SIGNIFICANCE OF ARTIFICIAL INTELLIGENCE IN ACHIEVING ONE HEALTH

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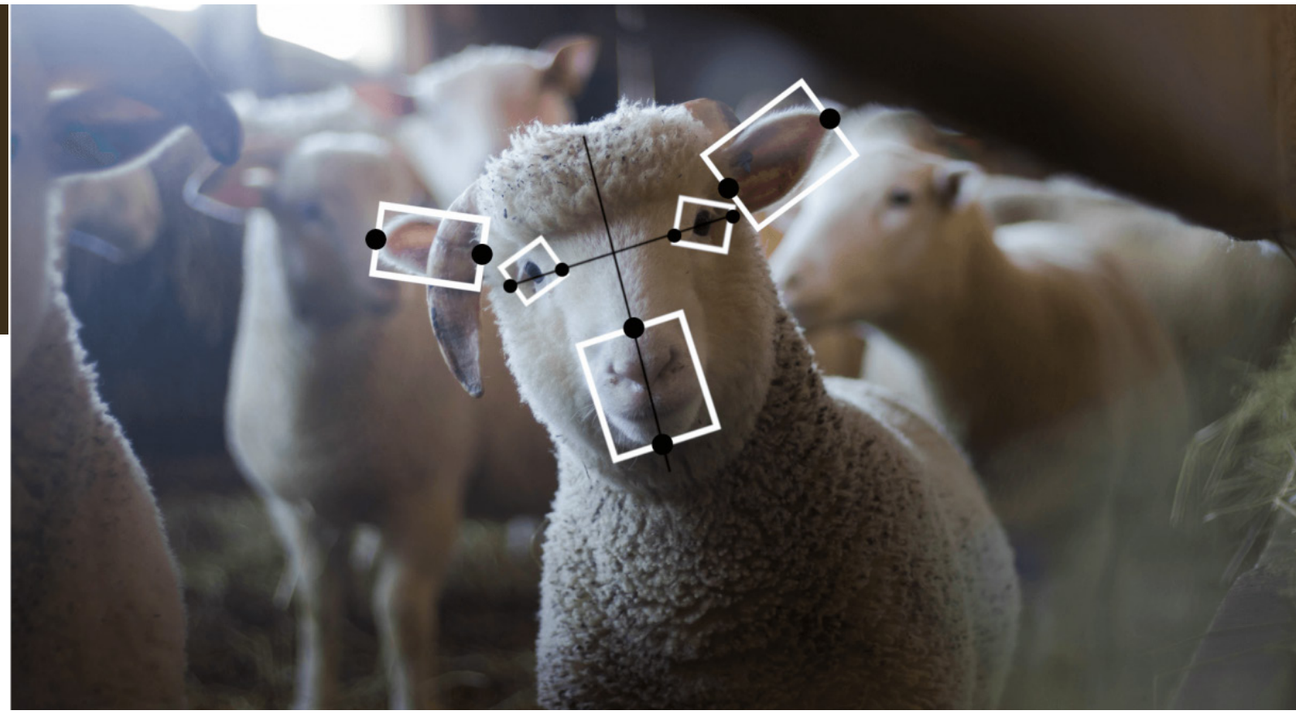

Artificial Intelligence (AI) is catching up its resurgence again after a dormancy period. AI is gaining traction across multi sectors including telecom, financial services and many other when compared to the situation an year or so ago. AI was core of chatbots since it was considered as a dangerous tool that will overtake human intelligence. Today adoption of AI by hundreds of companies move on it to utilize their data to the clouds and even it found a place in school curriculum and textbooks. The coming generations will be a springtime for artificial intelligence just like the need of driverless cars, as the intelligent machine can replicate human performance on any task. Artificial intelligence can tackle the problems with greater accuracy and speed when compared to human intelligence if wisely used.

