



Seeing Beyond Limits for Concessions:

An Exploration of Computer Vision Technology in Autonomous Stores at Parks & Stadiums

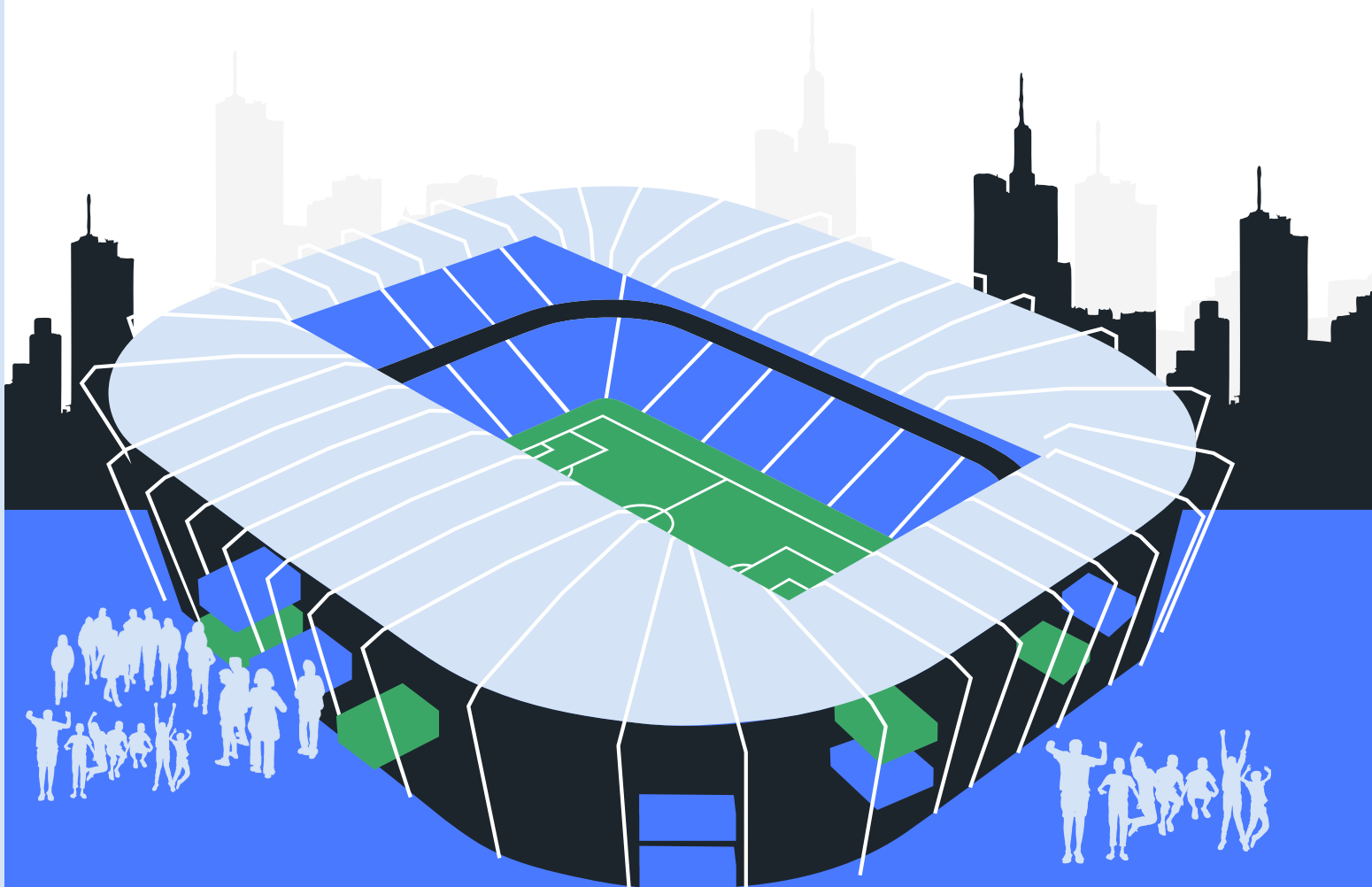


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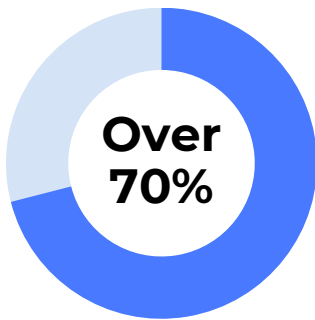


