Abstract:
In this paper we present a new approach for automated cell detection in single frames of 2D microscopic phase contrast images of cancer cells which is based on learning cellular texture features. The main challenge addressed in this paper is to deal with clusters of cells where each cell has a rather complex appearance composed of sub-regions with different texture features. Our approach works on two different levels of abstraction. First, we apply statistical learning to learn 6 different types of different local cellular texture features, classify each pixel according to them and we obtain an image partition composed of 6 different pixel categories. Based on this partitioned image we decide in a second step if pre-selected seeds belong to the same cell or not. Experimental results show the high accuracy of the proposed method and especially average precision above 95%.