UW Center for
Pattern Analysis and Machine Intelligence (CPAMI)

Graduate Seminar Series

Retinal Image Analysis and its Use in Medical Applications

Speaker: Yibo Zhang

Date: May 12, 2011

Time: 4pm- 5pm

Place: E5 (5047)

Abstract :

Retina located in the back of the eye is not only a vital part of human sight, but also contains valuable information that can be used in the diagnosis of certain diseases. In order to analyze this information from retinal images, its features of blood vessels, microaneurysms and the optic disc require extraction and detection respectively. A vessel extraction method known as MF-FDOG is proposed. MF-FDOG consists of two filters, Matched Filter (MF) and the first-order derivative of Gaussian (FDOG). Microaneurysm (MA) detection is accomplished with two proposed algorithms, Multi-scale Correlation Filtering (MSCF) and Dictionary Learning (DL) with Sparse representation Classifier (SRC). To detect the optic disc (OD) of Asians an algorithm using two steps: OD vessel candidate detection and OD vessel candidate matching is proposed to complement the current literary work. The proposed extraction/ detection approaches are tested in medical applications, specifically the case study of detecting diabetic retinopathy (DR).

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