Abstract

In human body, the cells are arranged in a particular pattern. Neoplastic diseases such as cancer may cause a change in these arrangements. Different methods can be used to quantify these patterns. This study mainly focuses on the structural representation of colon tissue and the graph features used to diagnose and grade the cancer. The different graph techniques used in structural method are color graphs, colorless graphs and probabilistic graphs.

The inputs for the system are histopathological images. These images are pre-processed and then clustered according to luminal, stromal and nucleus components using k-means clustering algorithm. Then the centroids of each component are found out using region-props algorithm for each cluster in the whole image. Then these centroids are eroded and represented as disk structures and these disks are considered as set of nodes. Finally Delaunay diagram is created by connecting the nodes using different colored edges. From the diagram, set of features such as edge length, average edge length and diameter are extracted. These features are given to the ANN (Artificial Neural Network), which will accurately classify the images according to the
grade of cancer to which they belong.

References

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