

Retinopathy Diagnosis Software: Software for Automatically Segmenting Blood Vessels from OCT and OCT-A Scans

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Technology description

Researchers at the University of Louisville have developed an automatic segmentation system for retinal blood vessels from Optical Coherence Tomography (OCT) images and Optical Coherence Tomography Angiography (OCT-A) images.

Retinopathy Diagnosis Software

Software for Automatically Segmenting Blood Vessels from OCT and OCT-A Scans

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Technology

More than 200 million people worldwide suffer from blindness or low vision due to retinal conditions, such as retinal vascular diseases. [1]

Many people often do not have symptoms until very late in their disease course, when there is irreversible damage. [2] Hence, there is an urgent need for early diagnosis of retinal vascular diseases, which improves the chance of recovering vision.

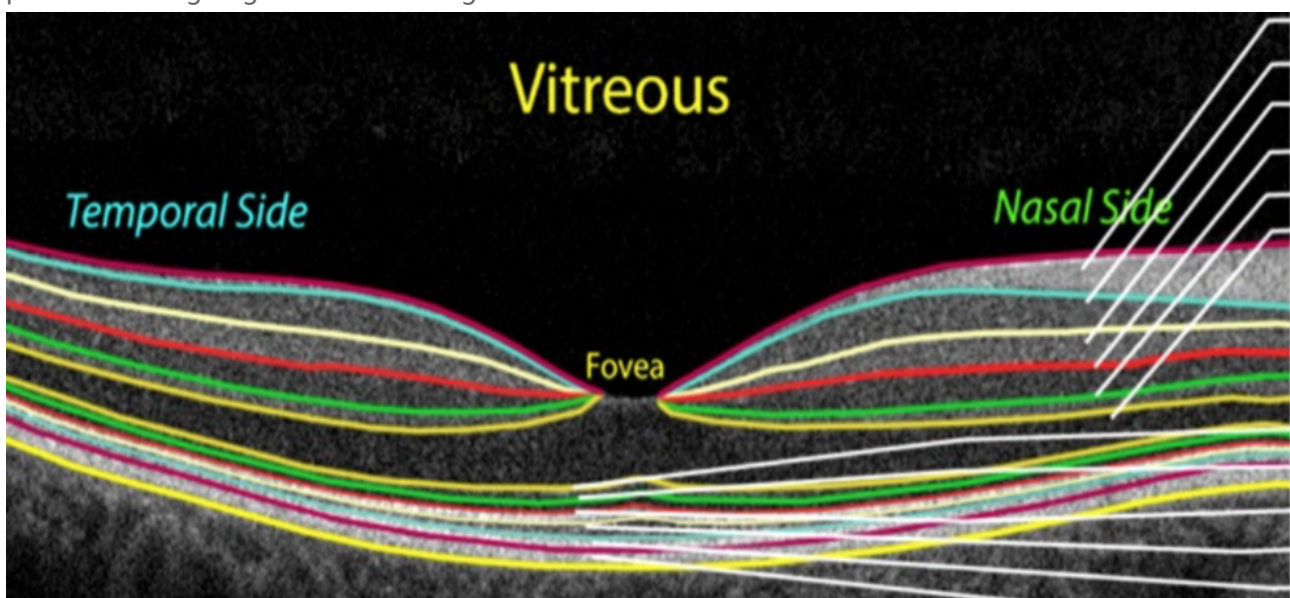
To address that need, researchers at the University of Louisville have developed an automatic segmentation system for retinal blood vessels from Optical Coherence Tomography (OCT) images and Optical Coherence Tomography Angiography (OCT-A) images.

Segmentation of retinal blood vessels is a powerful method for diagnosis of retinal vascular diseases. Currently, most eye-imaging technologies provide limited objective quantitative data, requiring an eye specialist must subjectively interpret images.

The UofL technology overcomes this limitation and provides quantitative, detailed information about the retina and blood flow by measuring the reflecting unit of each retina layer.

There is widespread use for the technology in diagnosis of numerous pathologies, including macular degeneration, central/branch vein occlusion, and diabetic retinopathy.

Additionally, there is potential for using the technology in the evaluation of the visual outcome for patients undergoing vitreoretinal surgeries.



A typical OCT scan of a normal subject showing the 12-distinct layers.

Publications: Eladawi, Nabila, et al. "Automatic blood vessels segmentation based on different retinal maps from OCTA scans." *Computers in biology and medicine* 89 (2017): 150-161.

Schaal, Shlomit, et al. "A novel automated method for the objective quantification of Retinal layers reveals sequential changes that occur in the Normal retina with age."

Application area

All

Advantages

May aid early diagnosis of many diseases;

Extracts the whole retinal vasculature network from OCT and OCT-A images;

Integrates different image features to produce high accuracy results;

May provide more quantitative information than other modalities.

Institution

[University of Louisville](#)

Inventors

[Shlomit Schaal](#)

[Nabila Eladawi](#)

[Harpal Sandhu](#)

[Amir Reza Hajrasouliha](#)

[Ayman S. El-Baz](#)

[Mohammed Elmogy](#)

联系我们



叶先生

电话 : 021-65679356

手机 : 13414935137

邮箱 : yeyingsheng@zf-ym.com