Abstract

Some of the most common blinding conditions are caused by choroidal neovascularization (CNV). The relevant conditions include diabetic retinopathy and age-related macular degeneration. At present, the only proven modality of effective treatment is the application of laser energy to the CNV to cauterize the vessels. The key to effective and lasting treatment is the identification of the full extent of the CNV, cauterization of the CNV completely by accurately aiming an appropriate amount of optical energy while ensuring that healthy tissue is not cauterized. Extraction techniques must be developed to discern the retinal blood vessels tree and determine the positions of laser shots in a reference frame. After extracting the blood vessels tree & determining the locations of the laser shots, those locations will be saved in a database. Due to the eye movement the locations of the laser shots will differ. So, registration of the translation between the reference & the sub-sequent frame in different types of retinal images is required. This paper presents a comparison of two different methods to register blood vessels, which are a prominent retinal structure, in both gray-scale and color retinal images. The blood vessel registration is composed of two algorithms, i.e., registering the blood vessel using Normalized 2-D Correlation algorithm and Minimum Error Function algorithm. Results on various retinal images verify the effectiveness of the proposed methods.
Registering the Retinal Vasculature in Gray-scale and Color Digital Fundus Images

References

Index Terms

Computer Science

Image Processing
Keywords
Retinal Image  Registration  Choroidal Neovascularization  Age-related Macular Degeneration  Correlation.