An advance planning for the smart animal care and Executive system based on Artificial Intelligence

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***Abstract*— There are several animals in Dairies where some are kept in fence so as they cannot run around and get lost the most important things is animal care and management in the Dairy. The basic task of it can include as space, breeding, healthcare, diet plan and medical care. Some of the animals are very big were some are small so they so need proper diet plan and medical care. The caretaker should be very skilled to operate various tools needed to care of animals. It need much more time to do so and this will lead to heavy work freight on the caretaker. Therefore, to reduce the work load of caretaker as well as to monitor the animals and there medical, healthcare these studies suggest an advance plan for the smart animal care and executive system based on artificial intelligence. The main Moto is to mechanize some deadly procedures for caring animals through AI to help caretaker of animal to manage them more efficiently.**

***Keywords*— caring animals through AI, Dairy, artificial intelligence, mechanize, smart animal are care .**

I. INTRODUCTION

A. This Introduction to animal care using various devices

There are many Dairies that take care of animals there are various animals in the Dairy that run around or get lost so they are kept in fence. These animals may be very big or small so they needed a proper space and proper healthcare should be taken as well so the animals should not get any diseases and if so get cured by calling doctor. Livestock is animals rise for rural reason. Livestock plays an important role in Indian economy. About 20.5 million people depend upon livestock for their livelihood. Livestock contributed 16% to the income of small Dairy households as against an average of 14% for all rural households. Livestock provides livelihood to two-third of rural community. It also provides employment to about 8.8 % of the population in India. India has vast livestock resources. Livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP.[1] All through there are various animals in Dairies any animal can go any were so to keep monitoring this system is useful.The animals offer social security to the owners in terms of their status in the society.

The families especially the landless which own animals are better placed than those who do not. Gifting of animals during marriages is a very common phenomenon in different parts of the country. Rearing of animals is a part of the Indian culture. Animals are used for various socio religious functions. Cows for house warming ceremonies; rams, bucks and chicken for sacrifice during festive seasons; Bulls and Cows are worshipped during various religious functions.

Many owners develop attachment to their animals. [2]There are various technology help full in analyzing animal behaviors the one among them is artificial intelligence there are still many gadgets that carry out smart animal concern and many further things based on IoT devices. They analyze the different patterns of animals behaviors and there sound and store them in the databases.

This smart care system will include some Iot and AI devices so as to take care of animals it will help the caretaker to work in effective manner without taking much work load and can easily monitor animal. This system is projected to attain subsequent goals:

- Use of different networking devices for continuous weight monitoring of animals.
- Automate feeding and climate control to have a better place to live in.
- Caretakers workload will be reduce and can monitor animal easily.
- Tracking animals becoming in the case if they get's lost.
- Will help to preserve the extinct species and the current species.

B. Development of smart animal care and executive system

In order to fit the smart system in Dairies to take care of animals and there environmental conditions or climatic conditions the system developed by the study is mainly to provide "Smart management" and deadly operation that are carried out by the caretaker and some activities that are not carried out by the caretaker. Therefore AI deep learning technology, cloud database and cloud computing will be used to help caretaker to understand the individual diet, activities, health, etc. The extra labor cost of the Dairy will be reduced to some extent and the quality life of animals will also be increased. This system uses Arduino and Raspberry Pi the overall system design is shown with their basic function and implementation.

1) Animal medical signal sensing and collections :

First of all, we must heck the sensor that they take proper reading of animals body temperature, heartbeat, activities, etc. if proper then it will store the data in cloud database individualized

for every animal and then this data is then analyzed through AI methods.

2) Climate sensing and control :

We are using various sensors here like temperature and humidity sensor, air quality sensor, sound sensor, etc. to detect the climatic or environment of animals and provide a better or suitable environment as per there need for example: Consider that the temperature increases more than 25 degrees, turn on the sprinklers so as to get the proper temperature that has been controlled.

3) Clean food residue:

The food which has not been eaten by animal should be analyzed and the remaining food should be cleaned automatically and then it should be treated so there should not be any infection to that animal.

4) Automatic Weighting:

The weight of the animal will be monitored and stored in database and analyzed by AI methods if the animal's weight decreases from the minimum set weight then the care taker will get the notifications or warning.

