Module 1. Artificial Intelligence & Data Analytics

BARÇA INNOVATION HUB
Universitas

This module presents an overview of artificial intelligence (AI) and how it relates to sports events, leagues, and competitions. Through real-life examples and cases studies, the module explores the differences between AI and traditional computation systems, showcasing the advantages of AI in enhancing sports events operations and strategies.

The module reviews the importance of good quality data in sports, its significance in driving successful AI implementations, and its applications in analysing fan events aspects, such as fan engagement, venue management, event operations, and marketing strategies.

Key concepts in data analytics are outlined for extracting valuable insights from sports-related datasets.

Generative AI's potential for enhancing sports experiences is also explored with examples of custom generated (specifically for this module) marketing materials for sports events and competitions. AI-based automated news reporting and its role in sport events, PR, and media operations is also explored.

The module briefly reviews the stories of artificial intelligence and data analytics, before exploring the role of AI and data analytics in the future of sports events organisation and management and sports in general.

AI is a revolutionary technology that will dramatically improve and impact on sports events, leagues, and competitions. The way we experience and engage with sports is

about to change beyond recognition

Artificial intelligence (AI) overview: A case study

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Artificial intelligence (AI) is a rapidly evolving field that focuses on creating intelligent machines capable of performing tasks that typically require human level intelligence. Computers using AI no longer need to be told explicitly how to process information. They learn automatically.

Let us see an example: imagine your event entity or league wants to hire a commercial director. Your organising committee or board of directors are considering several factors in selecting the best candidate, from previous experience, to track record of success, to qualifications. If they were to write these factors down, they may come up with something like table 1 below. Notice this is not a complete list. Rather an example.

Table 1: Codifying thoughts into variables

Candidate information	Shortened code

Previous performance	P
Level of education	E
Size of previous organisations	O
Related, additional successes	R
Length of experience	L

Source: own source.

They would also have to think about how much influence each of the above factors may have in predicting a new hire's future performance. This 'influence' that each of the above variables would have could be codified as a 'weight' for each of the factors.

Table 2: Codifying the importance of each variable

Factor	Weight
Weight for previous performance	wP
Weight for level of education	wE
Weight for size of previous organisations	wO
Weight for related, additional successes	wR
Weight for length of experience	wL

Source: own source.

Now, all of this can be written as a formula for evaluating and ranking candidates' predicted performance in their new post.

$$Predicted\ performance = (wP * P) + (wE * E) + (wO * O) + (wR * R) + (wL * L)$$

Filling in the numbers for each candidate and writing the formula in mathematical notation might look something like this:

$$Predicted\ performance = \sum_{1}^{n} ((4 * 3) + (6 * 7) + (9 * 6) + (3 * 9) + (8 * 2))$$

The Greek symbol Sigma in front of the formula tells us that we need to sum all the subsequent calculations inside the brackets together. The numbers inside the brackets represent a value for each one of the parameters we are considering (e.g., a value for education), multiplied by how important we think this parameter is for our prediction. For example, the numbers in the second brackets in the equation above '(6*7)' mean that we have assessed the level of education of a particular candidate to be seven (let us say out of ten). The other number, '6', is what we believe is the influence of education on someone's performance (let us say out of ten again). Once these numbers have been processed, a final number that represents our evaluation of the

candidate is produced. By the way, the number '1' under the Greek Sigma symbol and the letter 'n' above it simply tell us to do these calculations for each candidate we have.

This kind of logic can be used for analysing or predicting many things. Players, fan engagement, coaches, ticket sales, etc. You can imagine that if you needed to evaluate fan engagement, for example, and had to analyse a few variables for each fan, this would become too time-consuming a task to do all the calculations by hand.

Thankfully, we have computers. Thousands of variables can be calculated in a matter of seconds. This, in general terms, is how traditional analytics applications work. You provide the formula (the brains), and the computer does the math (the muscle). Systems that rely on such technology are already widely available. AI.io, for example, offers scouting software for sports talent and is a member for FIFA's Innovation Programme (AI.io, 2023). Chelsea FC, as well as the Major Football League in the US (MLS), already benefit from such technology. MLS provides the opportunity for all football players to be scouted without the need to travel.

Figure 1. MLS and Chelsea FC

Source: [untitled images of MLS and Chelsea FC], (n. d.), https://bit.ly/3FMTJ56; https://bit.ly/3tYVB86.

How AI differs from traditional computation

As it is possible to see from the process in the previous section, the computer here is relied upon to do the calculations, which it can do very fast. In the above example, however, it did not have to invent the formula. Humans did. And here is where AI differs: AI helps us invent the formulas in the first place.

But how does AI do that, and why is it important? Let us consider the second question first. Why is this important? You might be familiar with the old English proverb that says: 'if you give someone a fish, you feed him for a day. If you teach them how to fish, you feed them for a lifetime.'

AI represents the same kind of logic here: 'if you give a computer a formula, it will compute a number. If you teach it how to make formulas, it can do the thinking for you.'

