Computerized method of Optic Disc Localization and Detection in Retinal Images

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Dedication

In the name of Allah, the Most Gracious, the Most Merciful

This project is dedicated to our loving Parents,

Our Family,

Our Teachers

And our Friends.

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Abstract

This is a research-based project which involves two parts, first part is a primary part in which a research is implemented based on*"Computerized method of optic disk localization and detection in retinal images"*.The first step for the analysis of diabetic retinopathy through an automated system is OD (optic disk) localization from a fundus retinal image with maximum accuracy. In the normal healthy fundus image the yellowish brightest spot is Optic Disk from where blood vessels and optic nerve originate, which can be identified but in the retinal image with abnormalities caused by diabetes; the eye is sometimes filled with bright or dark spots called lesions. In the retinas affected by diabetic retinopathy, here can be bright spots other than OD. Lesions are caused by disease in the retina of an eye. Lesions can be small bright spots and can be larger than OD. Which makes it challenging to identify the OD and distinguish it from lesions in retinal images. In some cases the lesions spread in the whole retina which mixes OD into it. In this case the identification of an Optic Disk is the most difficult task.

Four different techniques are implemented for the localization and detection of Optic Disk for further improvement in accuracy and efficiency of the detection. The second part of the project is based on learning the integration of libraries created in MATLAB with .NET C# and use them for further image processing. In this part we create MATLAB libraries and access them in .NET C# for the detection of bright lesions after the detection of Optic Disc.

Table of Contents

List of Figures

List of Tables