Sr. no.	Paper Title	Year	Publications	Abstract	Future Scope	Algorithms	Dataset
1	Deep Learning Approach for Detection of Diabetic Retinopathy	2023	• Kaustubh Ratna • Bhushan Maheshwari • Akash Shedage • Amber Aggarwal • Raghav Agal • Somya Rakesh Goyal	This study focuses on detecting diabetic retinopathy (DR), a condition that can lead to vision loss, by analyzing images of the eye. It compares different methods, including (CNNs) and ResNet, to see which one works better for identifying the severity of DR. The study uses a large set of eye images from a public database and finds that the proposed method is a promising way to automatically detect and classify DR.	In the future, this approach could be improved by using more advanced models and larger, more diverse datasets to increase accuracy. The technology could also be integrated into healthcare systems or mobile devices to assist doctors in diagnosing diabetic retinopathy quickly and reliably in real-time.	CNN model and the ResNet50 architecture for the binary classification of Diabetic Retinopathy.	Kaggle "APTOS 2019 Blindness Detection" dataset; it contains fundus images of eyes diagnosed with DR. These images were rated on a scale of 0 to 4 based on the severity of DR. A total of 2000 images were used for our model.
2	Diabetic Retinopathy Using Deep Learning	2023	• Shivani Joshi • Rajiv Kumar • Praveen Kumar Rai	This paper addresses diabetic retinopathy, an eye condition caused by diabetes that can lead to blindness. The study uses deep learning to detect the disease by analyzing eye images, achieving high accuracy. A technique called SHAP is used to explain the model's predictions, helping to improve its performance.	In the future, this method could be used to improve early detection of diabetic retinopathy, potentially helping more people avoid blindness. It could also be adapted to detect other eye diseases using similar techniques.	• CNN • SVM • DNN • ResNet50 • XceptionNets • DenseNets	• From 2015, Kaggle Diabetic Retinopathy Detection Challenge's available dataset • Indian Images of diabetic retinopathy dataset • Messidor Methods to Assess Indexing and Segmentation Techniques in Retinal Ophthalmology dataset • Kaggle APTOS
3	Detection of Diabetic Retinopathy using Machine Learning Algorithm	2020	• Sonali Chaudhary • Ramya H. R	This paper presents an automated system for detecting and classifying Diabetic Retinopathy stages. It segments retinal images, extracts features with GLCM, and uses Fuzzy classifiers and Convolutional Neural Networks for classification.	As the further work of this study, will be a in depth analysis of the dataset and implement an automated modified DR detection method and classification system to participate in this area that is very crucial to save lives.	Fuzzy classifier CNN Classifier Non Local Means Filter (NLM)	• STARE • DIARETDB0 • DIARETDB1
4	Automatic Diagnosis of Diabetic Retinopathy using Machine Learning	2020	• Piumi Liyana Gunawardhana • • Raviru Jayathilake • Yasiru Withanage • Gamage Upeksha Ganegoda	Diabetic Retinopathy harms vision and can be prevented with early detection. Deep learning, using convolutional neural networks, improves detection speed and accuracy. This paper reviews the latest methods and challenges in this area.	As the future work the hardware can be used to for the identification of the diabetic retinopathy and implemented into a real time system.	SVM KNN Random Forest CNN DNN EfficientNet-b4 DenseNet ResNet	The approach proposed by Revathy R. et al. was based on a Kaggle dataset of 2000 images which included 1000 images of DR and 1000 with no DR.
5	Diabetic Retinopathy Detection using Deep Learning	2020	• Supriya Mishra • Seema Hanchate • Zia Saquib	Diabetic Retinopathy (DR) is a diabetes-related eye disease that can cause vision loss. This project uses Deep Learning with the DenseNet model to automatically detect DR stages from images, achieving 96.11% accuracy. It also compares the performance of DenseNet121 and VGG16 models.	Future work could include improving accuracy, expanding the dataset, enabling real-time detection, integrating with health systems, and developing user-friendly apps.	CNN VGG16 Architecture DenseNet121 architecture	From "Aravind Eye Hospital" and it is available on kaggle that is "APTOS (Asia Pacific Tele-Ophthalmology Society)" ImageNet dataset
6	Early detection of diabetic retinopathy based on deep learning and ultra-wide-feld fundus images	2021	• Kangrok Oh1,6, Hae Min Kang • Dawoon Leem • Hyungyu Lee • KyoungYul Seo • SangchulYoon	Diabetic retinopathy cases increased from 2.6 million in 2015 to 3.2 million in 2020. New deep learning methods using ultra-wide-field images for detection are more effective than traditional ones.	Future research could focus on improving early diabetic retinopathy detection with ultra-wide-field imaging and deep learning techniques.	ETDRS 7 standard felds image segmentation ResNet-34 model training	The ultra-wide-feld fundus image dataset

7	Diabetic Retinopathy Detection Based on Modify Convolutional Neural Network Using Fundus Images	2023	• Awais Bajwa • Neelam Nosheen • Khalid Iqbal Talpur • Sheeraz Akram	Diabetic Retinopathy (DR) is a major cause of blindness from diabetes. A deep learning model was tested on eye images to detect DR and achieved 93.72% accuracy. Experts confirmed the results after screening 398 patients.	In the future, the model could be improved with more data and adapted for different settings. It could also be combined with other tools to enhance early diagnosis and treatment of DR.	• DR model consist of CNN • Incremental Modular Networks (IMNets) • ReLU	• Real time dataset collected from a hospital • DIARETDB1 dataset
8	Diabetic Retinopathy	2023	• Unnati V. Shukla • Koushik Tripathy.	Diabetic retinopathy (DR) is an eye disease from long-term diabetes that can cause blindness. It affects many adults and can be prevented with early detection and good diabetes control. Treatment includes managing diabetes, medication, and laser therapy.	Future research could focus on improving early detection methods, developing new treatments, and exploring better management strategies for diabetic retinopathy.		
