Literature Survey

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ADHIYAMAAN COLLEGE OF ENGINEERING(AUTONOMOUS),HOSUR

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

TEJASWINI R M - AC19UCS127

VARSHA N - AC19UCS131

VARSHINI R - AC19UCS132

KALA SREE T - AC19UCS148

S.No	TITLE	PROPOSED WORK	TOOLS USED/ ALGORITHM	TECHNOLOGY	ADVANTAGES/ DISADVANTAGES
1	Early Detection of Diabetic Retinopathy by Using Deep Learning Neural Network	This project successfully detects the diabetes by using deep learning on a fundus images and it can be used as one of method to detect the diabetes on the future. Nevertheless, it need some improvement to make the accuracy of the project nearest to 100%. Next, Alexnet layers is the most perfect layer for deep learning neural network these day. The dataset used here is MESSIDOR database.	• MATLAB • Alexnet Convolution Neural Network	ARTIFICIAL INTELLIGENCE	**DISADVANTAGES** • The accuracy is not 100% ,because of the CNN was insufficient of the data to train the neural.This is the main drawback of this. • When exudates were too small,it is difficult for CNN to detect the exudates on the images. **ADVANTAGES** • Even though the accuracy is not 100%,it can be considered as a success CNN since the accuracy is higher than 85%.(CNN accuracy is 88.3%)

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2	Deep learning for diabetic retinopathy detection and classification based on fundus images	Diabetic Retinopathy is a retina disease caused by diabetes mellitus and it leads blindness.Early detection helps us to delay or avoid vision deterioration and vision loss. We can detect the fundus images using algorithms . The dataset used here is Diabetic Retinopathy Datasets(Kaggle EyePACS, Messidor & messidor 2,IDRiD,DDR,Kaggle APTOS 2019,E-optha,DiaRetDB1, DRiDB and other datasets)	• ANN &CNN • UNet • Generative Adversarial Networks • Transfer Learning and Ensemble Learning • Interpretable DL approaches • Mild DR misclassification	ARTIFICIAL INTELLIGENCE	**ADVANTAGES** • .Early detection helps us to delay or avoid vision deterioration and vision loss. **DISADVANTAGES** • Although deep learning has paved the way for more accurate diagnosis and treatment, further improvements are still necessary regarding performance, interpretability and trustworthiness from ophthalmologists.

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3	Deep Learning Techniques for Diabetic Retinopathy Classification	Early detection helps us to delay or avoid vision deterioration and vision loss. Machine learning-based medical image analysis has proven competency in assessing retinal fundus images, and the utilization of deep learning algorithms has aided the early diagnosis of Diabetic Retinopathy (DR).The dataset used here are DRIVE, EyePACS, APTOS , STARE, DIARETDB , HEIMED,ROC , Messidor, e-ophtha , DDR , and RFMiD	• Classification • Supervised Learning Self -supervised Learning [1. Binary Classification 2.Multi-class Classification] • SVM & CNN	ARTIFICIAL INTELLIGENCE	**ADVANTAGES** • It mainly helps us to prevent from the vision loss. **DISADVANTAGES** • .The main issue is the manual diagnosis that has to occur after screening, which is typically a lengthy process prone to ophthalmologists' bias. • The main issue involved with DR detection is that the manual diagnosis process is very time,money, and effort consuming and involves an ophthalmologist's examination of eye retinal fundus images. .

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4	Fundus images analysis using deep features for detection of exudates, haemorrhages and micro aneurysms	The focus of this paper highlights the prevalence of Deep learning techniques for Diabetes Retinopathy classification and its impact on classification results. The dataset used here are DRIVE , EyePACS, APTOS, STARE, DIARETDB, HEIMED, ROC, Messidor e-ophtha, DDR and RFMiD	• Supervised learning • Self supervised learning • Transformers • CNN algorithm	ARTIFICIAL INTELLIGENCE	**ADVANTAGES** • It is used to diagnosis of microneurysms, haemmorages, soft and hard exudates. • Achieve accuracy rate of 81.7% in training the model **DISADVANTAGES** • Private datasets are usually small and typically obtained from participating labs that collaborate with the researchers and shared

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5	Deep Learning Fundus Image Analysis for Diabetic Retinopathy and Macular Edema Grading	Disease that can cause visible microvascular complications such as diabetic retinopathy and macular edema in the human eye retina, the images of which are today used for manual disease screening and diagnosis. In this study, our aim is to identify retinopathy using five diferent diabetic retinopathy and macular edema classification systems. The dataset used here are MESSIDOR dataset	• Binary Classifcation tasks (NRDR/RDR and NRDME/RDME) • Deep convolutional neural network • Ensemble Approaches	ARTIFICIAL INTELLIGENCE	**ADVANTAGES** • In the multiclass classifcation tasks, i.e. PIRC, PIMEC, and QRDR, our algorithm achieved the best results. • In these paper, Deep learning model has achieved comparably or better results than other medium of model. **DISADVANTAGES** • Training the images of fundus is a time consuming process.

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6	Early detection of diabetic retinopathy based on deep learning and ultra- wide- fel d fundus images	It represents that the diabetic retinopathy detection system based on ultra-wide-field fundus photography and deep learning is more efficient than conventional fundus photography. The dataset used here are UWF fundus images, ImageNet dataset, ETDRS 7SF images	• ResNet and U-Net algorithms	ARTIFICIAL INTELLIGENCE	**ADVANTAGES:** • In these study the ultra wide field fundus photography achieved more efficient result **DISADVANTAGES:** • The automated DR detection and grading system based on deep learning technology is not investigated thoroughly

THANK YOU