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Gene selection using information gain and improved simplified swarm optimization

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Abstract

Recently, gene selection (also called feature selection in data mining) has played an important role in the development of efficient cancer diagnoses and classification because gene expression data are coded by huge measured variables (genes), and only a small number of them present distinct profiles for different classes of samples. Gene selection problem involves reducing irrelevant, redundant and noisy genes and identifying the most distinguished genes to improve the classification accuracy. In this paper, a hybrid filter/wrapper method, known as IG-ISSO is proposed for gene selection problem. In this method, information gain (IG) as a filter is applied to select the most informative genes and an improved simplified swarm optimization (ISSO) is proposed as a gene search engine to guide the search for an optimal gene subset. The support vector machine (SVM) with a linear kernel serves as a classifier of the IG-ISSO. To evaluate the performance of the proposed

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