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| S.NO | TITLE | AUTHOR | ABSTRACT | CONCLUSION |
| 1. | Studies on Different CNN Algorithms for Face Skin Disease Classification Based on Clinical Images | Weihong Huang, Xiang Chen and Yi Li | Skin problems not only injure physical health but also induce psychological problems, especially for patients whose faces have been damaged or even disfigured. Using smart devices, most of the people are able to obtain convenient clinical images of their face skin condition. On the other hand, the convolutional neural networks (CNNs) have achieved near or even better performance than human beings in the imaging field. Therefore, this paper studied different CNN algorithms for face skin disease classification based on the clinical images. | This paper performed experiments using five mainstream CNN structures for the clinical image diagnosis of six common facial skin diseases and constructed a data set consisting mainly of facial skin disease images. The results demonstrate that CNNs have the ability to recognize facial skin diseases. Based on our experiments, we determined that different models to diagnose diseases on different body parts should be used. Furthermore, our experiments also showed that a more reasonable network structure could improve the performance of the model. |
| 2. | Analysis and Classification of Human Skin Diseases. | P. B. Manoorkar,Prof. D. K. Kamat,Dr. P. M. Patil | Most common skin diseases like skin cancers, leprosy etc are untreated and mostly causes death. Skin cancer has more cure rate if detected and treated early. The basic means of detecting these skin diseases is through visual inspection followed by biopsy and pathological examination. If the physician finds the appearance of lesion doubtful then normally visual inspection method is used for diagnosis but all malignant lesions are not identified through visual inspection. Now, there are no generally accepted tools that physician can use to immediately find the skin disease in the clinic. | Bio-impedance measurement method is for analysis of skin diseases is used in diagnosis of early stage skin diseases like melanoma skin tumours Non-melanoma 1) basal cell carcinoma 2) squamous cell carcinoma and Malignant melanoma skin disease like scabies, Acne, Sickle-Cell Anemia, Rubella, Leprosy, Psoriasis Hand, foot, mouth skin diseases. From above results we conclude that normal skin magnitude has more value than disease skin and we separate affected skin with normal skin. By using this measurement we easily diagnose and compare affected skin with normal skin of any disease. From this method we control our body parameter and avoid occurrence of different diseases like early stage skin cancer. The main compensation of the bio-impedance method is it requires very low power, low cost and portable. |
| 3. | Skin Disease Classification versus Skin Lesion Characterization: Achieving Robust Diagnosis using Multi-label Deep Neural Networks | Haofu Liao,Yuncheng Li, Jiebo Luo | In this study, we investigate what a practically useful approach is in order to achieve robust skin disease diagnosis. A direct approach is to target the ground truth diagnosis labels, while an alternative approach instead focuses on determining skin lesion characteristics that are more visually consistent and discernible. We argue that, for computer aided skin disease diagnosis, it is both more realistic and more useful that lesion type tags should be considered as the target of an automated diagnosis system such that the system can first achieve a high accuracy in describing skin lesions, and in turn facilitate disease diagnosis using lesion characteristics in conjunction with other evidences. | In this study, we have showed that, for skin disease classification using CNNs, lesion tags rather than the diagnosis tags should be considered as the target for automated analysis. To achieve better diagnosis results, computer aided skin disease diagnosis systems could use lesion-targeted CNNs as the cornerstone component to facilitate the final disease diagnosis in conjunction with other evidences. We have built a largescale dermatology dataset from six professional photosharing dermatology atlantes. |
| 4. | An Enhanced Model for Skin Disease Detection using Dragonfly Optimization based Deep Neural Network | K.Melbin, Dr.Y.Jacob Vetha Raj | In this paper, we have proposed an efficient skin disease identification approach using enhanced deep neural network model. The database images are segmented using enhanced level set approach-based segmentation. Feature extraction is carried out for all the images to retrieve the feature vector using GLCM. Finally, dragonfly optimization-based deep neural network is utilized for the classification of skin diseases. The system is implemented in the working platform of MATLAB, and the proposed dragonfly based DNN is evaluated using existing methods such as SVM, ANN for different evaluation metrics such as accuracy, sensitivity, and specificity to show the system efficiency | In this paper, we have proposed enhanced optimizationbased DNN for classification of skin diseases to find the normal or abnormal stage. The proposed model has been used as the automatic detection of skin diseases and compared with existing approaches to prove the effectiveness of the proposed system. The evaluation metrics are estimated for several parameters that are tabulated above, and the segmentation accuracy for the presented method is 98%. The segmented images produce 98% of accuracy while classifying the skin database images as normal and abnormal for various metrics. |
| 5. | Image Analysis Model For Skin Disease Detection: Framework | Alaa Haddad, Shihab A. Hameed | Skin disease is the most common disease in the world. The diagnosis of the skin disease requires a high level of expertise and accuracy for dermatologist, so computer aided skin disease diagnosis model is proposed to provide more objective and reliable solution. Many researches were done to help detect skin diseases like skin cancer and tumor skin. But the accurate recognition of the disease is extremely challenging due to the following reasons: low contrast between lesions and skin, visual similarity between Disease and non-Disease area, etc. | In this research paper can used as an effective, low cost solution for skin diseases detection by a computer aided system is proposed to resolve difficulties that’s created from challenges faced from the dermatologist to recognize the different skin diseases easily. Firstly applied enhancements to remove the noise, two noise reduction technologies were investigated. Gaussian filter and median filter were compared in the noise reduction and compared four color spaces (RGB, YUV, HSV and YCbCr) for skin lesion extraction and feature extraction and to improve computation efficiency. This model is built in mobile application with user friendly interfaces and clearly steps. |