5) Automatic feeding:

There is fix feeding time of animal and when the specific time is arrived, the food is automatically delivered or sends to the animals.

6) Real time monitoring animals and tracking their positions:

Using camera we can monitor the animals and track the position of animals using positioning devices.

- *AI deep learning for animal behavior and status of health care and analysis:*

Every day gets stored in cloud databases each health care data is immediately monitored through AI. If there is some abnormality in animal's behavior then it will notify and alerted the caretaker.

- Existing system of smart animal care and executive system.

This system can be implemented using the following related technologies:-

- Beacon

It is a best technology that runs on low energy. It basically uses Bluetooth which is inexpensive as compared to other devices. It can be arranged in various fields and dairies. This data is then stored in cloud. This data then can be analyzed for individual animal. Normally, they have used Beacon to read the information from the equipment on the animals. This will help to reduce loss of animals.

- Local Area Network (LAN) Implementation

It is a connection of computers network or networking devices. It is used within a limited area such as Dairy, School, Stable, etc. We can arrange it in such a manner that the Internet can be access by sensing devices which are present on animal's body and this data of animals is stored in cloud. The Local Area Network is used to transmit signals and positions measured by the devices as well as activity status and health quality.

- Arduino and Raspberry Pi

Both these are IoT devices which have low cost, simple device Actuator for building digital devices and interactive object that can interact with environment.

E.g. If the temperature is low, then the humidity sensor will sense and automatically turn on the heater.

The Raspberry Pi is easy to obtain, easy to carry, simple to install. It is generally Linux based single chip computer that can access Internet. Its Operating System (OS) is open source. It is called as Raspbian OS.

- Artificial Intelligence (AI)

After receiving the data from the sensors present on Animal body and the environment, this system hopes to help the caretaker to analyze the behavior and state of animal through AI. It generally used Deep Learning Architecture to identify the animal'simage, motion and its voice. The basic structure of Neural Network is shown in figure 1

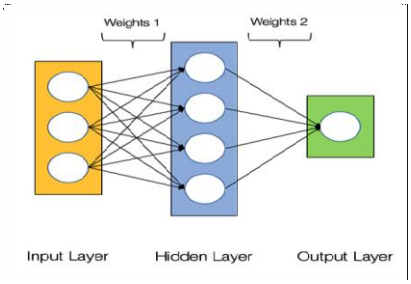

Fig. 1. Neural Network. [7]

- Cloud Database and Cloud Computing

Cloud is used to store the data of various formats. It is normally cost effective. The data that has been gathered by the sensors present on the animal's body will send the data to the data to the Cloud. This data is based on individual animals. The data is then analyzed by AI methods individually for each and every animal. It will speed up the system and no need to worry about the maintenance of the system.

II. REVIEW OF LITERATURE

In order to enable the animal administrators to take care of each animal in an efficient manner, the architecture was developed by this study is mainly to provide "intelligent management" operation and corresponding measures for the control of the zoo, with particular emphasis on animal administrators learn about animal information. Therefore, IoT technology, AI deep learning technology, cloud database and cloud computing will be used to help animal administrators to clearly understand the individual species, diet, physiological status, mood, feed trough storage, water volume and other information. The labor cost of the zoo is reduced, the efficiency of the animal administrator is improved, and the quality of life of the animals in the zoo is improved and guaranteed. In order to reduce costs and facilitate implementation, the proposed intelligent animal care and management system architecture will be implemented with Arduino,Raspberry Pi, beacon, Wi-Fi, local area network, AI, and various communication technologies such as cloud database and cloud computing. Through the use of these technologies, some cumbersome procedures for caring animals are automated through the IoT and AI to help animal administrators to systematically care for and manage animals, such as sensing the body temperature, mood, activity, and

activity status of animals, surrounding environment and position. There were various modules that were used in this system.[6]

The data that was collected from Arduino and Raspberry Pi was send to Animal administrator with the help of Beacon.

Beacon [10-12] is a technology that uses low energy Bluetooth 4.0, which is a small and inexpensive physical device. We can arrange it in various fields or dairies to send information to mobile devices or equipment within a certain distance to achieve message transmission to neighboring animals. This data is then also store to the AI cloud and then analysed with the help off some AI methods and then forwarded to real time animal care and management. The main goal of the existing system was to take care of animal in smart manner .(i.e.

