

The Application of a Time Series Database for Sports Infomatics

Abstract:

A competitive athlete trains to improve his skills. To improve his skills, the athlete should receive proper movement feedback from coaches and other athletes. And he should also refer to movement of both athletes who possess similar skills as himself, and athletes who demonstrate a higher level of skill. However, because movement feedback is typically carried out subjectively, evaluation standards are vague, and giving proper feedback to athletes becomes difficult. In addition, when an athlete attempts to find others with similar movement skills, without a choice he must depend on his subjective judgment. We proposed a system which analyzes time series data mechanically, evaluates movement, and searches for similar time series data. With this system, an athlete is able to get an objective evaluation of his movement skills, and is also able to better his training methods through using the search results. The system we propose is a web-based system which uses database and web-based programming language. Time series data is registered to a database and analyzed mechanically through script constructed by the system manager. Then, analyzed data is compared with the standard data using either Euclid Distance or Fourier Transform, and calculate the degree of similarity. An algorithm to cut down search time was also implemented to this system. Finally, test results of this system using real motion data showed positive results.

Keywords:

Sports Biomechanics, Sports Informatics, Motion of Competitive Sports, Time Series Data, Web System

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