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خلاصه مقاله:

Clustering players based on their abilities, a new perspective and an important opportunity to meet needs that in the light of traditional talent identification and player science, which is held periodically and there is not enough time for them to appear. Early recognition of these abilities is a factor influencing the success of sports teams. Artificial Neural Network (ANN) is a new method of modelling and prediction. The aim of this study was to cluster basketball players based on their individual abilities. For this purpose, Self-Organizing Map (SOM) Neural Networks (NNs) were used. The data set used by ۳۰۰۰ NBA players for ۲۰۱۱ until ۲۰۱۸ is from the Basketball-Reference[۱] site. Each player is assigned ۳۰ attributes to reduce them using the Principal Component Analysis (PCA) method and the features for each player were reduced to ۱۲ samples. In order to implement a SOM of features and functions in MATLAB software ۶۵% of the data were used as the network training phase and the remaining ۳۵% were used to the test phase. ۱۲ players' features as network input and output ۹ clusters resulting from the combination of features. After simulation using SOM, accuracy parameter with the help of this system were obtained above ۹۵%. The result of the study showed that the performance of the SOM in clustering basketball players was higher than the K-Means algorithm. The network implemented in this article has a faster speed in the training process and generalizability than similar cases.

کلمات کلیدی:

Basketball, Clustering, k-means, Self-Organizing Map (SOM), Neural Networks (NNs), discriminant Analysis, PCA