

Mosaic Generation of Fundus Image & Segmentation of laser Marks on Retinal Image



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Abstract

As many different type diseases occur in eye, the detailed study of retinal images is increasing rapidly. For the process of vision many structures in human body are responsible but the main focus of our thesis is retinal study. Most of the major diseases of vision start in retina. Digital Fundus images are used by doctors to diagnose the problem in retina. The field of view of fundus image is restricted and it is not possible for the doctors to diagnose any disease without using more than one fundus image. We have represented a method by which the field of view of fundus image is increased by stitching different fundus images together. WLD (Weber Local Descriptor) is used to generate a blended image. Comparison with other state of the art techniques is also done. A locally gathered database of patients was used to validate our proposed system.

Diabetic Retinopathy (DR) is one of the major diseases being workaround using different techniques of image analysis. Advanced stage of DR is commonly treated with laser at the present time which is a major tool to safe further vision loss which leaves marks on the surface of the retina. We present an automated system for detection of laser marks from colored retinal images to facilitate automated diagnosis of retinal diseases. The proposed system performs pre-processing on the image in order to extract all possible candidate laser mark regions. This is followed by a post processing stage to remove false pixels from candidate regions. The method extracts a number of features for proper representation of all candidate regions. These extracted features are used to facilitate the later classification stage for accurate detection of laser marks from all candidate regions. The validity of a proposed system is performed on a locally gathered retinal image database and results show the significance of proposed system.

Keywords – *SURF, SIFT, ASIFT, Harris Corner Detector, WLD, Image Stitching, Medical Image Analysis, Retina, Diabetic Retinopathy (DR), Proliferative/non proliferative Retinopathy, Macular Edema*

Certificate of Originality

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institution of learning.

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Dedications

*To my Parents, Supervisor (**Dr. Usman Akram**) and colleagues.*

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