With AI applications, a computer is not trying to follow some predefined instructions on calculating some specific business formula already given to it. Instead, it scans through information—as much as you give it—trying to find relationships between the data. Every time it finds a relationship of some statistical significance, it memorises it.

Eventually, after all relationships within a body of data are found, or if it is stopped by an operator, we can ask it important questions. The answers can help us **build** formulas.

Questions such as the following:

1. which relationships in the data I gave you can best predict the success of an event?
2. Which one parameter has the biggest impact on success?
3. Which parameters have the least impact on success?
5.

As you can see, the AI system now helps us produce the formula by telling us which variables are important, which are not, and by how much. Humans must now do a lot less mental work. Of course, in the above example, humans are still needed to ask the high level, initial questions. For example, 'which parameters will predict performance most accurately?'. The AI does not care about what the high-level questions are. The only thing the AI cares about is what data relates to what other data and how strongly. Beyond that, the meaning of these connections or relationships are inconsequential to the AI, but very consequential to sports, as well as other domains and operations.

Therefore, computers now need to be told much less precisely how to solve a problem. With AI, the machine understands the concepts of cause and effect. It understands how a particular piece of data affects or relates to another piece of data. Armed with the ability to discover relationships, it can answer any question that relates to relationships. In other words, it can think. Scientists have already used the above techniques to train virtual agents to play football. In 2020, Google launched a Football Research Competition to train AI systems in playing football and understanding the rules and mechanics of the game, knowledge that can be later used to analyse and predict results from real games and competitions (Yu, 2020).

Examples of use of AI in international events

AI used at the World Cup

During the 2022 World Cup in Qatar, FIFA and FIFPRO collaborated on a project that used AI to monitor social media abuse targeting players.

Over 300 individuals who posted 'abusive, discriminatory, or threatening' content on platforms such as Twitter, Instagram, Facebook, TikTok, and YouTube were identified.

The project's main goal was to safeguard players and officials during the tournament, prompting the reporting of abusive posts to law enforcement. The France-England quarter-finals witnessed the highest surge in abusive activity. The AI system scanned approximately 20 million posts and comments, identifying more than 19,000 as abusive, with over 13,000 reported to Twitter for necessary action.

Most of the identified abuse originated from accounts in Europe and South America. Players and teams were offered moderation software, which intercepted over 286,000 abusive comments before being visible. The individuals responsible for the abusive posts will have their identities shared with relevant authorities for appropriate measures. The project's success has led to its extension for use during the forthcoming Women's World Cup in Australia and New Zealand (ESPN, 2023).

AI used by the German Bundesliga

Germany's top national football league, the Bundesliga, uses a range of services from Amazon Web Services (AWS), including artificial intelligence (AI), machine learning (ML), analytics, compute, database, and storage. These AWS technologies are employed to deliver real-time statistics, enhancing game strategy and outcomes, while also providing personalised content recommendations to fans and partners across various platforms. The league boasts a massive global fan base of over 500 million, and viewers can access valuable insights about their favourite players and teams through the Bundesliga Match Facts feature. Additionally, AWS machine learning, AI, and analytics play a crucial role in improving the broadcast quality and exploring innovative distribution formats, with the aim of expanding the Bundesliga's international fan base (Buser, 2023).

AI used in the Paris 2024 Olympics

During the upcoming Paris Olympics, real-time cameras with artificial intelligence (AI) will be used to identify suspicious activities on the streets. These AI-powered CCTV algorithms can detect unusual occurrences, like crowd rushes, fights, or unattended bags. However, the technology will not employ facial recognition to track ‘suspicious’ individuals, as seen in China. Despite its potential benefits, civil rights groups are raising concerns about the implications for civil liberties. The law explicitly prohibits facial

recognition, but allows the use of AI in certain police stations, including one in Massy, a suburb of Paris. To train the system, developers have provided a vast collection of images depicting abandoned bags, continually expanding the database, as more images are gathered (BBC, 2023).

AI used in Spanish LaLiga

Since partnering with Microsoft in 2016, LaLiga, the top Spanish football league, has embraced artificial intelligence (AI) and machine learning (ML) to revolutionise the sport for players, coaches, and fans. The core of this transformation lies in Mediacoach, an Azure-powered data analysis platform that collects and interprets around 3.5 million data points per match in almost real-time. Mediacoach has evolved into LaLiga Tech, a comprehensive technology subsidiary that offers platforms, services, and consultancy to the sports and entertainment industries.

Initially catering to technical staff, such as coaches and doctors, Mediacoach's insights are now also accessible to media and fans through Beyond Stats, a portal driven by Mediacoach. LaLiga recognised the fans' appetite for data and competition insights and uses AI and ML through LaLiga Tech to engage fans by recommending content and providing deeper insights using sentiment analysis.

LaLiga further uses AI with solutions like Calendar Selector to optimise match schedules for maximum TV viewership and stadium attendance. Additionally, the league has developed predictive models to identify trends, make predictions, and simulate results. These offerings encompass fan engagement, competition management, and advanced performance analytics. LaLiga aims to continue innovating and delivering data and knowledge to fans through various channels, aiming to create exciting and immersive experiences both at home and in stadiums (Olavsrud, 2023).