Proper healthcare,diet,food residue cleaning, automatic feeding,climate control,etc)

III. METHODOLOGY

Though India maintains its position as word's top milk producer, with production of 176.3 million tonne milk production in 2017-18, more than 50% of the marketable surplus is still handled by the unoranised sector. the total milk produced in rural areas around 52 per cent is the marketable surplus. Of this surplus less than half of the milk sold is handled by the organized sector comprising of dairy cooperatives and private dairy companies and the rest by the unorganized sector.[8] According to my survey the overall percentage of death of animal due to food and some of the diseases has been increased upto 65% to avoid this the system is designed.

This system basically deal with automatic feeding,climate control,Weighting, leaning food residue,etc. In order to reduce the death of animals and to provide proper diet of animals and to maintain there animals.

IV. MOTIVATION

Suffering includes wide range of unpleasant emotional states such as fear, boredom, pain, and hunger. Suffering has evolved as a mechanism for avoiding sources of danger and threats to fitness. Captive animals often suffer in situations in which they are prevented from doing something that they are highly motivated to do. [3] The "price" an animal is prepared to pay to attain or to escape a situation is an index of how the animal "feels" about that situation. Withholding conditions or

commodities for which an animal shows "inelastic demand" (i.e., for which it continues to work despite increasing costs) is very likely to cause suffering. In designing environments for animals in zoos, farms, and laboratories, priority should be given to features for which animals show inelastic demand. The care of animals can thereby be based on an objective, animal-centered assessment of their needs. [3]

V. PROPOSED SYSTEM

The proposed system will help the caretaker to reduce the work load and then this data will be stored in cloud then this data will be analyzed by AI methods each animals data will be stored in separate mode to check the healthcare of each and every animals.

This system will generally monitor the weight as well of every animal they would be no need of extra workers in an organization. Climate control plays an important role as well in this system. The behavior of the animals will also be recorded and they can be tracked using various devices. The main highlight of the system is pseudolite. These devices are very small they are transceiver that is used to create a local, ground-based global positioning system. The range of these devices depends on how the power is available to the unit. Normal GPS system is generally blocked or jammed. If the weight of an animal decreases then a warning should be provided to the user so as to provide proper vaccination to the animal by the caretaker through some doctor.

As there are devices that are present on animals body so the caretaker can easily get the proper location of the animal and the animals may not get lost. Caretaker can easy monitor each and every animal using camera as well. Cloud storage can be used to store the data as it is cost-effective and large amount of data can be stored in it. The working of proposed system is shown below in the figure2:

A. Working of the system:

Smart animal care is the best expected system as it will take care of animals without need of many humans and reduce the workload of humans it will properly monitor the health of animals as well as the weight there will be continuous monitoring through camera that is connected to raspberry Pi and the Pseudolite will help caretaker to get the proper location of any animals in his dairy or stable so that any animal doesn't get lost or die due to any issues.

Arduino sends the data to Raspberry Pi and then both data will send to the cloud. Cloud is basically used to store the data of any format it is inexpensive as compared to others. Each animal's data is stored individually or separately in the cloud database then this data will be analyzed through AI methods

VI. RESULT AND DISCUSSION

As this system is based on animals care it will continuously monitor the animals health and weight if any abnormal things in behavior of animals it will be notified to the caretaker the work load o the care taker will be reduced and there will be no need of extra workers the purity of milk will also be determined in this system The population of cows in the country has risen by 18 per cent in the last seven years, while that of oxen dipped by 30 per cent, according to the latest census of livestock. The total number for livestock was pegged at around 536 million.

Among the States, Uttar Pradesh has the highest number of livestock of 67.8 million (68.7 million in 2012), followed by Rajasthan 56.8million (57.7 million), Madhya Pradesh:

40.6 million (36.3 million) and West Bengal: 37.4 million (30.3 million).

Total livestock in the country, goats accounted for 27.80 per cent, buffaloes: 20.45 per cent, sheep: 13.87 per cent and pigs: 1.69 per cent. As compared to the previous census, the percentage of sheep and goats has increased whereas the percentage of cattle, buffaloes and pigs has marginally declined.[4] this will to reduce disease spread by one animal to another and can increase the profit to some extent.

