Considerations about Artificial Intelligence, applied to Sports

Apreciaciones sobre la inteligencia artificial, aplicada al deporte

Apreciações sobre inteligência artificial, aplicada ao esporte

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In the 21st century, man has gone beyond his recorded and accumulated wisdom on paper, to multiply and transfer it in terms of digital technology. What previously required intense mathematical calculations to analyze an athlete's movements or model a strategy before starting a live game, today is solved through a simple artificial intelligence (AI) operation.

In recent years, works such as Beal's *et al.* (2019) have been published that have showcased the different innovations or creations tempered with sport, converted into a manifestation that evolves in giant steps every time a novel digital device or technique is incorporated. Research like this has demonstrated the potential to create a unique real-world testbed to validate AI and machine-based learning (IBM) techniques in the near future.

With the help of these AI machines, it can be predicted how many times a throw in baseball or a goal in the penalty area can be effective, often supported by IBM, and it can be even known the probabilities in which an athlete may be injured or make a foul in the competition area.

In that same year, Claudino *et al.* (2019) delve into the use of AI focused on the treatment of sports injuries. After 11 AI techniques applied to 12 teams, it was found that the most used AI techniques or methods were artificial neural networks.

They also had a high impact on sports: the decision tree classifier, the support vector machine and the Markov process, all of them with good metrics on sports performance; on the other hand, football, basketball, handball and volleyball were the team sports in which AI was applied the most.

A year after and in the midst of the COVID-19 pandemic, Albarrán (2020) shows, in his research work, some contributions from his conception of Sports Intelligence (ID in Spanish) in relation to AI. According to this author, ID fundamentally focuses on sports performance, high performance and success at a very high competitive level, and conceives AI as a set of machine learning methods that is supported by the assimilation and representation of data. and can be very useful for multiple purposes, such as classifying or predicting information.

However, ID is the discipline of Management Sciences, whose resources provide in a systematic and organized way the necessary information about the external and internal components of a sports team. This knowledge makes it possible to develop strategies to guarantee tactical, efficient and effective technical action; Therefore, in summary, AI and ID complement each other ideally to successfully achieve this objective.

On the other hand, more than talking about devices, techniques, procedures and methods, Sampedro's (2020) work further highlighted the humanized nature of these technological approaches in favor of social development, by putting ethics at the center. In his study he reveals the dangers of marketable and elitist sport in the current global context where, sometimes, with the wealthy desire for victory, the health and well-being of the athlete is put at stake.

Triviño (2022) strengthens this author's criteria, but from a more holistic vision, where not only is the ethics of the athlete protected from the attacks of AI in its advancement for humanity; therefore, the preservation of autonomy is also considered important; avoid inequality between athletes; preserve, above all, the human element of sports practice; avoid disruption, in the comparison of merits in sports modalities and finally, help generate the excitement of sports competition.

However, very much in tune with the competitiveness of the times, Vicente *et al.* (2022) dedicate a chapter of the book to the topic of Moneyball, a technological resource based on AI, and is capable of predicting future problems or injuries that athletes may face, from the assessment in a case, in the sport of football.

Buendia *et al.* (2023) for their part, permeates its scientific statement from the perspective of AI in sports as an instrument to regulate heart rates. The researcher starts from the conception that conscious monitoring of heart health contributes to the sustainability of sport, carried out in its essence by human beings, therefore, no matter how sophisticated or automated AI seems, because the purpose It is not about thinking about the most perfect robot, but about conceiving a method that makes human beings happier and more fulfilled through the benefits of science and technology.

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