DMKD Special Issue Call for Papers
Sports Analytics

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As in most other areas of society, increasing amounts of data are being collected in all kinds of sports. However, depending on the type of sport, the goals of analysing the collected data, and thus also the deployed techniques, can be very different. In individual (e.g., tennis, martial arts) and cyclic sports (e.g., cycling, swimming), data-driven approaches focus on the athletes, for instance by optimising movements, or predicting future performance and injuries. By contrast, team sports (e.g., soccer, basketball) offer additional uses for this information when analysing the coordination of (sub)sets of players, in addition to team-level models that can be developed.

Consequently, there exist a great variety of different data sources, ranging from physical tests to trajectory data capturing positions of players for an entire game. Recorded data are thus often complex, particularly when more athletes/players are involved; straightforward (e.g., counting-based) approaches hardly capture the characteristic traits for an application at-hand and much data is left unused.

There is a real need for intelligent methods that exploit the full potential of the data and empower coaches and athletes to lift sports analytics to the next level. To generate additional value for individual athletes and players, data-driven approaches may help to coordinate body parts during physical activity, propose strategic options based on the match situation including the opponent's preferences, or prevent injuries by analysing performance tests and tailoring training regimens to the athlete. In team sports, additional value could be generated by automatically analysing an opponent's tactics and inferring match plans, scouting (young) players, predicting performance and injuries, or devising novel visualisation techniques, to name only a few.

This special issue will provide a leading forum for timely, in-depth presentation of recent advancements in sports analytics. Given the different types of movement profiles, ways of interaction, and evaluation "metrics" (subjective scoring, e.g. in boxing, arbitrary scoring, e.g. in volleyball, comparative measuring, e.g. in discus throw), this call covers a wide range of potential topics. We solicit high-quality, original papers describing work on the following (non-exhaustive) list of topics:

- Spatiotemporal data and models at large scale
- Video analyses of games, exercise, etc.
- Tactics
- Feature selection and dimensionality reduction with an application to sports (e.g. identifying determining factors for success)
- Real-time predictive modelling
- Interactive analysis & visualisation tools
- Real-time/deployed analytical systems
- Knowledge discovery of player/team/league behaviours
- Game theory
- Modelling the physiology of exercise
- Sequence analysis for discrete training events
- Analysing physiological sensor data
- Sensor integration for sports
- Analytics in cyclic sports (e.g., running, cycling, rowing, speed skating); individual competitions sports, team sports
- Athlete-specific vs. group-specific models
- Analysis and prediction of athlete careers
- Historical analysis and record progression
- Predicting competition results from physical and performance tests