ROBOT CATTLE AND POULTRY FEEDER

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Abstract

Many people in developing countries still use driven machine for cutting cattle feed and distributing it manually. These machines become less safe to the person while operating and it requires more skilled labour for operating. The main barriers are lack of labour and blockage of grass creates feed interference. Now-a- days efforts have been made by developing countries to promote automation in feeding systems. Various types of feeding machines are available in the market but these technologies operate at a very low efficiency and consume more power and leads to the wastage of feed (crops). A number of different types of AFS are currently used, because of their potential of reducing labour time and workload as well as more flexible working time. Furthermore, farmers focus on the benefits for their animals, where Food and feeding are the important elements for growth and production. The cattle need to be fed. It is a simple statement, but one that resonates with every cattle producer. To make this necessary task easier for farmers, the concept of automatic cattle feeding system came into existence. Automatic Cattle Feeding System is a robotic feeding system which consists of a battery operated robotic vehicle that is capable of feeding an equal amount of feed. All the existing equipment are largely for large scale cattle and poultry farms. But there is no machine for small scale cattle or poultry farms where the human labour is used for feeding the cattle. Our project aims to feed small scale Dairy and Poultry farms as there is no advanced technology that makes things easier for the farmers. Our project can help the farms to cut excess Human labour and also excess strain that affects their body.

1. INTRODUCTION

The cattle need to be fed it is simple statement, but one that resonates with every cattle producer.to make this necessary task easier for farmers, the concept of automatic cattle feeding system came into existence. The feed is manually loaded in the feeder and it follows the feed fence through a pre-determined route until it reaches the feeding fence at a pre-

determined distance where it places the feed through a sliding door. to ensure the precise, timely and adequate feeding of cattle of each group,this project is applicable in an agricultural country like Nepal where the lack of manpower in cattle farming has an adverse effect on dairy production. The main objective is to design an automatic cattle feeding system that moves around the fence to distribute the feed uniformly. It is not typically feasible for a dairy producer to feed their cattle many times throughout the day. The robot provides a better feeding system while freeing up the farmer to complete other tasks. It improves farm efficiency and cattle performance. The robotic feeder has been around for 11 years in Holland. It is being used on approximately 100 dairy farms and beef feedlots worldwide. So in the same if it is made for the small scale farms it would be more efficiently used. The machine is controlled with a touch screen phone or computer. It can be synched to your smart phone or tablet with an app that features the same program and screen as seen on the robot itself.

2. RELATED WORK

This literature studies the various technologies that are used worldwide in the robotic feeding machines. The first automatic feeding system is known to be introduced by Val metal. The robotic system was fully managed by a PLC capable of articulating and coordinating on its own all of the farm equipment of a dairy farming. Till the present date, Val metal is the company with the largest number of automated feeding system. The system consisted of a control panel assembled by one of the Val metal Group of companies "Controls -A-Tech Drummond" consisted of a PLC, a touch screen, a weighting system and other necessary equipment for conveying feed. In 1993, Pallone introduced its first feeding robot, Concentrate Feeder Robot. It was a simple solution to manually dropping feed to cattle in a certain proportion. The concentrate feeder robot assured accurate proportioning. After three years of implementation of the concentrate feeder robot, Pallone introduced Combo Robot to consider concentration as well as the quality of feed. The latest feeding system by Pallone is Feedline Automatic System. The system has its own Pallone Graphics that is independent of computer graphics or internet connections. The farm owned by Frank Murphy and managed by Ainge Sweeney was the first beef farm to introduce the Lely automated feeding system.