Introduction

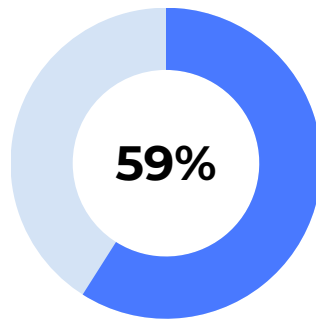
Autonomous stores are revolutionizing the fan and event-goer experience at parks and stadiums. But is there truly a need for fast, secure, and cashierless checkout processes at concessions stands within event venues? Yes!

Today's Fans Want Autonomous Solutions

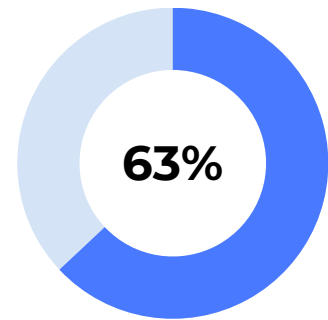
Source: [Oracle Food & Beverage Stadium of the Future Report](#)



of U.S. fans buy food & drink at games and spend an average of \$42/game.



of fans would spend more on food & beverage if wait times were shorter.

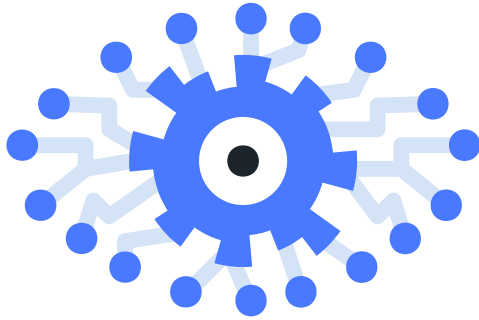


of fans said they would use a self-servicing kiosk.

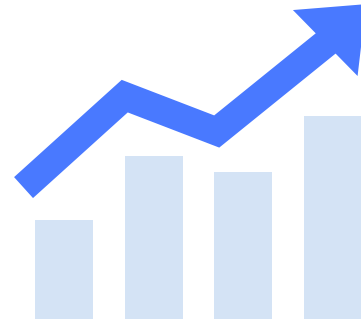
Autonomous stores and concessions rely on a variety of technologies to enable customers to shop without the need for cashiers or other human assistance. One of the most important of these technologies is **computer vision**, which allows the store to “see” and track customers and products in real time.



As the development of autonomous stores expands across the globe in stadiums, arenas, amusement parks, and more, it's no surprise that the use of computer vision is also expanding.



The global AI in computer vision market is forecast to reach a value of **USD 17.2 billion** in 2023.

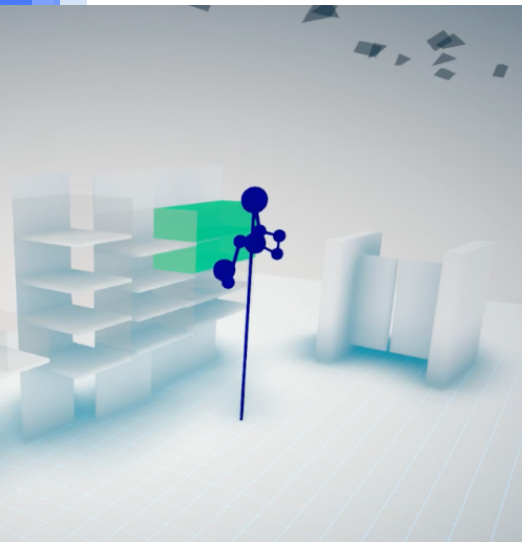


By 2028, the market is expected to be valued at **USD 45.7 billion** growing at a CAGR of 21.5%.

