LITERATURE SURVEY

1. Traditional Techniques for Skin Disease Image Classification:

Authors : Tanvi Goswami; Vipul K. Dabhi; Harshadkumar B. Prajapati.

Year:2018

They have come up with expert system limited to classify three diseases. The system consists of two separate units namely; data processing and Image processing unit. The data processing unit was responsible for image acquisition, preprocessing for noise removal, segmentation and feature extraction from the skin disease images whereas data processing unit was employed for data mining task or classification.. They have proposed a hybrid model using multi objective optimization algorithm NSGA-II and ANN for diagnosis of skin lesion being benign or malignant. The bag of-features approach is applied to classify the skin lesions and are generated using SIFT. SIFT algorithm identifies and locates the key points from the input image and generates the feature vector. These features are then fed to the hybrid classifier where NSGA-II is used to train the ANN. Authors also compared the model's accuracy with ANN-PSO (ANN trained with particle swarm optimization) and ANN-CS

2. Deep learning based approach for Skin Disease Image Classification

Authors: Zhang, Sun et al, Gessert .

Year:2020

They used a the 3-way disease partition algorithm was designed to classify a given skin lesion to be malignant, benign or non-neoplastic. Also, 9-way disease partition was performed to classify a given lesion into one of the 9 mentioned categories. The state-of-the art InceptionV3 CNN architecture was used for skin lesion classification has concluded that the CNN can out perform human experts if it is trained with enough data. They have proposed handcrafted feature based as well as CNN based approaches for classification of clinical images. They trained four CNN architectures namely; Caffenet, fine-tuned Caffenet, VGG and fine-tuned VGG Net. They have proposed CNN architecture by setting 16 different filters of 7*7 kernel size with pooling layers for down sampling. The proposed model was trained for malignant and benign category of diseases namely; melanoma, Seborrheic keratosis and nevus

3.Effective diagnosis mechanism for skin disorders using image mining techniques

Authors: Galiveeti Poornima, Dr. Deepak S Sakkari

Year:2022

The first stage of the model requires the compilation of datasets and augmentation of data. The dataset was entirely created by us collecting the photos from different sites of various disorders. The original dataset consisted of 30 images, 150 after augmentation. Second stage of the model involves in extracting features from the skin disorder images by using various image processing techniques. Third stage of the model involves in classifying skin disorder images.

4.Skin Disease Detection And Classification

Authors: V. Pugazhenthi, Sagar K. Naik, Amruta D. Joshi, Shreya S. Manerkar, Vinita U. Nagvekar, Kalpita P. Naik, Chinmay G. Palekar, K Sagar

Year:2019

GLCM (Grey Level Co-occurrence Matrix)In this method, the texture of the image is analyzed. Image Quality Assessment. Image Quality Assessment Features MSE(Mean Square Error) and PSNR(Peak Signal to Noise Ratio) are extracted from the segmented image.Full-reference method This metric is the mean squared error (MSE), computed by averaging the squared intensity differences of distorted and reference image pixels, along with the related quantity of peak signal-to-noise ratio (PSNR).Classification is the process of identifying to which category the input data belongs.Decision Trees,ID3 Algorithm are the classification methods used here.

5.Skin Lesion Segmentation Based on Deep Learning

Authors: Cheng Huang,Yongbin Yu

Year:2020

The Authors implemented Deep learning, Mask R-CNN, to segment skin diseases, and introduced K-means clustering algorithm in the pre-processing of the data set. Experiment results based on ISIC (International Skin Imaging Collaboration) data set .It predicts the presence of fuzzy boundaries and complex textures. There are many skin disease segmentation algorithms based on Deep learning, like convolutional neural networks (CNNs) and many derivatives based onconvolutional neural networks, such as the super-pixel segmentation algorithm and the U-Net segmentation algorithm. In the treatment of skin diseases by using Faster R-CNN, which provides us a new idea to use the R-CNN series of neural networks to deal with skin diseases. In deep learning, the neural network models of the R-CNN series have good effects on region detection and determination among which the instance segmentation effect of Mask R-CNN are fascinating.

6.Skin Disease prediction

Authors: Mr. T.K.Jagtap,Mr. H.P.Shinde,Mr. O.V.Gaware,Mr. S.R.Maurya

Year:2021

They implemented is mobile based and hence very accessible even in remote areas and it is completely non-invasive to patient's skin. Image processing techniques are performed on this image and the detected disease is displayed at the output.Convolutional neural network (CNN/Conv Net) is a class of deep neural networks, most commonly applied to analyze visual imagery. TensorFlow is a symbolic math library that uses dataflow and differentiable programming to perform various tasks focused on training and inference of deep neural networks. The training time for the deep learning algorithm increases because of the usage of the very large dataset. Deep learning algorithm chooses its own features unlike the machine leaning making the prediction process easier for the end user as it does not use much of pre-processing.

7. Skin Disease Classification System Based on Machine Learning Technique

Authors: Saja Salim mohammed ,Jamal Mustafa Al-Tuwaijari

Year:2020

They implemented the Data extraction techniques from healthcare systems are useful in designing automated disease diagnostic tools using machine learning algorithms and deep learning algorithms. Authors have used multiple types of artificial intelligence algorithms to train classifiers needed to perform machine diagnostics, using the principles of machine learning and deep learning. The close relationship between artificial intelligence, machine learning, and deep learning is a progressive process as well.

8. A Smartphone-Based Skin Disease Classification Using MobileNet CNN

Authors: Jessica Velasco, Cherry Pascion, Jean Wilmar Alberio

Year:2019

The authors aims to design a skin disease classification system application in an Android phone that will classify different skin diseases using the highest performance pretrained convolutional neural networks model in the said field of dataset. The images gathered from online public access dermatology repositories are validated by dermatologist . The proponent decided to use the pretrained CNN MobileNet model. To properly deploy the CNN model to an Android application the .h5 file should be converted to a protobuff file.

9. AI recognition in skin pathologies detection

Authors: Dmitriy Gavrilov, Lyubov Lazarenko,   Emil Zakirov

Year:2020

The epidermis, or top layer of skin, is where skin malignancies begin.In this layer, there are primarily 3 types of cells are Squamous cells, Base cells, Melanocytes. For skin cancer early identification, it is typically advised to focus on the ABCDE criteria, which include features such asymmetry, uneven border, odd and irregular color, diameter greater than 6 mm, and timely evaluation. Other characteristics can also be used to distinguish between malignant and benign tumors from a pathology imaging. It's not a brand-new concept to utilize computer vision to find skin diseases. For tasks like object detection and natural picture categorization, convolutional neural networks (CNNs) are superior to alternative approaches. Well-known CNN architectures are often trained on huge picture datasets to attain high accuracy.

10. A Survey Skin Disease Classification from Image

Authors: Tanvi Goswami, Vipul K. Dabhi, Harshadkumar B. Prajapati

Year:2020

Skin illness diagnosis from an image is a difficult challenge because there are numerous different skin diseases. The following issues were raised by researchers during the classification of skin diseases are Different lesion kinds can occur in diseases, A dermatologist may find it difficult to diagnose a disease by visual inspection because many diseases share a similar visual characteristic, The different skin tones and skin types (age) make computer-based diagnosis more challenging. Therefore, in computer-based diagnosis, it is crucial to choose relevant features for such diseases in order to appropriately identify them. The effectiveness of an automated system depends on how well it completes necessary image processing and machine learning tasks. A significant amount of medical data is generated every day as a result of recent technological advancements, and this data contains important and valuable information about the patients. Artificial intelligence that is based on images is gaining popularity for treating some ailments, particularly skin conditions.