

Exploring plausible uses of artificial intelligence in sports

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Introduction

Artificial intelligence (AI) is fast gaining popularity in almost every field. This study explores the uses of AI in the field of sports, which has significantly evolved in technological aspects over the past two decades. Available data and expert opinions were analyzed. The analysis shows that AI has a wide variety of applications in sports, which—when implemented—can improve the field; at the same time, the data makes clear that indiscriminate use may cost the sports industry its stability and glory.

1. What is AI?

AI is a branch of computer science that focuses on creating intelligent and efficient machines that can perform tasks that require human intelligence. These tasks include reasoning, discovering meaning and patterns, generalising, and learning from past experiences. AI applications range from advanced web search engines and recommendation systems to autonomous driving cars and strategic games (Artificial Intelligence, n.d.).

1.1 What is AI in sports?

AI in sports encompasses the application of technology to several facets of the sports sector. Applications transform the environment of sports by enhancing player performance analysis, injury prevention, strategy planning, fan engagement, and operational efficiency through the use of machine learning, data analysis, and predictive modeling (Porubay, 2024).

2. Merits of AI in sports

2.1 Athlete health and performance

AI is incredibly helpful in both injury prevention and enhancing performance of athletes worldwide. Personal coaches as well as team coaches use AI powered real time movement analysis to identify potential injury risks and help athletes reach their potential. This makes identifying indicators of exhaustion, stress, or harm risk possible. Coaches and medical personnel are notified, which enables prompt interventions and eventually lowers the risk of injury. For example, in football the team coaches track the progress and performance of each player separately using this technology. (AI Transforming Sports: 7 Impactful Trends, n.d.; Srivastava, 2024)

2.2 Advancing sports analytics and strategy

As in any field, data analysis helps sports administrators and managers in shaping effective strategies. They help to make better informed decisions on player selections, lineups and tactics. AI provides teams with useful data about their opponents as well as the playing conditions, helping them to make these decisions. For instance, the National Football League (NFL) has been using this technology to analyze game films and improve player performance. Major League Baseball (MLB) is using AI to help teams make better decisions about player personnel, and the National Basketball Association (NBA) is using AI to improve its scouting process. Thus, AI powered analytics play a vital role by providing an efficient and accurate analysis (Peranzo, 2024).

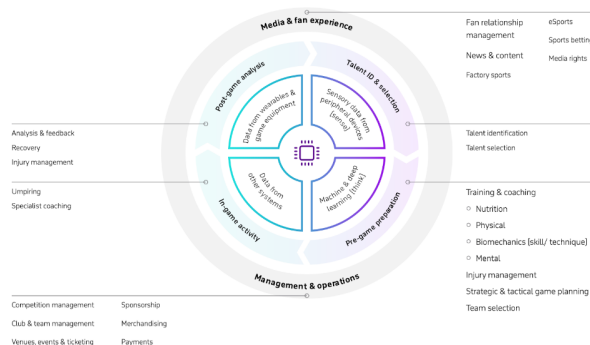
2.3 Enhances fan experience

AI provides fans with real time subtitles and stats in different languages to enrich their experience. Additionally clubs and sports companies are able to better their chatbots, customer support and digital presence. Take, for example, the Golden State Warriors, who use AI to craft immersive virtual reality experiences for their fans. Similarly, the Los Angeles Dodgers have harnessed AI to help fans navigate the stadium and locate their seats effortlessly. (Ahramovich, 2023; Peranzo, 2024)

2.4 AI referees

Many sports, such as cricket and football, have been successful in integrating AI in their 'in-game decision-making processes. Decision Review System (DRS) in cricket and video assistant referee systems in football have helped to make the decision making process quick and fair. The biggest example of this is 2024's UEFA Euro football tournament where video assistant referees will support human referees (Krämer, 2024).

Figure 1
Uses of AI in sports



Note. Figure 1 shows the key areas of sports in which AI is currently used. (Ahramovich, 2023).

