# Segmentation of blood vessels in retinal images

Accurate segmentation of blood vessels in retinal images is an important step in computer aided diagnosis and treatment of diabetic retinopathy, hypertension [1], glaucoma and other diseases. As a part of this project, I would like to automate the segmentation of blood vessels in retinal images.

The matched filter [2] is a simple yet effective method for vessel extraction. However, a matched filter responds not only to vessels but also to non-vessel edges. I would use a first order derivative of Gaussian (FDOG) to determine the threshold for matched filter response, as proposed in [3]. I would like to compare the results of matched filter with the results obtained from [4].

I would test the proposed method on one of the publicly available databases, the STARE database. The database consists of retinal images captured at a 35oangle. It has 20 images, 10 of which are from healthy ocular fundus and the other 10 are from unhealthy ocular ones. Each image is a gray scale images with a spatial resolution of 700 X 605 pixels. The ground truth for those images is supplied along with the database.

The performance measures used to evaluate the methods are detection accuracy, true positive rate, and false positive rate. These metrics are obtained by comparing the results with the human observer labelled ground truth images supplied along with the dataset.

# References

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