The importance of data

For all of this to work, AI needs a lot of high-quality data. Otherwise, any conclusions it might come to from analysing the data given to it may be wrong. Sometimes very wrong. That is why the most important job of a data analyst is to curate, clean, and prepare high-quality data for the machine to analyse. This last statement cannot be overstated; the following is well-known within the field of computer: rubbish in = rubbish out.

That is true for both traditional algorithms (like in our first example) and AI ones. The quality and relevance of data fed into computer systems is of paramount importance. In fact, a well-known way of 'hacking' an AI system is to feed it false data. This is known as 'corpus poisoning', a case in which hackers insert false information in the body of data (Poremba, 2021).

Assuming, however, that good amounts of quality data are available, one can imagine that AI systems will be able to identify hidden relationships well beyond human capabilities. For example, studies have shown that the average human can memorise approximately 20,000 words. That is 20,000 relationships between letters, images, sounds, concepts etc. The maximum number of words a human can memorise is reported to be around 70,000 (Johnson, 2013). Artificial intelligence systems have no theoretical limit in the amount of data and relationships they can process and memorise, and they can do it much faster than humans.

AI terminology for managers

Having looked at a very high-level example of an AI system and how it differs from traditional approaches, let us now examine some of the terminology commonly associated with AI. Here are some of the most common terms you will come across when discussing AI systems with AI providers:

- In terms of the scope of a system
    - Narrow AI (meaning it has specific domain intelligence).
    - General AI (meaning it has general, human like intelligence).
- In terms of the underlying algorithms used

- Data analytics (systems predominantly using statistical algorithms).
- Machine learning (combination of statistical algorithms and self-learning).
- Deep learning (more advanced self-learning capabilities).
- Neural networks (the fundamental, biologically inspired, building blocks of AI).

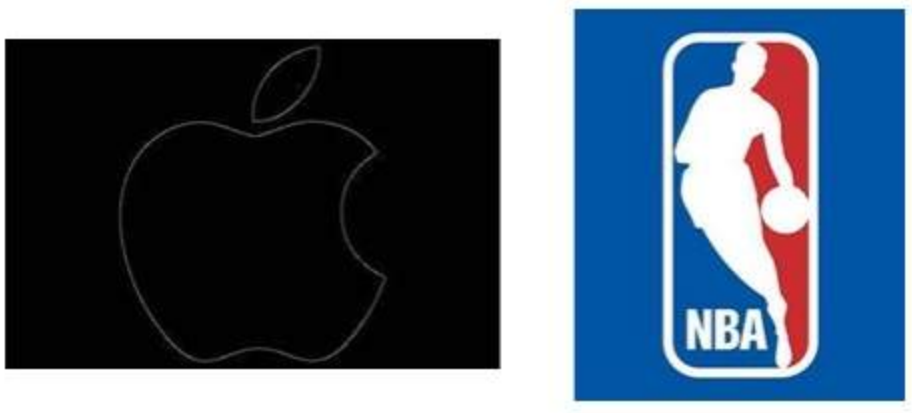
- In terms of output

  - Analytical AI (analyses and gives us insights about our data).
  - Generative AI (uses previously learned knowledge to create pictures, music etc.).

Narrow AI

Also known as weak AI, narrow AI focuses on solving **specific** tasks or problems. These systems are designed to excel in a particular domain, such as voice recognition, image classification, or recommendation engines. An example of a narrow AI system is facial recognition as used in sports events. In the United States, the National Basketball Association (NBA) already uses this technology to allow NBA fans to log onto their NBA app on their iPhones using Apple's Face ID (Cohen, 2023).

Figure 2. Narrow AI used by the NBA



Source: [untitled image of narrow AI used by the NBA], (n. d.), https://bit.ly/47wC3qq.

General AI

General AI, or strong AI, aims to possess human-level intelligence and capabilities. These systems can understand and perform a wide range of tasks, exhibiting reasoning, learning, and problem-solving skills comparable to humans.

An example of a general AI is ChatGPT, an online piece of software that can converse fluently with humans about many different subjects. Other systems include Google's Bard and Elon Musk's upcoming AiX. An example of how ChatGPT has been used in sports reporting is in Sports Illustrated. This popular sports publication used it to rank football's ten best modern teams (Parks, 2023).

Figure 3. ***Sports Illustrated*** **and ChatGPT**

Source: [untitled images of *Sports Illustrated* and ChatGPT], (n. d.), https://bit.ly/40z2hGa; https://bit.ly/3MKGdTp.

