

## **Moo-ing The Animal Husbandry Industry Forward With AI**

As we learn more about the diverse value of AI today, we envision self-driving cars and robots put to use to improve our human lives. Yet animal welfare is another valuable area of application to appreciate. Animal farming is becoming a data-centric business. AI in animal husbandry is used for raising animals for meat, fiber, milk, eggs and other products. With AI, providing day-to-day care and raising livestock has become easier for animal farmers. For example, farmers are making use of wearable AI devices to collect real-time data about them to make necessary decisions. The wearables are helping farmers to get important alerts like when their animals are sick, when they should be vaccinated and when they are ready for insemination. There are numerous ways that AI and machine-learning algorithms are now used to benefit the animal husbandry industry.

### **How farmers can leverage the use of AI in animal husbandry**

The core focus of a farmer in animal husbandry is to improve animal welfare, improve the efficiency of end products and create better production monitoring. Let's explore how AI in animal husbandry helps to achieve these objectives.

#### **AI in Dairy Farm Barns**

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.

#### **AI in Meat Farming**

Meat is a major source of dietary protein around the world. Cattle, sheep, pigs and goats are the main species involved in consumption as meat. Pigs can produce up to 11 piglets a year. Based on the numbers tattooed on the flanks of the pigs, AI systems can monitor vulnerable piglets for squeals of distress. An AI system is also being used to recognize facial expressions to detect if a sheep is in pain. The seriousness of the pain can also be determined by the system. The AI system detects different parts of a sheep's

face and compares them with standardized facial patterns provided by veterinarians to diagnose the pain.

Robots can be used to debone an animal to optimize the amount of meat produced. A robot can analyze the difference between the density of the meat and bone, thereby making the most accurate cut possible.

### **AI in Poultry Farming**

Like humans, even animals suffer from nutritional deficiencies. AI machines can help identify the decreased growth of a chicken. The machines can be trained to differentiate between healthy and infected chickens. AI-enabled robots can help poultry farmers in many ways. Robots can do repetitive work like feeding birds, collecting eggs and removing manure. Tasks like collecting, counting and packing eggs are becoming completely automated, reducing the need for close supervision by humans. Another task that a robot can perform is shifting a hatched chick from a broiler shed to the layer shed. Robots can also keep the birds moving for an added health benefit. Thus, a robot can perform various duties for poultry farming and prove to be a cost-saving attribute to the farmers. AI systems can monitor the environment of a shed and adjust conditions accordingly. AI systems can determine the accuracy of fertility in the early stage of incubation. AI can first learn which eggs are fertile and which are not by scanning the eggs, and then algorithms can be created that can determine the accuracy of fertility.

### **AI in Insect Farming**

Edible insects are becoming a growing part of food production because insect farming can help to meet future demand for protein consumption. Bees have been kept in hives and humans have been harvesting honey for a long time. Sensors can be incorporated in hives to monitor hive weight, temperature and humidity. AI systems have been developed that can track the sound waves made by a swarm of bees and can anticipate future changes to the swarm. With the help of anticipation, a beekeeper can plan for the swarm changes ahead of time. Insects such as crickets like it hot (90 °F) and humid (50-90%) and need different temperatures and humidity over their lifetimes. AI systems that allow artificial environmental changes with voice commands can be useful in growing insects like crickets. The AI system can provide features like analytics on smartphones, and alerts for temperature increases. Detecting the perfect breeding time can be achieved through AI monitoring. Companies in China are breeding 6 billion cockroaches a year with the use of 80 different types of big data being collected by AI systems. The cockroaches are then used as an ingredient for medicine that cures stomachaches and other ailments.

### **AI in Aquaculture**

Fish are being depleted faster than they can be generated. The use of AI in aquaculture provides actionable insights to optimize the expenses on fish farms. Fish farms provide

half of all the fish for human consumption. Free-floating aquapods are used for farming fish. The aquapods can accommodate thousands of fish. However, what happens when the aquapods need repair? To repair the aquapod manually is a time-consuming task. However, robots can complete the task of repairing aquapods in a safer and more cost-effective way. Underwater robots can easily examine and repair the nets of aquapods. Drones can provide applications for aquaculture both above and beneath the water. Monitoring offshore fish farms and inspecting underwater nets for damage and holes can be easily done by drones. Drones can also provide fish stock information and track environmental changes.

Sensors can be used in aquaculture to collect data such as oxygen levels, pH, salinity and pollution level of water. Detection of the hunger level of the fish by sensors can help farmers or even robots to feed them accordingly. Automated recirculation systems can circulate the water according to the information collected by sensors.

The consumption of animals and animal goods is increasing. The increased demand can be fulfilled by increasing the productivity and longevity of the animals. Therefore, the animal healthcare market size is demonstrating tremendous growth. The animal healthcare market size is expected to grow up to \$69.44 billion by 2026, with a CAGR of 5%.

AI in animal husbandry can help detect symptoms of any disease in animals by monitoring the daily behavior of the animal. For example, a drone can be used to collect images of the animal throughout the day. The images can then be fed into the AI machine to determine any behavioral changes. AI can help recognize a disease at an early stage and help provide better treatment to the animal. Thus, AI is not only improving the health of humans, it's also helping improve the medication and health services provided to animals.