



Role of artificial Intelligence in agriculture

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Introduction

The foundation of artificial intelligence is the idea that human intelligence can be described in a way that makes it simple for a machine to replicate and carry out tasks, from the most basic to the most complicated. Artificial intelligence aims to accomplish the following: perception, reasoning, and learning.

It is anticipated that by 2050, there will be 10 billion people on the planet, putting tremendous pressure on the agricultural industry to boost crop yields and productivity. Two possible strategies have surfaced to address the impending food shortages: increasing land use and implementing large-scale farming, or embracing creative methods and utilizing technology breakthroughs to boost productivity on current farmland.

The modern agricultural landscape is changing and branching out in various innovative directions as a result of numerous obstacles to achieving desired farming productivity, including limited land holdings,

labor shortages, climate change, environmental issues, and declining soil fertility, to name a few. Farming has undoubtedly advanced since the days of hand plows and horse-drawn equipment. New technologies are introduced every season with the aim of increasing productivity and optimizing the yield. However, the opportunities that artificial intelligence in agriculture can offer to their farming methods are often missed by both small-scale farmers and large international agribusinesses.

Benefits of AI in agriculture

It might have seemed odd to combine the terms artificial intelligence (AI) and agriculture in a sentence until recently. Considering that even the most basic AI only appeared a few decades ago, agriculture has been the foundation of human civilization for millennia, supplying both sustenance and fostering economic growth. However, new and creative ideas are being introduced in all

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sectors of the economy, including agriculture. Recent years have seen a rapid advancement in agricultural technology that has revolutionized farming practices worldwide. As the sustainability of our food system is threatened by global issues like climate change, population growth, and resource scarcity, these innovations are becoming more and more important. The introduction of AI helps to reduce the negative aspects of traditional farming and solves many of its problems.

Role of AI in the agriculture information

Management cycle

Managing agricultural data with AI can be beneficial in many ways:

Risk management

Predictive analytics reduces errors in farming processes.

Plant breeding

AI utilized plant growth data to further advise on crops that are more resilient to extreme weather, disease or harmful pests.

Soil and crop health analysis

AI algorithms can analyze the chemical composition of soil samples to determine which nutrients may be lacking. AI can also identify or even predict crop diseases.

Crop feeding

AI in irrigation is useful for identifying optimal patterns and nutrient application times, while predicting the optimal mix of agronomic products.

Harvesting

AI is useful for enhancing crop yields and can even predict the best time to harvest crops.

Challenges of AI in agriculture

Many believe artificial intelligence (AI) is irrelevant for physical farming tasks and only applies to the digital world. Usually, this assumption stems from a lack of knowledge about AI tools. The general public, particularly those in non-tech fields, is not well informed about artificial intelligence (AI), which is causing the agricultural sector to adopt AI more slowly. Despite the many advancements in agriculture throughout its lengthy history, many farmers are still more accustomed to using conventional techniques. It's unlikely that the great majority of farmers have ever worked on AI-related projects.

Furthermore, AgTech suppliers frequently do a poor job of outlining the advantages of novel technologies as well as their application. Technology companies have a great deal of work ahead of them in educating the public about the use of AI in agriculture. Using artificial intelligence in farming may seem like a sensible move for any farmer, given its advantages for sustainable farming.

AI based apps for agriculture

Operations Center Mobile

The most widely used app for remotely managing your field operations and equipment was once known as John Deere My Operations. Its primary purpose is to estimate and provide you with insight into your actual and expected performance. However, the program has a number of intriguing features, like AutoSetup, a tool that makes planning all significant tasks—soil tillage, seeding, spraying, fertilizing, and harvesting—easy. It can save up to 90% of the time needed for field setup. Alternatively, AutoPath, which prevents crop damage by automatically generating guidance lines from the rows that have already been planted for the entire field. The iPad, iPhone, and Android platforms support the app.

AgriSync

An app that links farmers with advisors who assist them and remotely handle problems on the farm. Farmers can use real-time video to increase visibility and communicate with different supporters from different companies. The app supports its displays by using John Deere's RDA. The primary benefit is that advisors can virtually fix problems, so a trip to the tractor might not be required. The app is available for iPhone, iPad, and Android users.

Climate App

A software designed to assist farmers in monitoring critical temperatures. It provides maps that show you the actual and recent

highs, lows, and soil temperatures. Farmers can take appropriate precautions to safeguard their crops in the event of unfavorable conditions because they have access to comprehensive data that helps them identify potential threats to their crops.

Conclusion

The adoption of AI solutions will determine how farming uses AI in the future. Despite the fact that there are several large-scale studies underway and some applications available now, the agricultural sector remains underutilized. Furthermore, early work is still being done on developing predictive solutions to actual problems that farmers face in their farming.

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