Machine learning

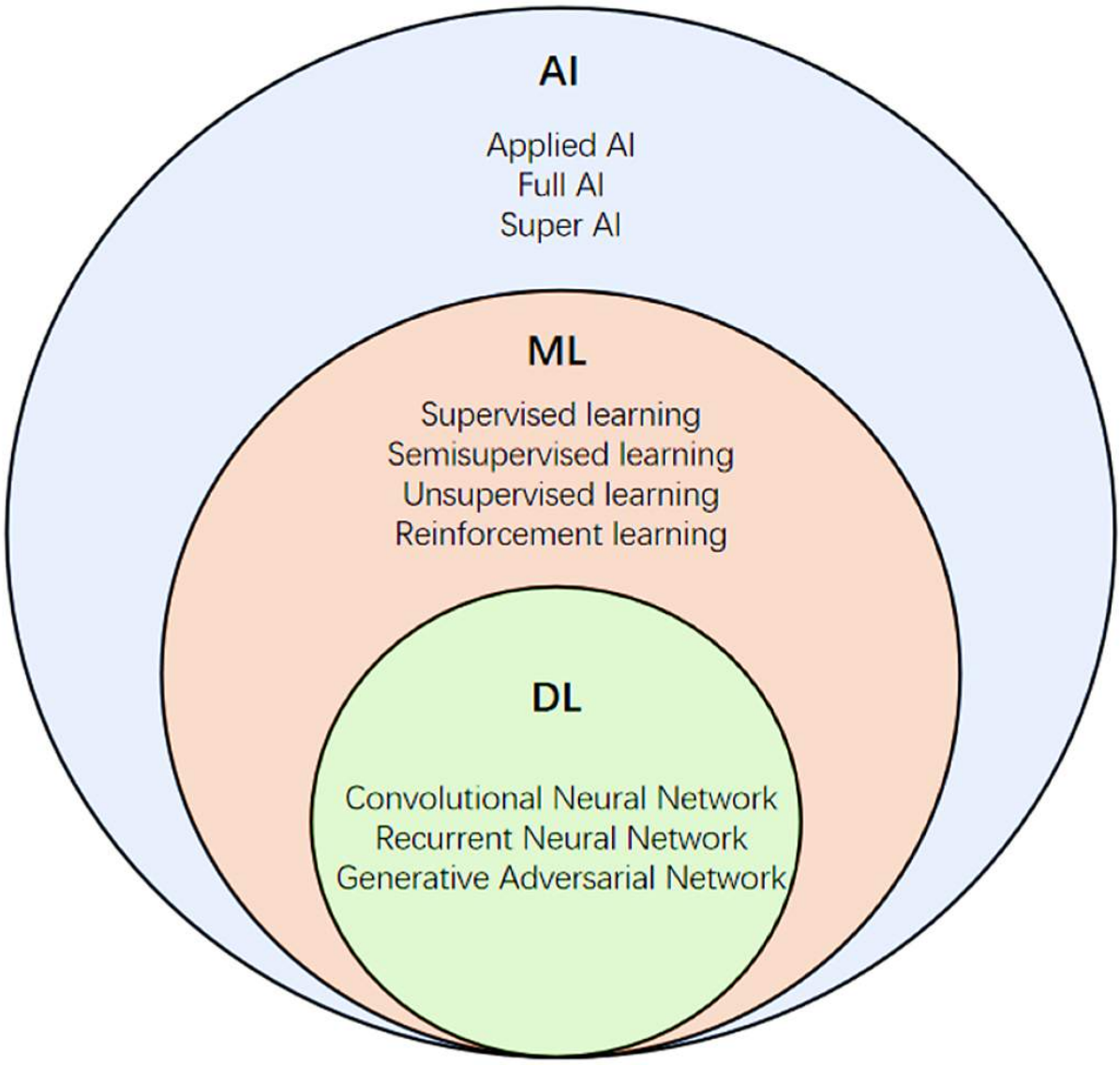
Machine learning involves algorithms that identify patterns and make predictions based on the provided data. Machine learning as a term describes

a more particular set of learning algorithms rather than their application. Machine learning algorithms are what is under the hood of AI systems. When we use the term 'AI', we generally mean an autonomously learning, intelligent system. When we use the term 'machine learning', on the other hand, we generally refer to the algorithms being used by the AI that allow it to learn. AI refers to the overall function, whilst machine learning refers to its underlying, enabling components.

Deep learning

Deep learning is a routinely used term by data analysts as well. It refers to a specialised branch of machine learning. Specifically, one that uses artificial neural networks that are inspired by the biology of the human brain. Deep learning algorithms process and analyse large amounts of data to recognise complex patterns and features. This enables tasks such as image and speech recognition. We will look at how a neural network operates in some detail later, but, for now, the picture below shows how all these concepts are related.

Figure 4. Nomenclature of artificial intelligence



Source: Wang *et al.,* 2021, p. 2.

AI is an umbrella term; it includes machine learning (ML), which, in turn, includes deep learning (DL), which is based on neural networks (NN) (Wang et al., 2021).

Data analytics

Another term that you will come across often, that describes many of the operations associated with AI, is 'data analytics.'

The key difference between AI and data analytics is that the latter existed independently of the field of artificial intelligence. Another way to think of data analytics is thinking of advanced 'statistics.' AI systems use a lot of statistical techniques for data analysis, such as statistical algorithms. Many AI systems depend heavily on the use of statistical techniques for identifying trends and relationships in data, to the point where lines can be easily blurred between AI and statistical analysis. However, AI systems, whilst able to incorporate a lot of statistical analysis methods within their operation, are not limited to statistical methods of analysis alone.

