

**A PARAMETRIC APPROACH TO MEASURING LIMBUS-CORNEA
FROM DIGITAL IMAGE
(SPONSORED BY K.S.C.S.T., BANGALORE)**

*A Project Report
submitted in partial fulfillment of the requirements
for the award of the Degree of Bachelor of
Engineering in Bio-medical Engineering
of the Visvesvaraya Technological University, Belgaum*

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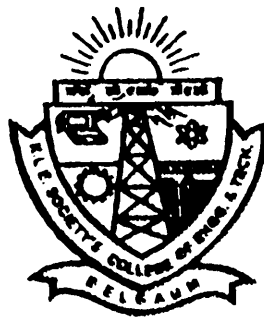
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ABSTRACT

It is difficult to demarcate the limbus borders in standard intensity images of the eye since the transition from the cornea (iris) to sclera is gradual. Non-parametric techniques that are currently used for this task are not sufficiently precise to be adopted in those ophthalmic applications where high precision in determining the limbus/pupil characteristics is required. The techniques for fitting ellipses to the estimated points of the limbus annulus and discuss clinical aspects of the proposed methodology.

The two-dimensional characteristics of the anterior surface of the eye are becoming increasingly important in modern optometry and ophthalmology practice. In particular, accurate estimation of the pupil size and centration is crucial in customized refractive surgery, corneal transplantation, and advanced contact lens fitting. The pupil parameters change under different lighting conditions so they often need to be related to some fixed reference such as the limbus outline. This algorithm utilizes several customized image processing techniques that form a robust procedure which performs well for a wide range of clinical images.

This project is related to opening a file of high pixel image of human eye, and then required operations are performed, the image is processed and simulated in MATLAB simulation software to get desired result. Now days, it is becoming quite common to implement the advanced technologies to solve the healthcare related problems. Image processing technology is also playing important role in the medical field. Any new innovation and development of projects in ophthalmology without damage to eye can lead to better vision for human beings. So, this project is a non-invasive method, which ensures safety, low cost and easy to implement in many ophthalmic applications.