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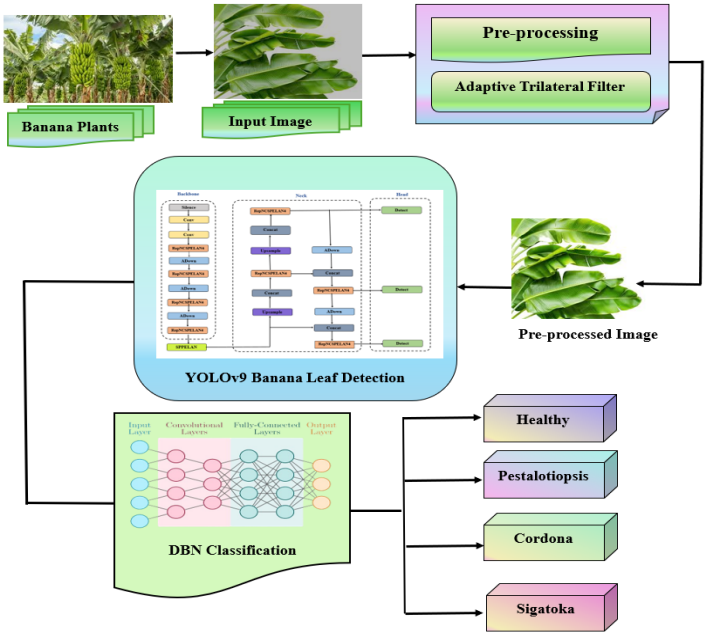
1. YOLOV9-DBN: HYBRID YOLOV9 AND DBN ARCHITECTURE FOR AUTOMATED BANANA LEAF DISEASE DETECTION & CLASSIFICATION

Zeenath Fathima M, Pushpalatha C

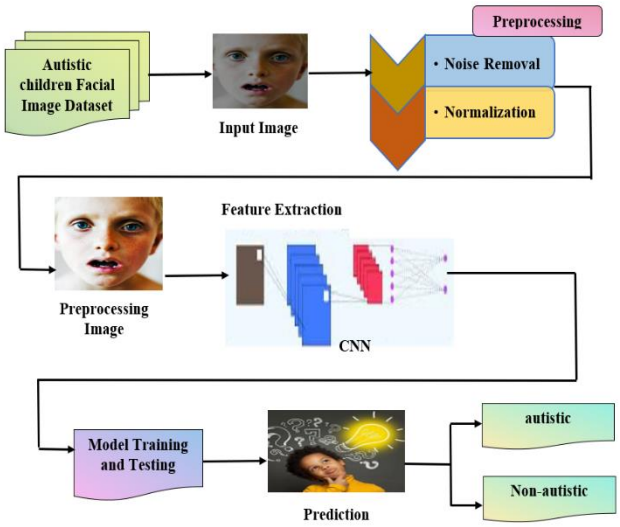
ABSTRACT: Banana leaf disease detection (BLDD) is an automated approach used to identify diseases in banana leaves for improving crop health and agricultural productivity. Accurate and real-time diagnosis of banana leaf diseases remains difficult due to environmental variability, visual similarity of symptoms, and the need for computationally efficient models. To address these issues, a YOLOv9 model is proposed, using advanced deep learning architectures for accurate banana leaf disease classification. Adaptive trilateral filtering is used to improve banana leaf image quality by lowering noise while preserving sharp edge information and disease lesion patterns. YOLOv9-based detection is used to correctly locate diseased patches in banana leaves, allowing for exact identification of infection sites. Furthermore, a Deep Belief Network (DBN) is developed to improve multi-level disease classification by learning discriminative representations from identified regions. The proposed framework classifies banana leaf conditions into healthy, cordana, pestalotiopsis, and sigatoka categories based on the extracted features, ensuring accurate and reliable disease severity assessment for precision agriculture applications. The YOLOv9 model achieves an accuracy of 91.9%.



