	doc_1	doc_2	decision	id
cases			DUPLICATES	59

authors	• Debapriya Maji • Anirban Santara • Pabitra Mitra • Debdoot Sheet
title	Ensemble of Deep Convolutional Neural Networks for Learning to Detect Retinal Vessels in Fundus Images
publication_date	2016-03-15 00:00:00
source	SupportedSources.INTERNET_ARCHIVE
journal	
volume	
doi	
urls	• https://web.archive.org/web/20191018210414/https://arxiv.org/pdf/1603.04833v1.pdf
id	id7840034261209645699
abstract	Vision impairment due to pathological damage of the retina can largely be prevented through periodic screening using fundus color imaging. However the challenge with large scale screening is the inability to exhaustively detect fine blood vessels crucial to disease diagnosis. In this work we present a computational imaging framework using deep and ensemble learning for reliable detection of blood vessels in fundus color images. An ensemble of deep convolutional neural networks is trained to segment vessel and non-vessel areas of a color fundus image. During inference, the responses of the individual ConvNets of the ensemble are averaged to form the final segmentation. In experimental evaluation with the DRIVE database, we achieve the objective of vessel detection with maximum average accuracy of 94.7\% and area under ROC curve of 0.9283.
versions	

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title	Ensemble of Deep Convolutional Neural Networks for Learning to Detect Retinal Vessels in Fundus Images
publication_date	2016-03-15 19:40:34+00:00
source	SupportedSources.ARXIV
journal	None
volume	
doi	
urls	• http://arxiv.org/pdf/1603.04833v1 • http://arxiv.org/abs/1603.04833v1 • http://arxiv.org/pdf/1603.04833v1
id	id-870642803215767743
abstract	Vision impairment due to pathological damage of the retina can largely be prevented through periodic screening using fundus color imaging. However the challenge with large scale screening is the inability to exhaustively detect fine blood vessels crucial to disease diagnosis. In this work we present a computational imaging framework using deep and ensemble learning for reliable detection of blood vessels in fundus color images. An ensemble of deep convolutional neural networks is trained to segment vessel and non-vessel areas of a color fundus image. During inference, the responses of the individual ConvNets of the ensemble are averaged to form the final segmentation. In experimental evaluation with the DRIVE database, we achieve the objective of vessel detection with maximum average accuracy of 94.7\% and area under ROC curve of 0.9283.
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