algorithm. The results indicate that the MCML classification algorithm is capable of enhancing the classification performance of multiple skin lesions.

Nazia Hameed

https://www.sciencedirect.com/science/article/abs/pii/S0957417419306797