2. EARLY AUTISM SPECTRUM DISORDER DETECTION USING CNN-BASED FACIAL IMAGE ANALYSIS

Mini Rajan, Soumya D D

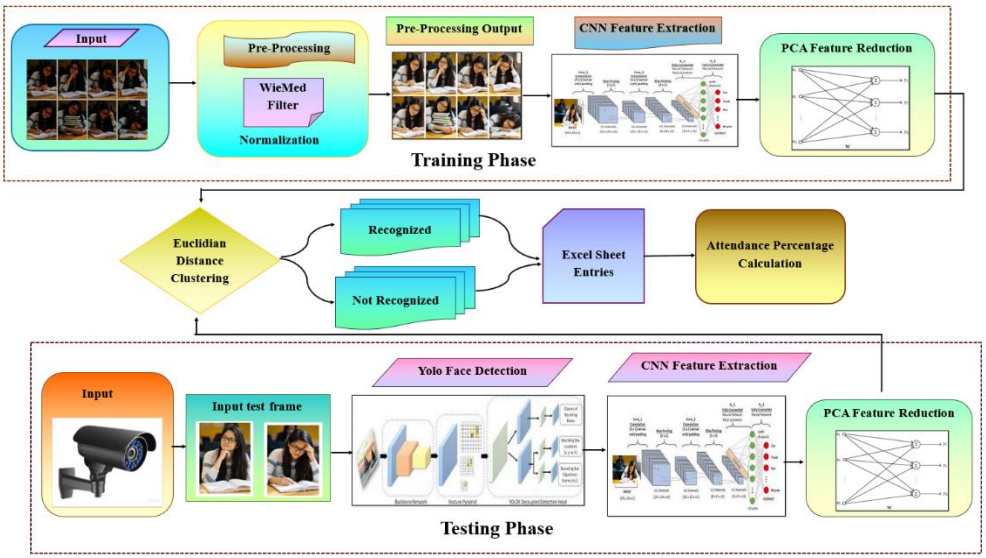
ABSTRACT: Autism spectrum disorder (ASD) refers to a neurodevelopmental disorder that is described as having issues with socialization, communication, as well as repetitive behavior. Early detection of ASD is critical at an early age so that individuals can receive the required intervention and better developmental outcomes. The conventional methods of diagnosis are generally long procedures which are subjective and need the assessment of experts. This paper presents a solution to the limitations in order to come up with a deep learning model that will be used in detecting autism on the basis of the facial images automatically. This study implements a Convolutional Neural Network (CNN) model that categorizes the images of faces as autistic and non-autistic. Resizing and normalization is a process that is involved in pre-processing so as to create homogenous data. The CNN model suggested here automatically extracts the relevant features of the face and generate accurate diagnostic classifications. The measures of performance are accuracy, precision, recall and F1-score. The model has been demonstrated to be accurate in its operation by both experimentation and is seemingly a comprehensive all inclusive, non-invasive and helpful instrument of early childhood autism diagnosis.



3. FACE CNN YOLO-SA: FACIAL ATTENDANCE USING CNN-BASED ENHANCED FUSION OF YOLO AND SPATIAL ATTENTION FOR ACCURATE REAL-TIME RECOGNITION SYSTEM