3. Pitfalls of AI use in sports

3.1 Cost-ineffectiveness

The usage of AI in almost all aspects of sports management increases the cost enormously. This is because AI has not reached its most sustainable state, which explains the constant need to upgrade hardware and software technology that many non-professional clubs and teams may not be able to afford.

3.2 Unemployment

Importantly, use of AI in sports is bound to reduce the need for humans in some capacities, as the manual work that would have been by humans is now automated and is performed by AI. For example, AI can more conveniently track a player's strengths and weaknesses, thus reducing the work of scouts. Some argue that AI also creates employment in the field AI development and management, however the number of jobs created due to AI is significantly lower than the number of jobs lost and requires there be training for new skills.

3.3 Affects the natural beauty of sports

While the use of AI will lead to fairness in decision making the traditional nature of the sport may be compromised. We know this as, with time the automation of decision making using AI will standardize the process. Many times, the presence of 'faults' is what attracts people to a particular sport (Ding, 2019).

4. How should we implement AI in sports?

4.1 Avoiding ethical concerns

AI systems can at times provide incorrect information due to wrong or incomplete data, threaten the privacy and security of sportspersons, thus reducing the competitive and enjoyable aspect; causing ethical issues: conflict of interest, risk of harm, and confidentiality. Therefore, extra care is required for the use of AI technology in sports (Ding, 2019).

4.2 Responsibility must be taken by governments and sports departments

AI has yet to reach its full potential and needs several improvements. It is the responsibility of the government and the sports departments to provide funds for the scientific development and management of AI and ensure their appropriate use in sports. This is in part because of the huge capital needed for the development of AI technology and also because promoting the public's interest is the first duty of those in power (Hais et al., 2022; Ding, 2019).

4.3 Acknowledging the impact on jobs and deriving solutions

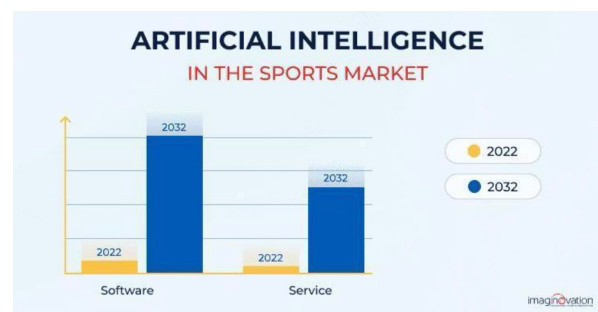
It is essential that AI doesn't overtake the job market altogether and cause massive unemployment. If this happens, it could lead to widespread resentment against the technology, and thus prevent its further integration in sports. AI should be implemented slowly, in a way that doesn't threaten the job security of the public. As for maintaining employment opportunities, the key lies in adapting to these changes by acquiring the necessary skills related to AI to remain relevant in the ever evolving job market.

5. What to expect?

With the continuous advancements, AI is crucial for various aspects of sports from injury management to curating perfect strategies. With a broad scope of implementation, we can expect businesses to invest in AI development which will likely reduce the high costs. This convergence of AI and sports is continuously raising the bar and redefining industry standards (Srivastava, 2024).

Figure 2

Comparison between the increase of AI use in software and services for sports from 2022 to 2032



Note. Figure 2 shows a rough estimate of the expected increase of AI in software and services related to sports till 2032. (Peranzo, 2024).

6. Conclusion

As we've discussed in this study, the impact of AI on sports is already being felt, from fan engagement to health analysis and beyond. With the global sports AI market set for significant growth, it's crucial for sports organisations and investors to stay informed about the latest advancements and implement AI technology so they can benefit from every way in which this technology is expanding organisations' capabilities in the sports industry (AI Transforming Sports: 7 Impactful Trends, n.d.).

There are many advantages and disadvantages of artificial intelligence across the enormous sporting world. Like every other thing that has benefits, however, it also has its flaws. It's left for the sports management authorities to maximise the benefits and minimise the problems.

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