ABSTRACT

Diabetic retinopathy is a common eye disease that affects people with diabetes and can lead to severe vision loss or blindness if not detected and treated early. In this study, we propose a novel approach for retinopathy detection using Generative Adversarial Networks (GANs).

GANs are a type of deep learning technique that can generate synthetic data that is similar to the real data, making them well-suited for medical image analysis. The proposed approach aims to improve the accuracy and efficiency of retinopathy detection, leading to early detection and better patient outcomes. The proposed approach involves training a GAN to generate synthetic retinal fundus images that are similar to the real images. The synthetic images are then used to augment the training dataset, which improves the performance of the retinopathy detection model. The retinopathy detection model is based on a convolutional neural network (CNN) architecture that is trained on the augmented dataset. The proposed approach is evaluated on the publicly available dataset and achieves a high accuracy of 0.94 for retinopathy detection.

The proposed approach outperforms several state-of-the-art methods, demonstrating its effectiveness in detecting diabetic retinopathy. The proposed approach's ultimate goal is to provide an accurate and efficient tool for diabetic retinopathy detection, which can lead to early diagnosis and better patient outcomes. The use of GANs for synthetic data generation and augmentation can improve the performance of retinopathy detection models and lead to more accurate and reliable diagnoses.