3. IMPLEMENTATION

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in course of care and management of farm animals by humans for profit. Supply of quality feed ensures thehealth of animals. Animal feed is the food given to animals which are domestic often refers to fodder in course of care and management of farm animals by humans for profit. Supply of quality feed ensures the health of animals. Various feeds include poultry feed, sheep husbandry,

cat food, pet food, pig farming, cattle feeding, dog food, equine nutrition and bird food. In order to provide animals with necessary nutrients to meet their requirements for maintenance,

growth, pregnancy, and production of milk, to reduce the risks of animal health and to minimize

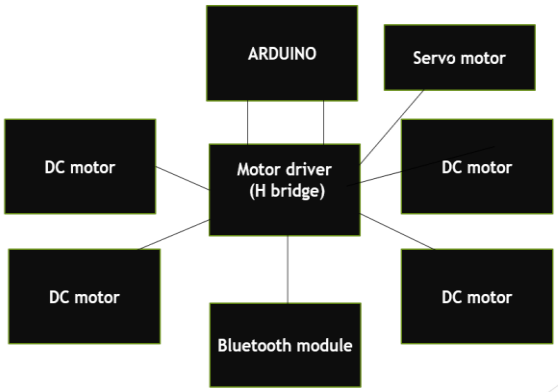
excretions and emissions into the environment, the chemical composition of cattle feed used in

the diet has to be precisely known.

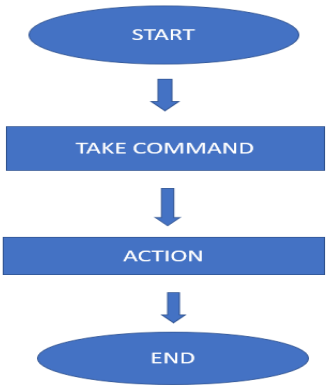
The cattle consume much more basic feed which provides more milk;The silage bales are prepared and in addition the feed is transported. To make a feeder which can be used to feed cattle in small scale dairy farms. Making a user friendly cattle feeder for the small scale cattle farms as there is no specific machinery to feed cattle in small scale farms. For this we have designed a feeder which can be controlled by mobile and dump the feed near the cattle and can be used in small scale where the load often lies in 5 to 10 kg range. To make a Bluetooth controlled mobile feeder which can be controlled using mobile via Bluetooth. Due to no Feeding machines in small scale farms, we developed a small feeding machine through which farmer can easily feed the cattle or poultry with minimum labour.

Methodology

The system consists of 2 DC motor, 1 Arduino Uno,1 motor driver and a Bluetooth module all handled and controlled by L298 Motor Driver. The lower section of the feeding system is simply a Bluetooth controlled robot moving on 4 wheels operated by DC motors M1, M2 are connected to the L298 Motor Driver. The upper section of the feed system is the feed distributor. Motors used for the sliding door which will open for feed distribution on the pit. The overall system is controlled via an android application which communicates with the system via Bluetooth Module. We are going to make a robot which can carry the load and is driven by arduino and is controlled via Bluetooth i.e it can go left and right and the user can also control the amount of fodder being dumped using his mobile. It is very simple to use and also very compact as it can go through tiny places as well.



Design Description



Flow Chart

4. EXPERIMENTAL RESULTS

Farmer will be able to feed his cattle and birds easily with minimum labour and cost .Proposed cattle and poultry feeder with a mobile robot. The robot is connected to the mobile using the HC-05 Bluetooth module and the required app is installed in the mobile. The proposed model can be used in small scale farms up to 12 meter radius and the flow of the feed can be controlled by using the gate(servo). The user can just use the robot with a tap on his screen and the model is tiny and strong enough to fit through small and bumpy places. It can carry a load around 10 kgs which can be feeded to 7 cattle or dozens of hens at once This way, the farmers in small scale farms where there is a lot of work to do can be minimized to a single person using a mobile by cutting all the labour cost and also lowering the expenditure and also save time and money and it also helps the farmer by not giving him much stress to his body and see a great profit

5. CONCLUSION

We can achieve a faster feeding process and the work can be done without much human labour one person can do the job and it saves the money for the owner. This can be user friendly and the device can be

used in the small scale cattle farms and poultry farms. With our design we can feed the cattle in small scale as well where the worker don't have to work hard as before. Our model is perfect for very small scale farms and load it cannot have more than 12kgs.Our project not only can be used to feed cattle and poultry but also can be used to transport small weights through rooms which can be helpful for people with disabilities and also be used in hospitals for transporting foods to covid wards and patients and can be modified to clean the rooms and also disinfect the rooms which is very important in times if covid and it can be very helpful for people with disabilities as well.

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