For example, whilst data analytics might use established statistical techniques to identify relationships in data, AI systems will go beyond that and use whole 'communities' of statistical analysis algorithms and even force them to compete against one another to better understand the data. An example of how data analytics has been used in understanding fan engagement is the Texas Ranger's use of Tableau software to boost attendance and optimise marketing spend. The software was used to create a 360-degree view of operations for 82 home games in a year and to track real-time ticket, food, and beverage sales as well as merchandise (Tableau, n. d.).

Figure 5. Tableau and the Texas Rangers

Source: [untitled images of Tableau and the Texas Rangers], (n. d.), https://bit.ly/3QTTonC; https://bit.ly/3SAwliL.

The Texas Rangers partnered with data analytics software developer Tableau to optimise marketing operations.

Key concepts in data analytics

To comprehend data analytics, it is essential to grasp some fundamental concepts.

Data mining: it involves the process of discovering patterns and relationships in large datasets. It encompasses techniques such as clustering, classification, association rule mining, and anomaly detection.

Descriptive analytics: it focuses on summarising and interpreting historical data to understand past events and trends. It provides a foundation for other analytical techniques and aids in gaining insights into business operations.

Predictive analytics: it uses statistical modelling and machine learning algorithms to make predictions about future events or outcomes. It helps businesses anticipate trends, forecast demand, and mitigate risks.

Prescriptive analytics: it goes beyond predictive analytics by suggesting actions to optimise outcomes. By considering various scenarios and constraints, prescriptive analytics assists in decision-making by recommending the best course of action.

Techniques and algorithms in data analytics

Data analytics employs a wide array of techniques and algorithms to analyse and extract meaningful information from data.

Regression analysis: it determines the relationship between dependent and independent variables to predict future values accurately.

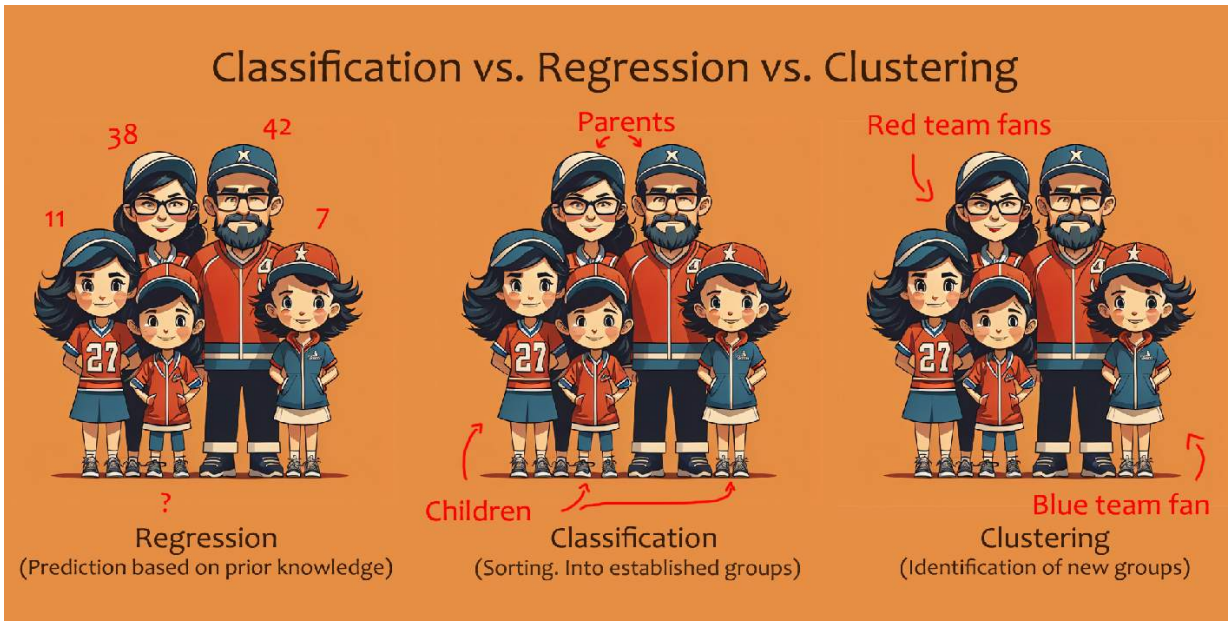
Clustering: clustering algorithms group similar data points based on their inherent characteristics, enabling data segmentation and pattern recognition.

Classification: classification algorithms assign predefined categories or labels to data based on their features. It is commonly used for tasks such as image recognition, spam filtering, and sentiment analysis.

An example of how these techniques differ from each other is shown below. In market analysis, regression (left side of image) will predict missing information based on surrounding data. For example, it may predict that the age of the young child of this fictional sports fan family is somewhere around five years old. In the case of classification, if the system is already aware of certain classes, it will assign fans into the correct class. In this example, it is possible to imagine a facial recognition algorithm classifying the family members automatically as they arrive at the event.

