

[41]	Deep Convolutional Neural Network	x	Eyepacs http://www.eyepacs.com/ https://nei.nih.gov/health/diabetic/retinopathy	82.00%	Not Given	Not Given	Not Given
[42]	Deep Convolutional Neural Network	x	Government Medical College	98.41%	Not Given	Not Given	Not Given
[43]	Support Vector Machine (SVM) K-fold cross-validation (K-CV) with genetic algorithm and grid search were further applied for parameter optimization.	x	Messidor	98.33%	Not Given	Not Given	Not Given
[44]	Convolutional Neural Network	Inception-Resnet-V2 CNN	Singapore eye research institute Chinese university HongKong dataset	100.00%	Not Given	Not Given	Not Given
[45]	Deep Convolutional Neural Network	VggNet-s	Kaggle	95.68%	Not Given	Not Given	Not Given
[46]	Convolutional Neural Network	x	Publically available High-Resolution Fundus (HRF) dataset	91.66%	Not Given	Not Given	Not Given
[47]	Convolutional Neural Network	AlexNet, VGG-16, and SqueezeNet CNN	Messidor	98.15%	98.94%	97.87%	Not Given

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4.3. Analysis of DR, AMD and Glaucoma detection through Deep learning Approach

Diabetic Retinopathy, Age-related Macular Degeneration, and Glaucoma are the three leading causes of blindness in adults & the elderly as per the researcher's views in ophthalmology. Therefore, the results of some studies related to ophthalmology based on three leading eye diseases have been comprehended in table 4.

4.3.1. Diabetic Retinopathy (DR)

DR is the leading cause of vision loss which is growing exponentially in the working age populace of adulthood. It's a common cause of diabetic complications. Blood

vessels are affected by the impact of this disease which further affects the light-sensitive tissues of retina. The basic reason for the progression of this disease is lack of enough oxygen being received by the retina [29]. The advancement of DR is mainly denoted by four stages in medical terms namely: mild non-proliferative retinopathy, moderate non-proliferative retinopathy, severe non-proliferative retinopathy, and proliferative diabetic retinopathy [49] as shown in figure 5. As compared to early stages like mild, moderate non-proliferative retinopathy, later stages are the more severe form in which new fragile blood vessels are growing. These blood vessels leak the blood into vitreous which affects the vision of person. Various symptoms are exhibited by this disease [29] such as blurry vision, impaired color recognition, dark spots or strings floating through your vision, fluctuating vision, etc..

4.3.2. Age-Related Macular Degeneration (AMD)

AMD is one of the other severe causes of vision loss in the human beings which impact normally at the age of

† x – Not Available

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