Blood vessel segmentation with 3D SD-OCT

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Technology description

The subject invention is an automated retinal blood vessel segmentation technique designed and developed based on 3D SD-OCT, with the aim to provide accurate vessel patterns for clinical analysis, retinal image registration, early diagnosis and monitoring of the progression of glaucoma and other retinal diseases. The technique uses machine learning algorithms to automatically identify blood vessels on 3D OCT images and does not rely on any other processing. SD-OCT is a new high resolution imaging technique, capable of achieving micrometer resolution in depth. It allows detailed imaging of the eye structures. Currently there is no independent method of retinal blood vessel segmentation on SD-OCT. The present invention provides an automated method to identify blood vessels on 3D OCT image without relying on any processing such as retinal layer segmentation. Advantage 1) Technique is fully automated and independent. The performance of the existing segmentation technique is highly dependent upon the retinal layer segmentation, which often fails in the presence of retinal pathologies or in the region of the optic disc.

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