Finally, clustering will go beyond that and identify new classes or groupings, above any existing ones that we may have pre-defined ourselves. This will allow us to identify categories in our data that we were perhaps unaware of previously. In this case, the algorithm automatically detects two further possible classes (red team fans and blue team fans).

Figure 6. Same data (the family of sports fans) and different data analytics techniques

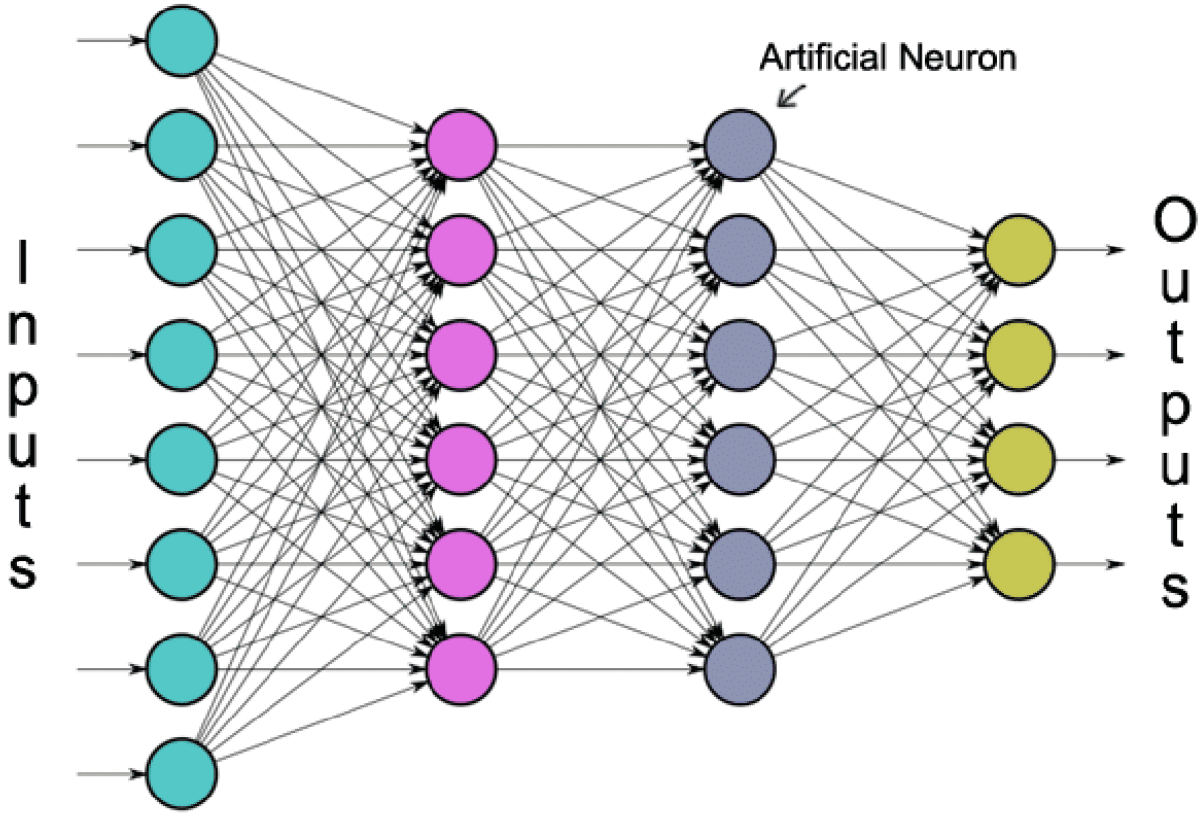


Source: Source: own source.

Neural networks: they are a class of algorithms inspired by the structure and functioning of the human brain. They are capable of learning complex patterns and have achieved remarkable success in tasks like image and speech recognition.

In the diagram below, we feed information into the neural network inputs on the left (e.g., pixels of an image) and that triggers one of the outputs on the right to 'light up'. Each of the outputs is associated with a concept (e.g., a cat, dog, ball etc.). Depending on the number of neurons and connections we have, we can teach the network relationships between inputs and outputs. AI softwares like ChatGPT have trillions of connections (Romero, 2021).

Figure 7. A typical neural network



Source: Loewe, 2017, https://bit.ly/49AcSFe.

Figure 7 represents a typical neural network consisting of neurons (circles) and connections between them [lines] (Loewe, 2017).

Generative AI

Generative AI is a great example of how all these different AI systems come together. The generative AI system will use data analytics techniques to learn the features of human faces, for example, and then use that knowledge to also **generate** content for you. As you can see, generative AI goes beyond traditional data analysis techniques and into information synthesis. Examples of the output of such systems can be seen below. All images were generated by a generative AI system, specifically for use as examples in this module.

Figure 8. AI-generated image of fictional sports fans watching a fictional match

Source: Source: own source.

Figure 9. AI-generated marketing poster for a children's basketball event

Source: Source: own source.

Brief history of artificial intelligence and data analytics

Artificial intelligence

AI can trace its roots back to the mid-20th century, when researchers began exploring the idea of creating intelligent machines. Let us look at some key early developments.

