Abstract

Early diagnosis of precancerous and malignant lesions is critical for the improving of the current poor survival rate of patients with a variety of tumors. The development of new high-specificity and high-sensitivity imaging technologies can play an important role in the early diagnosis, accurate staging, and treatment of cancer. Bio-optical signals are the result of the optical functions of the biological systems, occurring naturally or induced by the measurement. The identification of the state of human skin tissues is discussed here. The Bio-optical signals recorded in vitro have been analyzed by extracting various statistical features. Using MATLAB programs, various statistical features are extracted from both normal and pathology spectra. Different features like mean, energy etc were extracted. The values of the feature vector reveal information regarding tissue state. Then a classical multilayer feed forward neural network with back propagation algorithm is employed to serve as a classifier of the feature vector, giving 100% successful results for the specific data set considered. Furthermore, a small time needed to acquire and analyze the fluorescence spectra together with high rates of success, proves our method very attractive for real time applications.

Reference

Neural Network Based Classification of Bio Optical Signals for Detection of Cell Abnormalities of Human Skin


Index Terms

Electronics

Bio-Informatics

Keywords

Neural Networks

Back Propagation algorithm