عنوان مقاله:
A Novel Texture Extraction-Based Compressive Sensing for Lung Cancer Classification

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خلاصه مقاله:
Background: Lung cancer images require large memory storage and transmission bandwidth for sending the data. Compressive sensing (CS), as a method with a statistical approach in signal sampling, provides different output patterns based on information sources. Thus, it can be considered that CS can be used for feature extraction of compressed information. Methods: In this study, we proposed a novel texture extraction-based CS for lung cancer classification. We classify three types of lung cancer, including adenocarcinoma (ACA), squamous cell carcinoma (SCC), and benign lung cancer (N). The classification is carried out based on texture extraction, which is processed in ۲ stages, the first stage to detect N and the second to detect ACA and SCC. Results: The simulation results show that two-stage texture extraction can improve accuracy by an average of ۸۴%. The proposed system is expected to be decision support in assisting clinical diagnosis. In terms of technical storage, this system can save memory resources. Conclusions: The proposed two-step texture extraction system combined with CS and K- Nearest Neighbor has succeeded in classifying lung cancer with high accuracy; the system can also save memory storage. It is necessary to examine the complexity of the proposed method so that it can be analyzed further.

کلمات کلیدی:
Classification, compressive sensing, extraction, sparse, texture