9	Transfer Learning based Diabetic Retinopathy Detection with a Novel Preprocessed Layer	2020	• Md. Robiul Islam • Md. Al Mehedi Hasan • Abu Sayeed	Diabetic retinopathy (DR) can cause blindness, so early detection is crucial. This paper presents a deep learning model using VGG16 and a new color preprocessing technique, achieving 91.3% accuracy on the Kaggle "APTOS 2019 Blindness Detection" dataset, with reduced training time and minimized overfitting.	Future work could focus on enhancing model accuracy, testing on larger and more diverse datasets, and applying the model in real-world clinical settings for early diabetic retinopathy detection.	• Decision • Tree • Logistical Regression • K-nearest Neighbor (K-NN) • Random Forest • Support Vector Machine (SVM)	The Kaggle latest dataset "APTOS 2019 Blindness Detection" provided by Aravind Eye Hospital The dataset contains 5590 high resolution fundus images. We used 3662 images for training purposes and 1928 images for testing purposes.
10	Prevalence and risk factors for diabetic retinopathy in a high-risk Chinese population	2013	• Jiao Wang • Ru-Yi Zhang • Rong-Ping Chen • Jia Sun • Rui Yang • Xiao-Yun Ke • Hui Chen • De-Hong Cai	This study found that 14.9% of high-risk individuals in Guangzhou had diabetic retinopathy. The main risk factors included a history of blood sugar problems and the presence of specific proteins in the urine. These findings suggest that diabetic retinopathy is common among people at high risk for diabetes in this region.	Future research could focus on developing targeted prevention strategies and treatments for diabetic retinopathy in high-risk populations, especially in areas with similar lifestyle and dietary habits as Guangzhou.		
11	A systematic review on diabetic retinopathy detection and classification based on deep learning techniques using fundus images	2024	• Dasari Bhulakshmi • Dharmendra Singh Rajput	Diabetic retinopathy (DR) can cause vision loss and is tough to diagnose manually. AI technologies like deep learning help by analyzing eye images to detect and grade DR. This study reviews diabetes, DR, and how AI models improve diagnosis and treatment.	Future research on diabetic retinopathy can focus on improving AI models, integrating diverse data sources, and overcoming current challenges in diagnosis and treatment.	Support vector machine (SVM) CNN algorithms	STARE DIARETDB0 DIARETDB1
12	Diabetic Retinopathy Detection Using Convolutional Neural Network	2021	• Farha Fatina Wahid • G. Raju	Detecting Diabetic Retinopathy (DR) is challenging. Traditional methods used preprocessing and feature extraction, but now deep learning with Convolutional Neural Networks (CNNs) is used instead. This paper reviews recent deep learning methods and compares two modified CNN models.	Future work could focus on improving CNN models for better accuracy, exploring other deep learning architectures, and testing with larger and more diverse datasets.	CNN AlexNet GoogleNet VggNet ResNet U-Net ReLU	MESSIDIOR contains HRF images ROC
13	Performance analysis of automated lesion	2020	• R. Alaguselvi • Kalpana Murugan	The paper presents a method for detecting diabetic retinopathy lesions in retinal images	Future work could explore using this algorithm with more diverse retinal image		DIARETDB1 dataset

	detection of diabetic retinopathy using morphological operation			using matched filters and morphological operations. It achieves high accuracy in identifying micro-aneurysms, exudates, and hemorrhages, outperforming other algorithms.	datasets or integrating it with real-time monitoring systems for earlier detection and treatment of diabetic retinopathy.		
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