عنوان مقاله:

Genetic algorithm based feature selection and neural network analysis of breast cancer from mammographic findings

محل انتشار:

سیزدهمین کنفرانس مهندسی پزشکی ایران (سال: 1385)

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خلاصه مقاله:

A genetic algorithm for feature selection in conjunction with neural network was proposed to differentiate breast lesions based on the mass and micro-calcification findings. These findings were encoded as features for a genetic algorithm (GA) for feature selection and classified with a three- layered neural network to predict the outcome of biopsy. The system was established through optimization of the classification performance of neural network which was used as evaluation function. Our database contains 120 patients' records each of which consisted of 13 parameters (BI-RADS findings and patient age). The BP-ANN was trained using 80 cases containing masses and micro-calcifications previously diagnosed by surgical biopsy and tested with 40 cases. The performance of hybrid model was then compared to that of the experienced radiologist in terms of sensitivity, specificity, accuracy and receiver operating characteristic curve (ROC) analysis. The optimized subset of features helped neural classifier to achieve better results in classification of breast lesions. Our results showed that the neural network with optimized features was able to classify correctly 32 of 40 cases presented in the validation sample and yielded a better diagnostic accuracy (80%) compared to that of the radiologist (66%) and full ANN model (70%).

کلمات کلیدی:

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