عنوان مقاله:

Parkinson disease detection during gaiting based on RQA features and SVM classifier

محل انتشار:

بیست و ششمین کنفرانس ملی و چهارمین کنفرانس بین المللی مهندسی زیست پزشکی ایران (سال: 1398)

تعداد صفحات اصل مقاله: 4

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خلاصه مقاله:

Parkinson's disease (PD) is a degenerative disorder of central nervous system that affects movements. Thus Gait analysis plays an important role in early diagnosing PD. Data were collected from a Physionet database consisting of force sensors positioned under subjects' feet while walking. Data were filtered using a Chebyshev type II high pass filter with a cut-off frequency 0.8. Nonlinear methods are being researched due to nonlinear and dynamic nature of signals. In this study four main features based on Recurrence Quantification Analysis (RQA) such as RR (Recurrence rate), DET (determinism), L (mean diagonal line length) and ENTR (entropy) are selected. Features were extracted from data in order to classify patients with PD and healthy control subjects. Then Principal component analysis (PCA) method is used to construct the linear combination of features to improve the accuracy of classification. Finally SVM (support vector machine) classifier is applied. Results showed that proposed features could effectively distinguish between the two group of subjects with PD and healthy control subjects and SVM with linear kernel with accuracy of about 87.50 % had a best accuracy between other types of SVMs.

کلمات کلیدی:

classifier; Gait analysis; Parkinson disease; RQA