PERFORMANCE ANALYSIS ON OCULAR DISEASE DIAGNOSIS (IRIDOLOGY) AND PERSON IDENTIFICATION

A THESIS

Submitted by

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ABSTRACT

Presently secured system is a challenging task for the system administrator.Biometrics uses irises to identify a person using existing database information. Human iris structure is not the same throughout the life span. It may get affected structurally and texturally due to many reasons. The structural changes are not encountered in the existing human identification system. So, the present iris system may fail. Retinal structures are affected by various disease such as exudate, cataract, and glaucoma. Structural changes may occurred due to many reasons like surgery, medication, diseases. Based on symptoms, clinicians can identified various diseases in iris and confirmed with scanned images.A single ended symptom based neuro fuzzy computer aided iris disease diagnosis system is designed to assist the clinician's.

For this design initially a specific algorithm is chosen to identify the disease like exudate, cataract, glaucoma and the structural changes occurred due to disease with the help of performance analysis.

Initially, exudate is detected using hough transform algorithm and performance are evaluated, then due to exudatestructural changes occurred in iris is proved. Exudate is symptoms of diseases leading to blindness such as diabetic retinopathy and wet macular degeneration. Exudate is formed by the leakage of proteins and lipids from the bloodstream into the retina via damaged blood vessels. Exudate is one of the disorders that occur in the retinal part of eye.

Secondly, Structural Changes in Iris due to cataract surgery is analysed using gober algorithm then structural parameters are evaluated. From the result structural changes occurred iris due to cataract is proved.Cataract is a blurring of the lens in the eye and possessions in inadequate vision. Blurred vision, faded colours, glare, bad night vision and duple visualization are the symptoms of cataract.

Thirdly, Glaucoma is identified using EM (Expectation maximization) segmentation and also structural changes occurred in iris due to glaucoma is proved with the help of performance analysis. Glaucoma is an optic nerve disease and which diminishes vision. Peculiarly high intraocular pressure inside the eye is a source of this disease.

Finally, neuro fuzzy single ended Computer Aided Diagnosis (CAD) system is generated for ocular diseases identification such as exudate, cataract, and glaucoma. Blood flow, age, diabetics and stress are the symptoms as input to train the neuro fuzzy system. In this work probability based disease identification system is initialized by using fuzzification and their results are optimized by using neural based system to prove the selection of symptom such as blood flow, age, diabetics and stress. In this way the rules andsymptoms are finalized. To obtain the best results a CAD (computer aided diagnosis) is proposed.