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Popular Article

Artificial Intelligence (AI): The Prospects for Indian Livestock Agriculture

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Introduction

Artificial intelligence (AI) describes computer programs that are able to carry out sophisticated operations that were previously limited to human performance, like reasoning, decision-making, and problem-solving involving machine learning, deep learning, and natural language processing (NLP). In contrast to the intelligence of living things, mainly humans, artificial intelligence refers to the intelligence of computers or software. It is a branch of computer science that focuses on creating and researching intelligent machines. These devices could be referred to as AIs. The majority of people use the term artificial intelligence (AI) to refer to a suite of machine learning-powered technologies, such as computer vision and Chat GPT, that allow machines to perform tasks that were previously only possible for humans, despite the numerous philosophical debates over whether "true" intelligent machines actually exist. Modern aquaculture and animal husbandry technologies, when combined with artificial intelligence, can intelligently detect animals of various weights and stages, feed them in different ways, and increase the output rate of high-quality feeding animals. Farmers are switching to more intelligent methods in response to the rapid increase in global population. These methods can help control the proper use of energy, water, and land, thereby feeding the world and preventing a global food crisis. Researchers think that artificial intelligence, robots, and sensors hold the key to the solution. With the successful adoption of AI technology by a number of industries, farming is about to undergo a revolutionary change thanks to the use of robots, drones, and intelligent monitoring systems. A method for keeping a close eye on the wellbeing of dairy cows and other agricultural animals.

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Milk production per cow is a metric that is well tracked in a dairy farm, but there are bigger questions that need to be asked to maintain the production levels. The feed is the most important factor that affects the production level of a cow. AI systems can provide accurate monitoring of the amount of feed that is provided to the cow and help to increase the production level. For example, there's an application that uses a motion-sensing device to transmit the movement of the cow to an AI-driven system. The sensor data, when aligned with real-world behavior, can help the AI system detect when the cow is walking, drinking or eating. Small dairy barns can be easily taken care of, but when it comes to huge barns, it becomes impossible to keep up with every cow on an individual basis. With facial recognition, AI can help identify each cow uniquely. Unique identification of cows helps farmers provide better treatment to the cows.

The day is not far when a drone will knock your door step to deliver milk with the desired fat and SNF percentage. The milk composition will exactly match as per your health requirement. Technology has redefined farming over the years and technological advances have affected the agriculture and livestock industry in more ways than one. Agriculture is the mainstay occupation in many countries worldwide and with rising population, which as per UN projections will increase from 7.5 billion to 9.7 billion in 2050, there will be more pressure on land as there will be only an extra 4% of land, which will come under cultivation by 2050. This means that farmers will have to do more with less. According to the same survey, the food production will have to increase by 60% to feed an additional two billion people. However, traditional methods are not enough to handle this huge demand. This is driving farmers and agro companies to find newer ways to increase production and reduce waste. As a result, Artificial Intelligence (AI) is steadily emerging a part of the agriculture industry's technological evolution. The challenge is to increase the global food production by 50% by 2050 to feed an additional two billion people. AI-powered solutions will not only enable farmers to improve efficiencies but they will also improve quantity, quality and ensure faster go-to-market for crops and livestock products.

Different applications of AI - 1. Artificial intelligence in automated milking: The use of artificial intelligence systems in milk booths is growing in the animal husbandry industry. The automated milking systems can detect anomalies in the product and examine the quality of the milk thanks to smart sensors that are AI enabled. 2. Precision animal farming: Using sensors and artificial intelligence technology, Latest Dairy is adopting intelligence for cows, milk, and herds. They provide a variety of sensors, from those for detecting heat and calving to those for monitoring health. One such sensor is the Sense Time Solution sensor, which tracks and records a cow's regular behaviors, like feeding, walking, and ruminating. 3. These days, farmers can monitor changes in animal movements, food intake, sleep cycles, and even air quality with the



use of a variety of sensors. 4. Artificial Intelligence for Oestrus Detection: A motion-sensor-equipped collar fastened to the cow's neck gathers all kinds of cow-related data around-the-clock. The dairy automation system's artificial intelligence components analyze the data gathered to offer insights on the heat stress, shift in feeding efficiency, and cow oestrus. Special hormones are released throughout the oestrus cycle, which influences the behavior and movement of the cow. 5. Robotic System to Deliver Vaccines: In order to ensure the long-term financial viability of dairy farms and to get a 100% compliance rate, these days' dairy farms employ a robotic injection system to give vaccinations and reproductive medications to their domestic animals. The robotic system is incorporated with a dairy automation system, now a day. The robotic injection system reads the RFID tags attached to the cow's ear and gets health-related information and vaccination record for the cow. If the cow needs an injection, it is directed to the injection site and the injection mechanism position itself to deliver the medication in the cow's neck. 6. Artificial Intelligence in food supply chain: Blockchain can connect all aspects of the supply chain from producer to consumer and allow for food traceability and safety. From an agriculture and food perspective, proposing this type of evidence to consumers will become a competitive advantage and may not prove as challenging in dairy as in other areas of agriculture, such as beef, which exchanges ownership more frequently. 7. Artificial Intelligence in data collection: Previously, collected data was generalized for an entire dairy farm. Through the use of sensors, AI and other technologies can provide individual data for each cow, allowing farmers to improve precision and accuracy when making managerial decisions. 8. Artificial Intelligence in improvement of feed quality: With the use of robotics is quite efficient and speeds up harvesting time, when compared to traditional harvesting by hands. Moreover, the automated machinery indefinitely calculates moisture in the cereals harvest as well as overall yield. 9. Improving animal health using facial recognition systems: Several useful applications, such as helping us learn more about the animal's emotional and attentional state. For example, by studying the ear and eye movements of an animal, we can now understand its mood and excitement level with reasonable accuracy. It might help us regulate pain symptoms of animals. On further exploration, we may find injuries, diseases or even signal of predator attacks. 10. Gains in optimizing feed efficiency & energy intake: RGB-D camera can help farmers measure feed intake for individual cows and optimize feed expenses according to their animal needs. Technology can help us estimate performance of farm animals accurately. Their energy expenditure during lactation can be assessed based on parity, milk yield component, and body condition score.

AI at present- Being one of the few global economies to have implemented and perfected automated AI processes across diverse sectors, India is definitely leading in the AI usage trends.



As per a study by Salesforce, India ranks third after Singapore and Hong-Kong in the Asia Pacific region, in terms of artificial intelligence readiness

Businessmen looking to invest in the Livestock industry have noted the increased spending power of the consumers and their willingness to pay a premium in order to have fresh and hygienic livestock products. As a result, it is expected that there will be investments made in this sector which will aid the introduction of technological advancements both in logistics and farm management. AI is one such technology which needs immediate implementation in the livestock industry. As Artificial intelligence and machine learning become more common and easily available, it is expected, that the use of such technology in the dairy industry will automate most of the farm processes while at the same time produce information based on the farm's operational history. Researchers believe that the future is in sensors, robots and artificial intelligence (AI).

The AI technology has been successfully adopted by several industries, and now it is set to revolutionize the future of farming with drones, robots and intelligent monitoring systems.

