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Paper-4: Diabetic Retinopathy Classification with Deep Learning via Fundus Images.

Summary: This paper reviews current developments in deep learning-based research for the classification of diabetic retinopathy (DR). It examines well-known public datasets that are used to test and train DR classification methods. With more than 88,000 photos, Kaggle EyePACS has the largest dataset. To handle noise and variability in fundus images, common data preparation approaches covered are image enhancement, denoising, normalization, and augmentation. Convolutional neural networks (CNNs), autoencoders, recurrent neural networks, and deep belief networks are popular deep learning designs that have been investigated. The most widely used CNNs are those based on ResNet and VGGNet, in particular. Models are assessed for multi-class classification of DR grading severity levels and binary classification of DR detection. Performance is demonstrated to improve with transfer learning, while human-level deep learning has been attained.

Paper-5: Segmentation Using the IC2T Model and Classification of Diabetic Retinopathy Using the Rock Hyrax Swarm-Based Coordination Attention Mechanism.

Summary: The paper suggests a two-step method for segmenting the optic disc (OD) and blood vessels (BV) and classifying diabetic retinopathy (DR) using retinal fundus pictures. For training and evaluation, it makes use of publicly accessible datasets with over 10,000 fundus images, such as DIARETDB0 and Messidor-2. To enhance image quality, it performs pre-processing operations such as extracting the green channel, evenly resizing photos, and applying top-bottom hat transformation. To adjust the model hyperparameters, it employs Grasshopper-BAT, a hybrid optimization technique. - It uses a convolutional transformer network known as the IC2T Model for the segmentation stage. To more effectively extract edge features, this makes use of a contour detection module and two convolutional transformer blocks. It employs preferable attention mechanism network known as CAMNet for the categorization stage.

Paper-6: Vision Transformer Model for Predicting the Severity of Diabetic Retinopathy in Fundus Photography-Based Retina Images

Summary: This paper proposes a method,based on fundus photography retinal pictures, a vision transformer (ViT) model that predicts the severity of diabetic retinopathy (DR). If neglected, diabetic retinopathy (DR) is a common consequence of diabetes that can lead to blindness or vision loss. Because a ViT architecture is superior to CNNs at capturing long-range dependencies in images, it is utilized. Based on the International Clinical Diabetic Retinopathy Severity Scale, the model uses fundus pictures to classify the severity of DR into 5 classes. The study makes use of the fine-grained annotated FGADR dataset, which comprises 1,842 retinal pictures labeled with severity grades and lesion comments by three. This will make a vital improvement in the sector of Diabetic retinopathy.