Literature Survey

Title : AI‑based localization and classification of skin disease

with erythema

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| s.no | Author | Title | Abstract | Advantage | Disadvantage |
| 1. | M. Mourad Mabrooka, Hussein A.Khalilb , Aziza I.Husseinc | Artificial Intelligence Based Cooperative Spectrum Sensing Algorithm Intelligence Based Cooperative Spectrum | Cognitive Radio (CR) technology is regarded as a key network technology used to manage the limitation of the  available spectrum in wireless communication networks. Spectrum Sensing (SS) is the core process in CR engine based on  detecting the free channels and sharing it among other users. In wideband spectrum, many algorithms are proposed to sense the  available free channels. Cooperative sensing is mainly considered as an effective solution of signal fading and shadowing  problems in CR networks. | Wideband spectrum sensing techniques achieved great importance in cognitive radio networks. Therefore  adaptive blind Multi-Coset sampling based wide spectrum sensing technique is used in this paper. In order to  overcome the effect of noise and fading problems, centralized cooperative sensing scheme is developed. | The error was theoritically calculated about 10% but practical wise was 1 % after 300 epoch of training. |
| 2. | Ha Min Son1, Wooho Jeon1, Jinhyun Kim2, Chan Yeong Heo3,  Hye Jin Yoon1,  Ji‑Ung Park ,Tai‑Myoung Chung1 | AI‑based localization  and classification of skin disease  with erythema | Although computer-aided diagnosis (CAD) is used to improve the quality of diagnosis in various  medical fields such as mammography and colonography, it is not used in dermatology, where  noninvasive screening tests are performed only with the naked eye, and avoidable inaccuracies  may exist. This study shows that CAD may also be a viable option in dermatology by presenting a  novel method to sequentially combine accurate segmentation and classification models. Given an  image of the skin, we decompose the image to normalize and extract high-level features. Using  a neural network-based segmentation model to create a segmented map of the image, we then  cluster sections of abnormal skin and pass this information to a classification model. We classify each  cluster into different common skin diseases using another neural network model. Our segmentation  model achieves better performance compared to previous studies, and also achieves a near-perfect  sensitivity score in unfavorable conditions. Our classification model is more accurate than a baseline  model trained without segmentation, while also being able to classify multiple diseases within a single  image. This improved performance may be sufficient to use CAD in the field of dermatology. | 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. | the disadvantages of these traditional approaches, convolution neural networks (CNNs) have gained  popularity because of their ability to extract high-level features with minimal preprocessing. |
| 3. | Mustafa Qays Hatem | Skin lesion classification system using a Knearest  neighbor algorithm | One of the most critical steps in medical health is the proper diagnosis of tthe disease. Dermatology is one of the  most volatile and challenging fields in terms of diagnosis. Dermatologists often require further testing, review of the  patient’s history, and other data to ensure a proper diagnosis. Therefore, finding a method that can guarantee a  proper trusted diagnosis quickly is essential. Several approaches have been developed over the years to facilitate  the diagnosis based on machine learning. However, the developed systems lack certain properties, such as high  accuracy. This study proposes a system developed in MATLAB that can identify skin lesions and classify them as  normal or benign. The classification process is effectuated by implementing the K-nearest neighbor (KNN) approach  to differentiate between normal skin and malignant skin lesions that imply pathology. KNN is used because it is  time efficient and promises highly accurate results. The accuracy of the system reached 98% in classifying skin  lesions. | the advantages of the proposed system are  that it is easy to implement and fast (no training period  needed) as it is based on the KNN algorithm, and as a  result, new data can be added seamlessly without affecting  the accuracy | the disadvantages are that it  does not work well with a large dataset and is sensitive  to the noise present in the dataset. The system can be  further improved by using ensemble learning methods  or evolutionary algorithms that guarantee even higher  accuracy and faster results.  Conclusions  Diagnosis |
| 4. | Samir Kumar Bandyopadhyay1  , Payal Bose2  , Amiya Bhaumik3  , Sandeep Poddar4  1Lincoln University College, Petaling Jaya, Selangor D.E, Malaysia | Machine Learning and Deep Learning Integration  for Skin Diseases Prediction | Living creature skin disease is a fairly prevalent  ailment. In the medical world, monitoring dermatological  disorders and classifying them is a complex process. Due to  the sheer intricacy of individual skin tone and the visible  proximity effect of infections, recognizing the precise type  can be challenging at times. As a result, it is critical to  diagnose and recognize skin disease as soon as possible.  Artificial intelligence (AI) is quickly expanding in  therapeutic areas in a modern context. For diagnostic  purposes, much deep learning (DL) and machine learning  (ML) methods are applied. These strategies drastically  enhance the diagnosing process while also speeding it up. In  this study, to improve disease detection, a model combining  deep learning (DL) and machine learning (ML) has been  developed. For classification, three sets of machine learning  models were utilized, and for feature selection, four sets of  pre-trained deep learning models were being used. For  classification models, deep neural networks Alexnet,  Googlenet, Resnet50, and VGG16 were used, while Support  Vector Machine, Decision tree, and Ensemble boosting  Adaboost classifier were applied for classification. To  identify the best prediction model, a comparative study was  carried out. The hybrid method Resnet50 with SVM produced  the best results, with 99.11% accuracy. | Computer vision, in addition to physical indications, is critical for detecting many skin diseases. The computer vision approach aids in the detection of skin diseases with greater precision. | A full comparative analysis was performed, and it was discovered that the deep network model Resnet50 with Support Vector Machine Classifier produces the best results for prediction with a 99.11% accuracy rate. |