| 6. | Deep convolutional neural network for face skin diseases identification | Sambit BAKHSHI, Rola EL SALEH LISSI | The use of computer based technologies or Artificial intelligence in facial skin problems identification has evolved significantly over the years. In this paper, we propose an automated facial skin disease method using a pre-trained deep convolutional neural network (CNN). In the beginning, the images are regenerated using some pre-processing image techniques in order to augment the size of our database, collected from different sources and resized to fit the network. These images are then used for training and validation purposes. We will show that our model can successfully identify eight facial skin diseases, normal skin class and no-face class and with an accuracy of 88%. | In this paper, a new automated facial skin diseases diagnosis method based on machine learning approach is presented. The prediction of diseases is achieved by a pretrained Convolutional Neural Network. We used VGG-16 model. The model was trained and validated by a database that 2019 Fifth International Conference on Advances in Biomedical Engineering (ICABME) we have created containing 12000 images. It achieves an accuracy of 88% and classifies successfully the facial skin images given for test with an accuracy of 98.5%. As perspective, the accuracy of our model can be improved by increasing the size of our database and new deep neural network models can also be considered. |
| 7. | Implementation of The Introduction of Skin Diseases Based on Augmented Reality | Mizanuddin Auliya Iqbal, Akuwan Saleh, Haiyadi Amran Darwito | —Indonesia is a tropical country that has high rainfall. Environmental conditions greatly affect health conditions in humans such as skin health examples. Many people are still confused to identify the skin disease they are suffering from. This has a negative impact on people's lives. In this research, an application is made that is useful for introducing and informing various types of skin diseases with the Convolutional Neural Network (CNN) algorithm and implementation for information in introducing this skin disease using augmented reality (AR).. | Based on the test results, several conclusions are obtained. Accuracy testing, to get optimal results on detection results, a distance of 8 cm, and a distance of 14 cm is a distance that can provide detection results with optimal accuracy. Based on the difference in light intensity during testing, namely the light intensity of 2 lux, 89 lux, and 248 lux, in samples taken using measles skin disease, the light intensity of 248 lux gets a detection result with an average accuracy of 99.91%. In the data obtained at a distance of 8 cm, there are also data on some unstable tests so that the detection results with an accuracy of 54.60%, and also 66.20% |
| 8. | Morphological, Texture and Auto-encoder based Feature Extraction Techniques for Skin Disease Classification | S. Chatterjee, D. Dey and S. Munshi | Development of computer aided diagnostic system for skin disease identification has a great impact on early and accurate diagnosis of the ailment. It is a challenging task for the experts to make diagnosis only by visual inspection of the skin lesion area or of the related dermoscopic images, owing to the closely similar appearance and complex structural property. Here, the morphological and wavelet based fractal texture features have been used along with the stacked auto-encoder based features for the identification of four disease classes from dermoscopic images. | The paper proposes a methodical approach for the four class classification of skin diseases using combined set of morphological, textural and auto-encoder based features. The stacked auto-encoder with three hidden layers have been used for the extraction of reduced set of features as the weight values of the neuronal nodes. The SVM-RFE with CBR technique has been used for the selection of features according to their ranking criterion and further used in SVM classifier based ensemble multi-class classification model. The combined feature set has identified the melanoma, nevus, BCC and SK diseases with the accuracy of 96.71%, 97.77%, 98.03% and 98.11% respectively. In future work, the color and texture features with modified auto-encoder based technique will be introduced for the improved classification of the diseases. |
| 9. | Skin Disease Classification from Image - A Survey | Tanvi Goswami, Vipul K. Dabhi | Skin diseases are one of the most common types of health illnesses faced by the people for ages. The identification of skin disease mostly relies on the expertise of the doctors and skin biopsy results, which is a time-consuming process. An automated computer-based system for skin disease identification and classification through images is needed to improve the diagnostic accuracy as well as to handle the scarcity of human experts. Classification of skin disease from an image is a crucial task and highly depends on the features of the diseases considered in order to classify it correctly. | This paper is focused on various techniques for classification of skin diseases. Automating the process of skin disease identification and classification can be very helpful and takes less time for diagnosis as well. This paper presents the survey of traditional or feature extraction based and CNN based approach for skin disease classification. From the study it is concluded that for traditional approach the feature selection process is time consuming also selection of relevant feature is very important. Whereas, the deep learning algorithm CNN learns the features automatically and efficiently, for feature extraction CNN selects the filters intelligently as compared with manual ones. |
| 10. | Open Set Deep Networks Based on Extreme Value Theory (EVT) for Open Set Recognition in Skin Disease Classification | Yordan Yasin, Dewinda Julianensi Rumala | A computerized skin disease classification system generally works on closed-set data, meaning images from unknown classes will still be classified as one of the known classes. In the Teledermatology system, skin disease classes are usually defined before the training process. However, in the real world application, it may receive images that belong to a new class or disease. To avoid misclassification, we have implemented the Extreme Value Theory of Weibull distribution function for out of distribution detection and incorporated the OpenMax layer to the deep networks for open-set recognition in skin disease classification. | In this paper, we have proposed the implementation of the Out of Distribution Detection method based on Extreme Value Theory and extension of the softmax layer with the OpenMax layer in the trained Deep Learning model for openset recognition in skin disease classification. CNN model of Inception V3 is used in this study to classify seven classes of skin disease image DERMNET dataset with a testing accuracy of 71.64% |