In 1950, Alan Turing, the cryptographer that helped break the Nazi Enigma code during World War II and an Olympic level runner himself, proposed his famous Turing test, a test to determine a machine's ability to exhibit intelligent behaviour indistinguishable from that of a human. Alan Turing is honoured in Great Britain by having his face on the £50 note, the highest value note in the British monetary system.

Figure 10. Cryptographer and athlete Alan Turing on the £50 note

Source: Bank of England, 2021, https://bit.ly/46aXEDG.

In 1956, the Dartmouth Conference brought together prominent scientists, including John McCarthy, Marvin Minsky, and Claude Shannon, who coined the term 'artificial intelligence.' The conference marked the birth of AI as a formal field of study.

Over the years, AI research and development have achieved significant milestones. In the 1970s and 1980s, expert systems emerged, enabling computers to mimic human expertise in specific domains (narrow AI). These systems used rules and knowledge bases to provide intelligent decision-making support.

In the 1990s and 2000s, machine learning gained prominence. Algorithms such as decision trees, neural networks, and support vector machines were developed, allowing systems to learn from data.

Deep learning, with its ability to process large amounts of data and recognise complex patterns, experienced breakthroughs in the 2010s. Notably, the use of deep neural networks led to significant advancements in image and speech recognition.

Data analytics

The history of data analytics intertwines with the development of AI, but the origins of data analytics can be traced back to statistical analysis and data processing techniques.

In the 18th and 19th centuries, statisticians such as Carl Friedrich Gauss and Sir Francis Galton made pioneering contributions to statistical theory and data analysis methods. In the 1970s and 1980s, the concept of data warehousing emerged, allowing organisations to collect, store, and manage large volumes of data.

With the advent of computers and the growing availability of data, data analytics has experienced rapid advancements. In the 1980s and 1990s, data visualization software and online analytical processing (OLAP) gained popularity, enabling users to explore and analyse data interactively.

The proliferation of digital technologies and the exponential growth of data (Facebook and Twitter, for example) in the 21st century led to the rise of big data analytics. Data science emerged as a multidisciplinary field that combines statistical analysis, machine learning, and domain knowledge to extract insights from large and complex datasets.

The integration of AI techniques, such as machine learning and natural language processing, with data analytics, has opened new possibilities for automated data analysis, predictive modelling, and intelligent decision-making. One of the most exciting aspects of this integration is generative AI, as we have seen in previous examples.

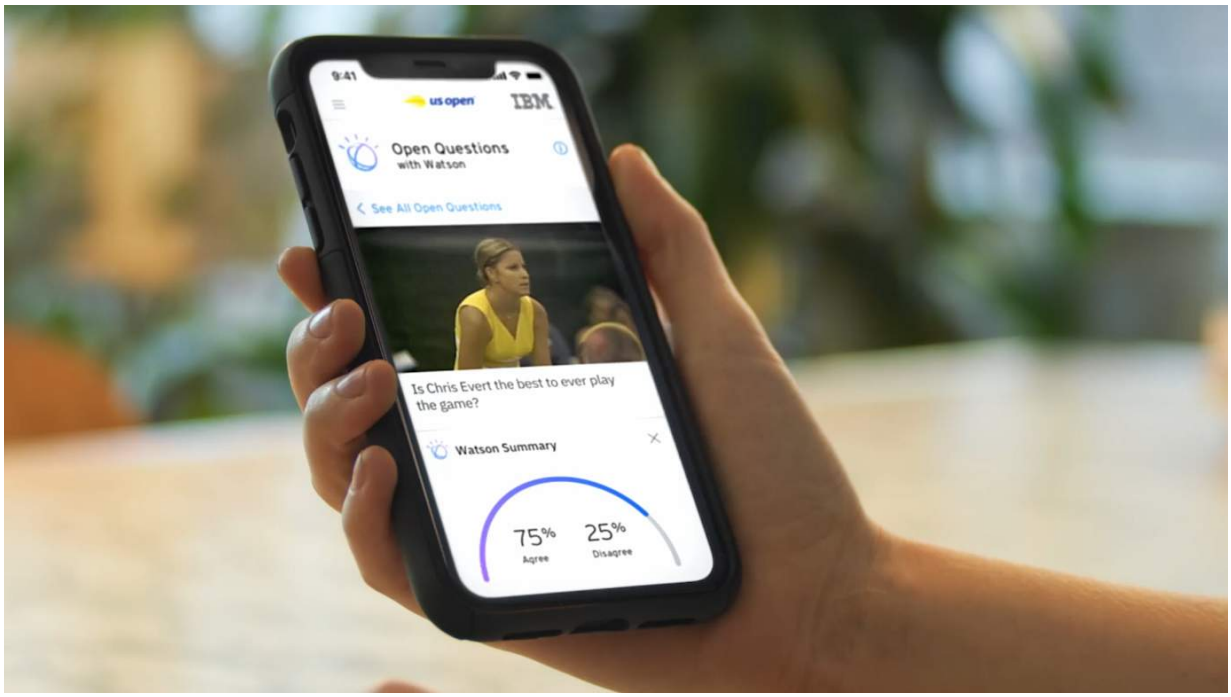
The future of AI

The future of AI in sports is bright. It promises to revolutionise the entire sports industry, enhancing various aspects from fan engagement to player

performance analysis. These advancements will create personalised experiences for fans, optimise ticketing and attendance, improve venue management and security, aid in performance analysis and injury prevention, assist referees in decision-making, automate sports journalism, provide immersive VR and AR experiences, analyse social media sentiment, and optimise event logistics.x1

