

GPU-Based Segmentation of Retinal Blood Vessels

Experimental results and programming code related to the paper [GPU-Based Segmentation of Retinal Blood Vessels](#) by Francisco Argüello, David L. Vilariño, Dora B. Heras, and Alejandro Nieto, published in the [Journal of Real time Image Processing](#).

Abstract

In this paper a fast and accurate technique for retinal vessel tree extraction is proposed. It consists of a hybrid strategy based on global image filtering and contour tracing. With the aim of increasing the computation speed, the algorithm has been tailored for efficient execution on commodity graphics processing units achieving low execution times and high speedups over the CPU execution. The performance of the proposed method was tested on publicly available databases, STARE and DRIVE, based on standard measures such as accuracy, sensitivity and specificity. Results reveal an average accuracy comparable to that reported for state-of-the art techniques. The vascular tree segmentation of the images in the DRIVE and the STARE databases is performed in an average of 14 ms and 18 ms, respectively (on a GPU NVIDIA GTX680).

Downloads

[vessel_seg.2014.11.13.tgz](#)

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