Source: [MarketsandMarkets™](#)

But what really is computer vision? And what role does it play in the development of autonomous stores? In this quick-step guide, we're providing an introduction to computer vision technology and showcasing how it is used in autonomous stores in stadiums and sports venues.

What is Computer Vision?



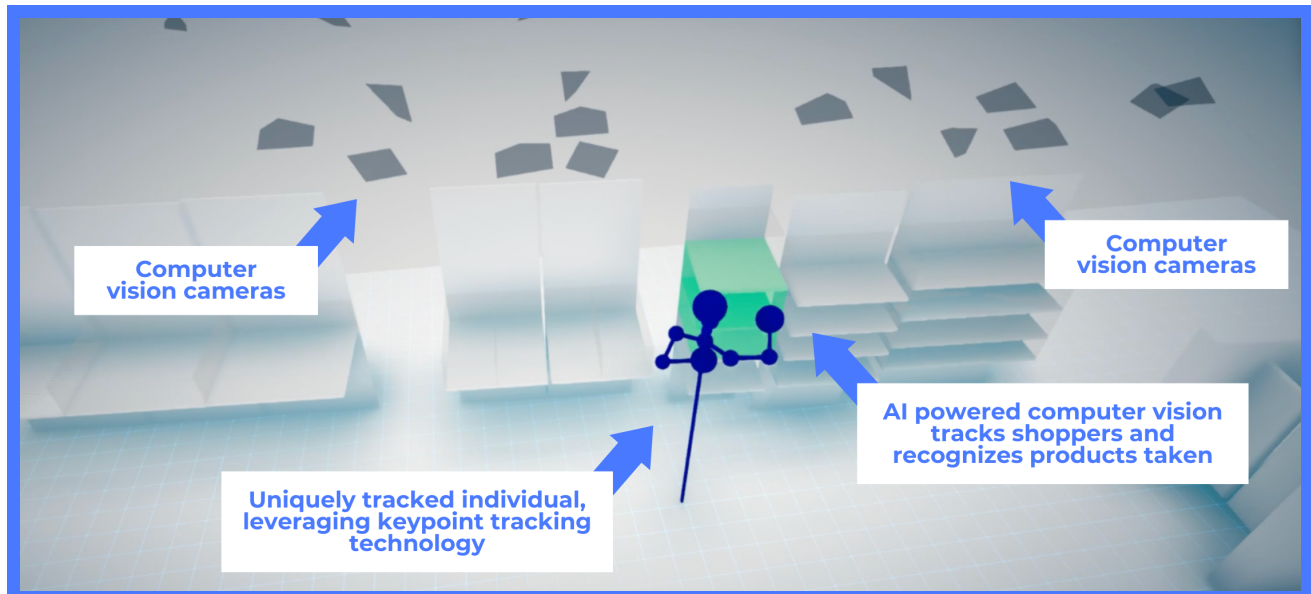
Computer vision is a field of artificial intelligence (AI). Essentially, this technology enables machines to interpret and understand visual data gathered from their environment. It's as if the camera is an eye and the AI platform behind the eye is a brain, turning all the images into understandable insights and data.

By using algorithms and machine learning, computer vision technology can analyze, recognize, and extract valuable information from digital images or videos in real time. Yes, it's that fast—*like microseconds fast.*

Here's How AiFi's Computer Vision Technology Works:

AiFi's camera-only AI platform begins tracking shoppers as they enter the store using **keypoint tracking technology** that creates a unique individual. It is important to note, however, that AiFi's platform is open and we can work with partners to help customers integrate biometrics when desired.

The diagram below details the components of an autonomous store and how computer vision connects all shoppers, products, and purchases within it:



Additionally, product and shopper tracking cameras identify items customers interact with, offering enhanced scalability. AiFi's AI-powered frictionless checkout provides shoppers with a **convenient, accessible, and personalized experience** to purchase items in-store without having to wait in line or stop to scan or pay.