Artificial intelligence has a significant role in achieving One Health concept on a global basis by resolving the real worldwide issues by simulating the human knowledge and reasoning skills. The concept of one health emphasise that the health of human is linked with that of animals and environment. Application of artificial intelligence for obtaining one health enables to monitor and control public health threats at an earlier stage by recognising the changes in patterns of behaviour and its relationship between human, animal and environment. AI models are well developed for various healthcare programmes like diagnostic procedures, treatment protocol, drug development especially for the development of personalized medicines, monitoring and care of patients. Artificial Intelligence also allows faster data collection and processing due to its efficient computing power. AI technology aids clinicians to detect a minute change which may go unnoticed in a routine imaging process. It can also describe and evaluate the outcome of certain surgical procedures even. Constant monitoring of patient is possible by AI devices.

Predictive modelling of electronic health records using AI in individualized treatment will be a promising tool to predict the course of disease and probable response in each patient. Adoption of artificial intelligence reduces the medical costs considerably due to its higher accuracy in diagnosis and better prediction in treatment plan as well as preventive strategies to be followed. Artificial Intelligence along with brain computer interfaces helps those patients with troubles in speaking, hearing or differently disabled by decoding the neural activities. Virtual nursing assistants can answer patient's enquiry with the use of AI and can decrease their unnecessary hospital visits.

AI models are now widely getting popular in livestock field too. Management of dairy cows based on artificial intelligence is practicing in some European countries due to its precise digital nature. With the adoption of artificial intelligence, the farm management tools becomes more specific. AI module identifies each cow by facial recognition technology and track the behaviour of them in the barn itself. The information collected is used for designing key animal and farm performance indicators, which are later informed to dairy entrepreneurs. The real time detailed analytics and daily notification help the dairy farmer to find out the loopholes and animal health issues for further action or modification of the management. Even the feeding behaviour of each animal can be monitored real time and the digitalized data can be stored for further stud ies. Thus the analytics addressing in time ensures the better welfare and productivity of the animals.

AI can be used for prediction of the occurrences of livestock disease outbreaks at an early stage itself. Seasonal and climatic forecasts based on AI for the prediction and better management of infectious diseases is a promising tool for animal healthcare sector. Analysis of disease patterns, disease maps, distribution of livestock population and study of disease impact in the environment can be achieved more effectively by AI models. The animal health management can be improved by an early detection of any disease like laminitis or mastitis before the appearance of clinical or subclinical stages of diseases. The data regarding prediction of events such as oestrus, dietary changes and behaviour tracking can be obtained from AI models implemented collar sensors. Accurate prediction of rumen fermentation pattern plays significant role for the evaluation of diets which has a role in milk production. One interesting application of AI is the prediction of carcass weight of food animals based on its zoometric measurement features and live bodyweight before slaughtering.

Artificial intelligence models can be effectively explored in other species of animals also like beef cattle, hogs or poultry. Early detection of problems in commercial production of eggs is also possible by AI technology. Convolutional neural networks based on face recognition are used in pigs to identify the animal, making them tags and distress free. Even in aquaculture, application of AI has an exciting opportunity for the effective management of fish, thereby improving our nutrition. Artificial intelligence technology also adds up the value to the supply chain of livestock products, addressing the growing interest in animal welfare, traceability and sustainability. The progressive agricultural entrepreneurs are very much interested in investment in those technologies which make a boom in near future.

The application of AI models for sustainable development and reduction of environmental deterioration will be fruitful in case of food security operations. Microsoft Corporation is rendering various agriculture services in India based on AI facility. The precision agriculture using AI technology helps to improve plants health as well as crop production. The detection of plant diseases, the causative pest, the nutrition deficiency, the identification of readiness of crop for harvesting are some areas where AI is using to optimise the resources. AI sensors can detect and target weeds and then decide which herbicides to be applied within the right buffer zone. Scanning of large crop fields by imaging enables the real time monitoring of crops in order to take rapid and appropriate actions by the farmer. Automatic irrigation techniques by AI probed machines add up the overall yield by conserving the water. Personalized recommendation for each farmer based on his land and soil parameters, weather forecast, pest infection at a specific area and the external factors like trends in marketplace, crop prices and consumer needs enable farmers to take rapid and real decisions for successful farming. Artificial neural networks with applications like differentiation of weeds from crops, forecasting of water resource variables, prediction of nutritional level in crops, prediction of crop quality and yield etc are in use in various agricultural farms across the world.