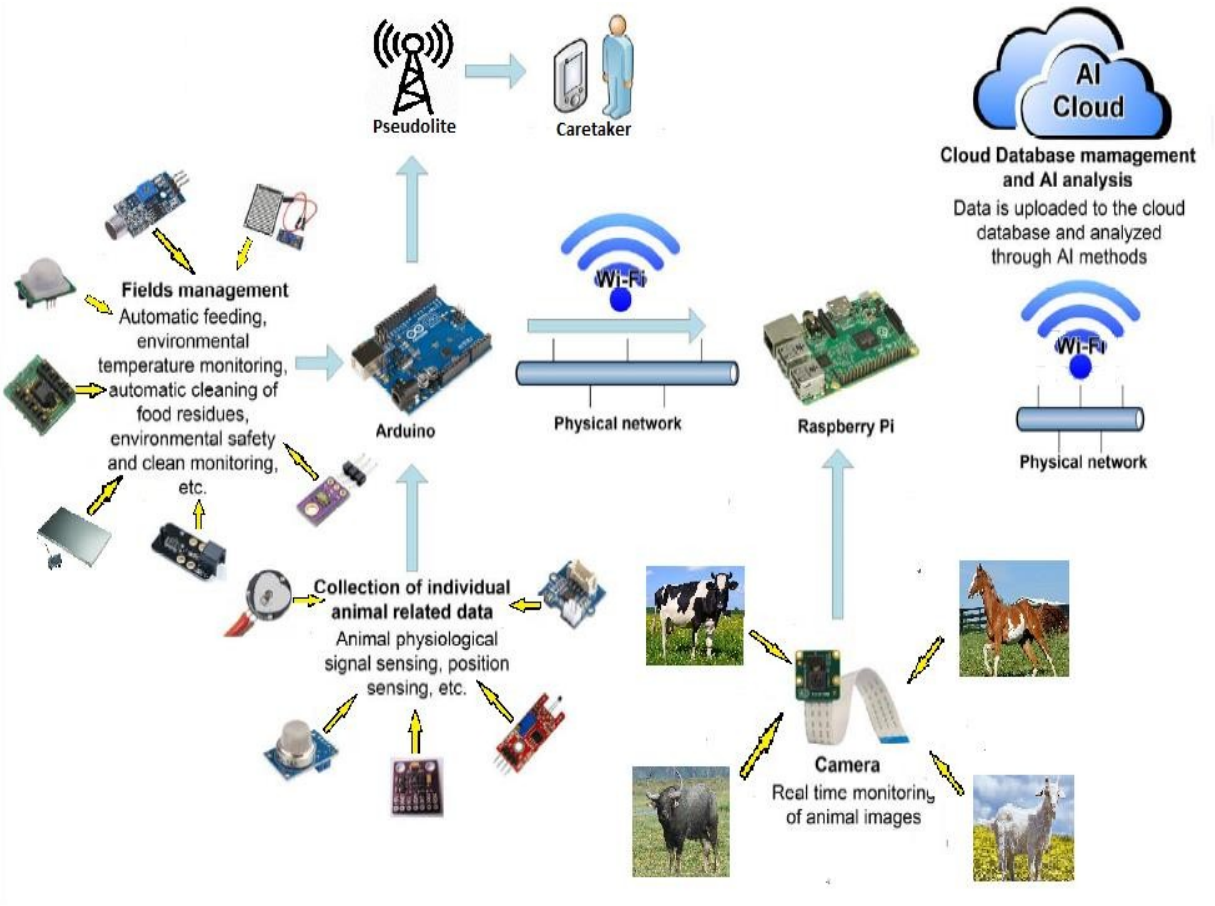

Fig. 2. Working of smart animal care system

VII. CONCLUSION

As this will reduce the work of caretaker and the animals will also be saved there is no need of extra workers in the field or stable the climatic control f it will also not affect the animal heath and if so proper vaccination will be provided to the animals automatic food residue cleaning will also help animals to be healthy the data that is present will be analyzed by the caretaker. As the average animals die due to no food or get's lost so there are some tracker present on their body the pseudolite will help to create ground based gps system this will easily help us to track the position as well as the motion of the animals we can also continuously monitor animals through our cameras present in that areas. This will probably reduce the deadly task that has to be done by worker. This system need to be more cost-effective and need to add some more technologies that will be present in future as animals are the part of eco-systems.

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