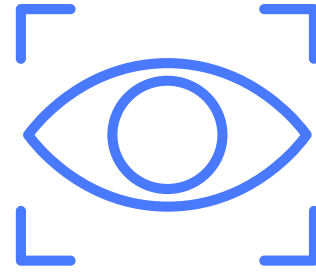
Learn more about [AiFi's AI-powered platform](#).

Computer Vision vs. Sensors

Some autonomous stores utilize sensors rather than computer vision to detect which items have been taken off of shelves. However, this technology is often limited in its ability to analyze and interpret visual data, leading to inaccurate outcomes.



Sensors typically use physical or chemical properties such as temperature, pressure, or light to detect objects.



Computer vision technology uses complex algorithms and machine learning models to analyze and understand visual data.

Computer vision provides a more detailed understanding of the store environment. This means that it can track customers and products with greater precision, enabling more seamless and efficient shopping experiences—no over or undercharges or inaccurate inventory! Not to mention, this technology is extremely flexible, allowing business owners to scale their inventory and store layout in a variety of different retail environments.

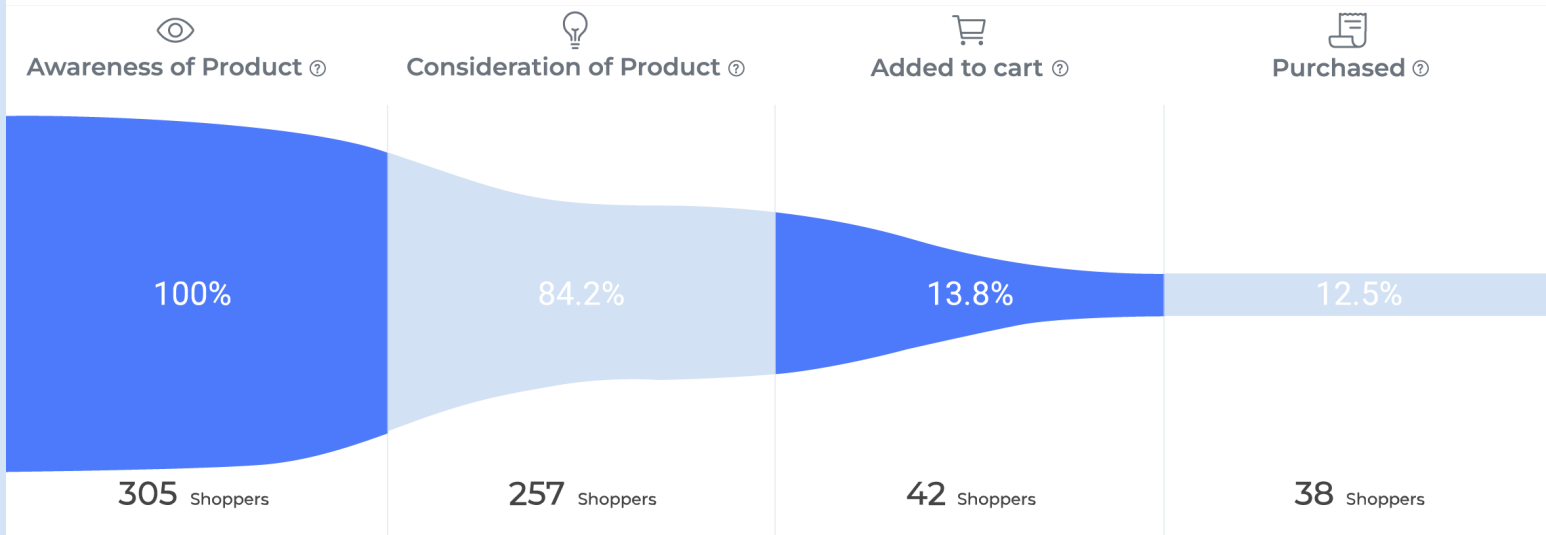


AiFi Store in the Aston Villa Football Club in Birmingham, England

But one of the top reasons computer vision is superior to sensors is its ability to monitor and analyze store traffic patterns to optimize store layouts and improve customer flow. Some would argue that **computer vision systems are even bringing the power and insights of e-commerce to brick-and-mortar stores.**

The image below depicts the insights computer vision generates via the AiFi Platform:

Shopper Journey



Why is Computer Vision Great for Autonomous Stores & Concessions?

