

Original Article

Artificial intelligence in Animal behaviour Analysis

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Abstract

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Artificial Intelligence (AI) is a powerful tool that assists scientists in viewing complex data on an animal and understanding how animals behave. Earlier, scientists observed animals with one's eyes. That was time consuming and subjective and could not capture many animals simultaneously. New technologies in AI, machine learning and computer vision have altered animal behaviour research. These tools can be used to automatically collect data and analyse it. They assist scientists and give them the visualization of animal movements and the detection of patterns, while also showing how animals react to each other more in real-time.

AI tools will be able to handle huge amounts of data from cameras, sensors and tracking devices. As such, they help scientists find the subtle patterns they could have difficulty seeing by hand. A number of industries have a huge use of AI in the wildlife monitoring tool, management of livestock, conservation works, and lab research.

This paper looks at the use of AI in animal behaviour analysis, its benefits and its problems. We used published articles/published journals/tech report. The results show that AI makes the studies accurate and faster, and can manage the larger scale. But there are still data quality issues, ethics and technological limits, which makes AI use challenging in animal research.

Keywords: Artificial intelligence, Animal behaviour, Machine learning, Wild life monitor, Computer vision, Zoology.

Introduction

Animal behavior analysis is an important part of the field of zoology. It observes an animal's behavior in his setting and towards others. This has benefited scientists in understanding ecosystems, evolution and species protection.

Before the advent of AI, researchers recorded what they observed when watching animals in the wild or in a controlled laboratory setting. These ways were useful, but had problems the observer could be biased, the observation time was limited, it was difficult to analyse many records.

AI offers new opportunities to study the behavior of animals. Machine learning, deep learning and computer vision have the capability to quickly and accurately process large amounts of data. They can automatically move over tracks of animals, look for patterns and flag weird behaviours.

AI is now playing a key role in the field of wildlife conservation, animal welfare checks nature and farm management. With automation, the scientists can do big studies that were impossible with old methodology.

Objectives of the Study

The main goals are:

Understand what is meant by artificial intelligence in zoology.

Study on how AI is being used in animal behaviour analysis.

Look At Industries Where Artificially Intelligent Beings Can Be Used: Wildlife Monitoring, Animal Research Can Be Uses Of Artificial Intelligence.

Seek the advantages of behaviour study using Artificial Intelligence.

Consider the issues of AI being used in the work of animal behaviour.



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Research Methodology

Research Design Descriptive Research The study follows descriptive research methods.

Sources of Data

1. Scientific journals involving zoology and animal behaviour
2. Papers on AI applications
3. Reports on conservation of wildlife
4. Online academic databases

Concept about Artificial Intelligence

AI means computers are capable of doing things that normal humans are likely to do, the work that normally requires smart thinking. These tasks include learning, seeing patterns, making decisions and solving problems.

In animal behavior study, AI helps in processing the pictures and the sensor data to find out the patterns in the movement and activities of the animals.

Electronic controls in Franz Feller's FC-YII animal behavior experiment:

1. Machine Learning
2. Deep Learning
3. Computer Vision
4. Neural Networks
5. Automatic Tracking Systems

These tools allow researchers to manage large data sets in a short amount of time.

Applications of AI in Analysis of Animal Behaviour

1. Wildlife Monitoring AI can analyse photos and videos from camera traps and give a name to the species as well as observe how they behaviour in the wild.
2. Animal Movement Tracking Machine learning can be used to track animals that have GPS collars or other sensors.
3. Livestock Management AI tracks farm animal's health wise, what they eat and where they move around.
4. Laboratory Animal Studies AI aids in examine mouse, rat and other lab animals behaviour in a controlled environment.
5. Conservation Biology AI helps in finding endangered species and keeping a track of the changes in their numbers.

6. Advantages of Artificial Intelligence in Animal Behaviour Studies

1. Better Accuracy AI is able to see patterns in data more accurately than humans.
2. Time Saving AI works fast on big data sets.
3. 24/7 Monitoring AI watches animals all the time without the help of humans.
4. Less Human Bias Automated analysis lowers the number of mistakes from the observers.
5. Large-Scale Study AI allows scientists to study over broad areas of animals.

7. Problems of AI in Analysis of Animal Behaviour

1. Data Quality AI requires tons of good data in order to be accurate.
2. Tech Limits Good AI requires high-cost computers and software.
3. Ethics There are privacy and care issues when watching animals with the help of AI.
4. Weather Rain, fog and other weather can impact on data.
5. AI Missteps AI may fail to interpret complicated actions if it does not have enough.

Role of AI in Conservation of Wildlife

AI is more applied to protect the endangered animals and prevent the illegal use of animals. For example, the A.I cameras can see the animals moving and can alert people about the threat such as poaching.

Models can also make a guess where animals will move and what places is like enabling people to protect the right habitats.

Findings of the Study

1. AI opens up a way to study the behavior of animals faster and more accurate.
2. It allows scientists to observe animals in the wild twenty-four-hours a day.
3. Models can discover difficult patterns of behavior.
4. AI has huge scope in preserving wild species, and farms.
5. Data quality/tech limits - are big problems still

Suggestions

Make better AI systems that made for studying animals.

Work more closely with animal study works and computer experts.

New sensors and cameras, take better data.

Set rules of how animals could be watched by AI and not hurt them

Mix biology and AI in order to work on research.

Conclusion

AI has altered the behavior study of animals according to another research by providing some powerful tools for collecting and automatically look at data.



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Tools such as machine learning and computer vision enable scientists to better and more quickly study animal behavior than by observing.

Even though there are some problems, putting AI into zoology can greatly help conservation, except care in farms and understanding the ways of animals act. As tech continues to grow, AI will play an even bigger role in science aspects and protecting biodiversity.

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