LITERATURE SURVEY

1. The study and analysis of various machine learning techniques that have been deployed such as Fuzzy C-means Clustering ,MLP and ELM, Neural Network, meta-SVM, SVM, NB Classifier, Probabilistic Classifier, Geometric Classifier, KNN Classifier and tree-based classifier , Bayesian Classifier, Mahalanobis classifier , KNN Classifier, Gaussian Bayes Classifier , Genetic Algorithm, AlexNet DNN, Convolutional Neural Network and various other Machine Learning techniques to model systems for early DR detection and classification .

2. Automated detection of lesions in retinal images can assist in early diagnosis and screening of a common disease: Diabetic Retinopathy. A robust and computationally efficient approach for the localization of the different features and lesions in a fundus retinal image is presented in this paper. Since many features have common intensity properties, geometric features and correlations are used to distinguish between them.

3. A neural network, with CNN architecture, identifies exudates, micro-aneurysms and hemorrhages in the retina image, by training with labeled samples provided by EyePACS, a free platform for retinopathy detection. The database consists of 35126 high-resolution retinal images taken under a variety of conditions. After training, the network shows a specificity of 93.65% and an accuracy of 83.68% on validation process.

4. The loss function is calculated across all data items during an epoch and guaranteed to give the quantitative loss measure at that epoch. However, plotting the curve over iterations only shows the loss for a subset of the entire dataset as shown in fig 8. The final results show that the model outperformed with 84 percent validation accuracy.

5. The ophthalmic fundus images are used in this automatic process [7]. The preprocessing stage includes few issues such as image blurriness, non-

clarity or problems related to image size. In the initial step, the image is resized and then the color space conversion and image restoration steps are performed further. The final stage includes the enhancement of image

References:

1. Early Detection of Diabetic Retinopathy using Machine Learning Techniques: A Survey on Recent Trends and Techniques
   Dolly Das1*, Saroj Kr. Biswas2, Sivaji Bandyopadhyay3, Sunita Sarkar4
   1,2,3National Institute of Technology Silchar, 4Assam University

2. Automated feature extraction for early detection of diabetic retinopathy in fundus images
   Saiprasad Ravishankar; Arpit Jain; Anurag Mittal

3. Detection of diabetic retinopathy based on a convolutional neural network using retinal fundus images
   Gabriel Garc´ıa1, Jhair Gallardo1, Antoni Mauricio2,Jorge L´opez2, and Christian Del Carpio1

4. Grading of Diabetic Retinopathy in Suspected Individuals
   Neha Sewal1[0000-0002-8730-0115] and Charu Virmani2

5. Neural Network Technique for Diabetic Retinopathy Detection
   Prabhjot Kaur, Somsirsa Chatterjee, Dilbag Singh