Mathumitha M S, Pushpalatha C

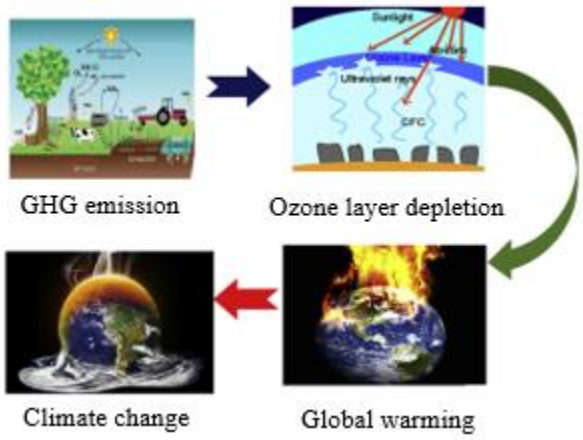
ABSTRACT: Face recognition system is based on combining conventional methods and the computerized system that uses deep learning methods to automate the process of attendance recording. The current method does not give precision in the real-life educational context as the brightness, direction, blockage and image quality vary. To overcomes this problem, a novel model proposes employing a Convolutional Neural Network (CNN) with spatial attention to identify essential facial characteristics and detect students, with an objective of boosting accuracy, minimizing time consumption and enhancing overall efficiency and reliability of attendance management in educational settings. A Wiener and Median (WieMed) Filter are utilized for preprocessing for improving the acquired image from the camera which becomes the input data for the CNN. The face is detected using You Only Look Once (YOLO) and it is extracted by CNN for efficient attendance marking of the student. The extracted features are of the face uses the PCA for feature reduction then Euclidian Distance Clustering recognize the face of the student the attendance is stored in the Excel sheet. The proposed model achieved an accuracy of 97.50% for recognizing the face. The proposed model improves overall accuracy by 25.07%, 7.82%, 1.15%, and 7.82% compared to the Eigen Face Recognizer algorithm, CNN, MTCNN, FaceNet, and Deep learning approach, correspondingly.



4. FORECASTING GREENHOUSE GAS EMISSIONS FROM AGRICULTURAL SECTORS

Jasmine Gnanamalar, Kumar M

ABSTRACT: Agriculture is one of the economic sectors that has both a direct and indirect effect on climate change, contributing to greenhouse gas (GG) emissions. This emission is created by the putrification of biomass and dry plants deposits and burning of crop leftovers. The cropped soils generate more than half of the earth's anthropogenetic N_2O fluxes, stock and discharge the organic carbon as CO_2, and can produce as well as consumeCH_4. The agricultural soils can be both emitters and sinks of GG. The sources and sinks of each of these GG varies, and each is affected differently by agronomic management. The Kyoto Protocol's architecture accounts for the interplay that occurs between the stratospheric ozone layer, solar ultraviolet (UV) rays, and climate change. In this research, the high temporal and spatial variability of farming emit the GG from the soil that need to analyse and forecast the climatic changes by using deep convolutional neural network (CNN) with Random Forest Classifier (RFC) named as CNN-RFC. The prediction is performed using humidity of air, soil texture and temperature of the atmosphere. The performance metrics is obtained from the values of root-mean-squared-error (RMSE):2.104, 13.231 and 4.128, mean-absolute-error (MAE):1.053, 10.032 and 3.653, Pearson: 0.325, 0.138 and 0.357, R^2 coefficient:0.432, 0.473 and 0.432 and standard deviation (SD):5.463, 10.587 and 3.463 for $CO_2, CH_4 and\ N_2O$ respectively.



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5. AD-HCBL: A HYBRID CNN-BILSTM FRAMEWORK FOR ALZHEIMER'S DISEASE CLASSIFICATION USING MRI IMAGES

Christal Anto V, Ahilan A

ABSTRACT: Alzheimer's disease (AD) is a neurodegenerative disorder that is progressive and causes loss of memory and cognitive performance, which significantly influences the quality of life of older adults. The accurate and early diagnosis of AD using MRI images provides complex brain structural changes, redundant features, and limited effectiveness of existing automated detection methods. To address this, a novel AD-HCBL is proposed for accurate and automated AD detection using MRI Images. The proposed AD-HCBL integrates a ResNet 50 + Grey-Level Co-occurrence Matrix (GLCM) for extracting the features from the MRI scan images. Frog Snake Prey Predation Relationship Optimisation (FSRO) is then used to extract the features and refine the exploration features to eliminate the redundancy, giving a good balance between exploitation and exploration. The MRI images are then correctly categorised into normal, mild and severe stages of AD, using a BiLSTM network. Two datasets are utilised in the implementation of the experimental results in the python, specifically, the AD Multiclass Dataset and the ADNI dataset. The proposed AD-HCBL achieves above 98% accuracy, precision, and recall when compared to the existing methods, respectively.