

Data mining techniques for the screening of age-related macular degeneration

Abstract

Age related macular degeneration (AMD) is the primary cause of adult blindness. Currently AMD cannot be cured, however early detection does allow the progress of the condition to be inhibited. One of the first symptoms of AMD is the presence of fatty deposits, called drusen, on the retina. The presence of drusen may be identified through the manual inspection/screening of retinal images. This task, however, requires recourse to domain experts and is therefore resource intensive. This paper proposes and compares two data mining techniques to support the automated screening for AMD. The first uses spatial-histograms, that maintain both image colour and spatial information, for the image representation; to which a case based reasoning (CBR) classification technique is applied. The second is founded on a hierarchical decomposition of the image set so that a tree representation is generated. A weighted frequent sub-graph mining technique is then applied to this representation to identify sub-trees that frequently occur across the data set. The identified sub-trees are then encoded in the form of feature vectors to which standard classification techniques can be applied.