

Survey on-Detection of non proliferative disease in diabetic retinopathy

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Abstract— Diabetic retinopathy is an eye disease that effect retina this leads to loss of vision. The major abnormality in non proliferative diabetic retinopathy is retinal hemorrhage. Hemorrhages are blood leakages lying in to blood vessels. The main objective is to detection of hemorrhages using SVM classifier. Finally classification accuracy compared with KNN classifier.

Keywords- Diabetic retinopathy, color fundus image, lesions, image processin, non proliferative daibetic retinopathy.

I. INTRODUCTION

Diabetic retinopathy is a disease occurs in the eye in which blood vessels gets damaged in the retina and leads to eye blindness. Fig1: shows the healthy and diabetic retinopathy infected retinal image.

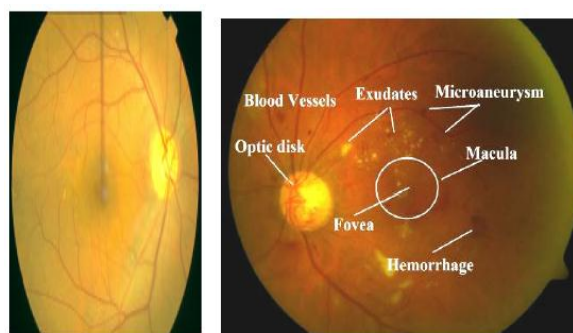


Fig 1: Healthy and infected retinal image.

In the middle layer of the retina hemorrhages are present it consist of DOT, BLOT, and FLAMES. In fundus image the of DOT HE and DOT MA are difficult to distinguish. It can be called as MA's. BLOT, The blood is leaking, deeper into the retinal layer in which the shape will be irregular. FLAME: The blood is leaking into the nerve fiber layer in which the shape will be elongated.

Fig 2 shows different fundus images with dot, blot, and flame.

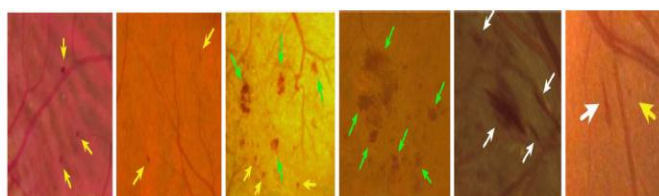


Fig 2: Different portions of color fundus image with dot blot and flame.

Types of Diabetic retinopathy are: on proliferative diabetic retinopathy (NPDR) and Proliferative diabetic retinopathy (PDR).

In NPDR, inside the retina when blood vessels get damaged and the extra fluid will leak and small amount of blood onto the retina.

In PDR, called as advanced stage of DR, Growing of an abnormal blood vessel in the retina may lead to total blindness. Fig 4 shows these stages.

II. RELATED WORK

Our proposed work focuses the abnormality called retinal hemorrhage in fundus retinal image set to extracting aplat feature using support vector machine classifier for detection and improving the accuracy.

III. SYSTEM DESIGN

The proposed technique endows with reliable method to detect the presence of retinal hemorrhage in digital fundus image to reduce the computation time. Acquired retinal images are pre-processed and set of splat features are extracted. These features have been fed into SVM classifier at the end performance is evaluated by compare the classification accuracy with KNN. Modules are shown in below figure2

1. IMAGE AQUISITION

Retinal fundus images are the interior surface of the eye specifies opposite portion of lens include retina, optic disc, macula, fovea and posterior pole. These images should examine and verified by ophthalmoscopy. Fundus images are collected from messidor data set.

2. PREPROCESSING

Color fundus images that are collected from messidor dataset are often show important lighting variations, poor contrast and noise. Pre-processing method use the small neighborhood of pixel in an output image to gert the new brightness value in the output and it is performed based on the morphological filtering.

3. IMAGE SEGMENTATION

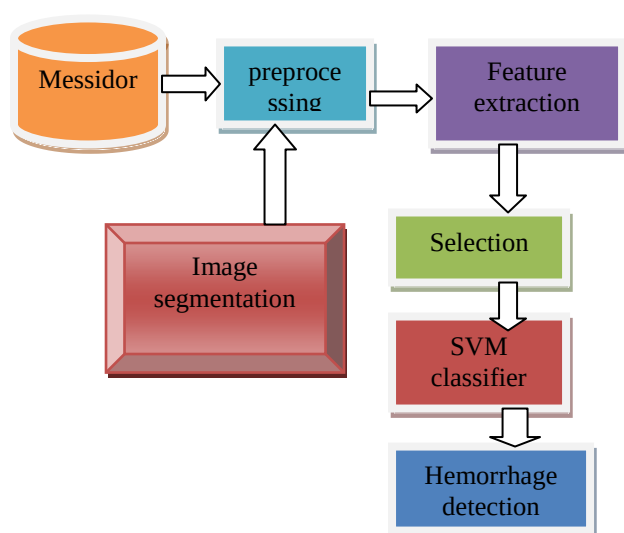
Image segmentation is the process of partitioning a digital image into multiple segments set of pixels. The goal of segmentation is to simplify and change the representation of an image into something that is more meaning full and easier to analyze. It is typically used to locate objects and boundaries. Then, assign a label to every pixel in an image such that pixels with the same label share certain visual characteristics.

4. FEATURE EXTRACTION

When the input data is too large to be processed and it is suspected to be notoriously redundant. Then the input data will be transformed into a reduced representation set of features. Transforming the input data into the set of features is called feature extraction. It is also called as dimensionality reduction. If the features extracted are carefully chosen it is expected that the features set will extract the relevant information from the data in order to perform the desired task.

5. FEATURE SELECTION

Feature set is selected such that discrimination between the classes is maximized while the feature within class is minimized. After feature extraction relevant features are selected to reduce the feature space and make feature set to be small. This process is performed by two step selection process. Those are filter and wrapper approaches. Figure shows the architecture diagram.



IV. ANALYTICAL RESULTS

Performance can be detected by evaluating per lesions and per image. Performance can be compared by using three measures such as sensitivity, accuracy and specificity. Sensitivity means a positive test with the probability in which patient has a DR. specificity means the negative test with the probability in which the patient has no disease.

V. ACKNOWLEDGEMENT

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VI. CONCLUSION

DR is necessary to detect in the early stage with the help of digital image processing because it leads to blindness. This paper summarizes the detection of hemorrhages. Segmentation can be done by SVM algorithm. Different processing techniques can be applied in order to improve the contrast of the image.

VII. REFERENCES

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