One of the most significant impacts of AI in sports events organisation, as we have seen, is fan engagement and personalisation. AI-powered algorithms will analyse fan preferences and behaviour, providing personalised experiences through virtual assistants and chatbots. Fans will receive tailored content, including player statistics, team updates, and live match highlights, leading to higher levels of engagement and satisfaction. For example, IBM's 'Open Questions' app allows US Open tennis fans to engage with live sports events using natural language to get answers to event related questions, increasing fan satisfaction (Hall, n. d.).

Figure 11. IBM's Open Questions app



Source: [untitled image of IBM's Open Questions app], (n. d.), https://bit.ly/4783yqv.

Open Questions is using IBM's AI debater technology to generate and moderate a public conversation during the US Open Tennis tournament.

AI's predictive analytics capabilities will play a crucial role in ticketing and attendance management. By analysing historical data, weather forecasts, team performance, and other factors, sports organisers can predict ticket demand and optimise pricing. This will ensure efficient resource allocation and better fan experiences during events. This will also enable services like dynamic pricing, upselling, and cross-selling (Nykyforuk, 2023). Venue mapping and social distancing algorithms are already being used by software to increase the number of potential visitors. Ticketmaster Worldwide using

software by Softjourn scanned 200,000 tickets within the first few months of testing. The reports from clients were outstanding.

Figure 12. Ticketmaster Sport and Softjourn

Source: [untitled image of Ticketmaster Sport and Softjourn], (n. d.), https://bit.ly/3QXWiI3; https://bit.ly/49xkjNj.

Ticketmaster Worldwide partnered with AI software developer Softjourn for more effective ticketing operations.

Venue management and security will greatly benefit from AI technologies. Facial recognition systems will enhance security at sports venues by identifying potential threats and banned individuals. AI-powered cameras will monitor crowd movements and optimise seating arrangements, ensuring safety and comfort for attendees. Products such as stadium management

software are already available (OnePlan, 2023; Momentus Technologies, 2023).

Figure 13. Some of OnePlan's clients already using these technologies

Source: OnePlan, 2023, https://bit.ly/40yFk6h.

In the previous figure, there are just some of OnePlan's clients that are already using these technologies.

In the realm of player performance, AI-driven wearable devices will monitor athletes' biometrics and movements during training and competitions. Coaches and medical staff will receive real-time insights, aiding in injury prevention and performance optimisation. Products are already available with such functionalities (Gemo, 2022, Smartabase, n. d.).

Figure 14. Gaelic Athletic Association

Source: Smartabase, 2018, https://bit.ly/46dlI8L.

The Gaelic Athletic Association already benefits from data-driven, player performance optimising software (Smartabase, 2018).

Referees will also receive assistance from AI technologies. Video analysis and computer vision will help identify fouls, offside situations, and other contentious calls more accurately. The implementation of Video Assistant

Referee (VAR) systems will lead to fairer decisions and improved match outcomes. It is predicted that VAR, in the future, will be able to operate completely autonomously, without the need for human reviewers, although it is likely that human oversight will remain, irrespective of the fact that, in most cases, it will not be necessary (SCC, 2018).

Sports journalism will see a transformation with the rise of AI-driven reporting. Automated journalism will generate real-time match reports, player interviews, and statistical analysis, providing sports fans with instant updates and comprehensive coverage. Such services already exist. In fact, some products produce real-time articles in multiple languages for multiple sports (Robots, 2023).

Figure 15. AI-generated articles (pre- and post-match) for a Bournemouth vs. Sheffield United game

Source: United Robots, (n. d.), https://bit.ly/3QFMBwv.

In conclusion, the future of AI in sports events organisation holds great promise for revolutionising the sports industry. By harnessing the power of AI, sports organisers can enhance fan engagement, improve player performance, optimise logistics, and create unforgettable experiences for sports enthusiasts worldwide. The widespread adoption of AI in sports events organisation will shape a new era of sports entertainment and experiences.

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Activities

Artificial intelligence (AI) focuses on:

- ○ Creating intelligent machines capable of performing tasks that typically require human level intelligence.
- ○ Creating intelligent people capable of performing that typically require machine level intelligence.

SUBMIT

The most important job of data analyst using AI is to:

- ☐ Curate high-quality data.

- [ ] Curate high-quality data.
- [ ] Analyze lot of data.
- [ ] Prepare high-quality data for the machine to analyse.

SUBMIT

The key difference between AI and data analytics is:

- ( ) That the AI exist independently of the field of data analytics.
- ( ) That the latter existed independently of the field of artificial intelligence.

SUBMIT

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