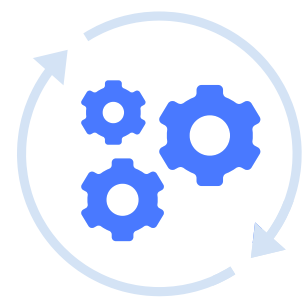
Computer vision technology plays a crucial role in enabling autonomous stores and concessions to operate without the need for human intervention. By using camera-only technology throughout the store, computer vision systems can:



Accurately track customers and products in real-time



Identify and authenticate customers



Process transactions automatically and accurately

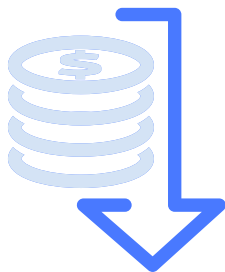
In addition to providing a more seamless shopping experience, computer vision technology offers a scalable solution for retail shops of all sizes. By automating various tasks such as **product identification, pricing, and checkout, businesses save time and resources** while providing a more efficient and personalized service to their customers.



AiFi Drink Lane at a Large European Stadium

Consider this example. In an autonomous store, computer vision technology can identify the various products a shopper selects, puts back on the shelf, or walks out of the store with, *in real-time*. Thus, it provides a more seamless and convenient shopping experience for customers, as they can simply grab the products they need and leave the store without having to wait in long checkout lines or interact with cashiers.

Meanwhile, for the business and its stakeholders, computer vision technology helps to:



Reduce operational and labor costs (fewer employees needed!)



Improve inventory management (clear imaging provides accurate data and analytics)



Enhance the overall shopping experience for customers (leveraging analytics to enhance the customer experience)

Final Thoughts

The demand for more convenient and efficient shopping experiences—especially in stadiums, arenas, venues, and amusement parks—is on an exponential trajectory. In fact, [30% of global fans](#) believe **“being able to stay in their seat is the most important way to improve the food and beverage experience at the stadium,** closely followed by faster transaction times.”

As customer demand for more convenient concessions options, like cashierless checkout rises, we expect computer vision technology to become an increasingly important tool for businesses looking to improve the in-store experience and lower operational costs.



In short, **computer vision technology is transforming the way we shop and interact with retail spaces**—and *it's pretty awesome.*

If you're a business owner looking to leverage the benefits of computer vision technology for your concessions stores at a stadium, park, or event venue and have questions about implementing this technology, [get in touch with us](#). We'd be happy to guide you through the process and answer any questions you may have.

About AiFi

AiFi, a globally leading AI provider, empowers retailers worldwide to scale autonomous shopping solutions with 100% computer vision. Powered by the most cost-effective and flexible method of deploying cashier-less technology solutions, AiFi's camera-only platform enables businesses to provide a frictionless checkout experience to their customers. AiFi's technology works through cameras and computer vision to allow quick and efficient shopping for various store formats across multiple global retail segments.

AiFi's solutions adapt to numerous verticals, including convenience stores, sports and entertainment venues, universities, workplaces, and travel retail. AiFi customers include: LA Clippers, Golden State Warriors, NASCAR, Florida Panthers, Aldi, Carrefour, Compass Group, Zabka, and many more. AiFi now has the highest number of store deployments globally, with over 100 active stores. The company has raised a total of \$80 million from investors, including Qualcomm Ventures, Verizon, HP, Mithril, Duke Angel Network, Cervin Ventures, TransLink Capital, and Plum Alley.

To learn more about AiFi, please visit aifi.com.