



AUTOMATIC PET FEEDER

Prof Chaithra T S¹,

Bhavana C P², Bhoomika B N³, Darshan S Hattali⁴, Devika Y S⁵

Assistant Professor, Electronics and Communication, East West Institute of Technology, Bangalore, India¹

Student, Electronics and Communication, East West Institute of Technology, Bangalore, India²⁻⁵

Abstract: The motive of our mission is to offer a simpler and extra efficient way for the pet owners to feed their pets. The system makes use of Internet of Things and Digital Image Processing for implementation. At First, In the project a pet call is provided using a recorded voice through a speaker to indicate feed time of the pet is initiated. The Ultrasonic Sensor is placed in order to detect the pet in front of the system. Once pet detection is done the camera is switched on and Camera captures image of the pet and processes. If the pet is recognized as required pet, a dc motor will be activated to dispense food.

Keywords: Automatic Feeder, Computer Vision, Digital Image Processing, Neural networks, Pet Food Dispenser.

I. INTRODUCTION

Nowadays, people tend to be busier and due to these beings tend to overlook additionally a number of their obligations which might be the primary purpose of trouble One of those obligations is having a puppy at home. Most humans need to have their personal pet for its appealing appearance, loyalty and playful personality. Having a puppy is a responsibility which doesn't go into waste because having a puppy serves enjoyment and employer at domestic One foremost trouble within the gift society is the people's busyness. It is one major reason why puppy proprietors devote irresponsible deeds with regards to looking after their pets. Their pets appear to be on the bottom listing of their priorities. One important factor on puppy care is feeding. This is in which this challenge is available in movement in which a Digital Image Processing primarily based food dispenser will be activated on pet detection and recognition.

The motive of our mission is to offer a simpler and extra efficient way for the pet owners to feed their pets, even when they may be now not at domestic and when they are no longer capable of manipulate remotely. Specifically, the purpose is to construct a design which can automatically discover specific pets, healthy the detected pets with the modern stored pet profiles and dispense the right sort of meals at the person precise quantity. A critical point is that the pet feeder can help pets from distinct species. The meals boxes and food plates are all separate in order that the person can put distinctive ingredients for distinctive pets. Man-made has been seeing a grand development in overcoming any issues between the capacities of people and machines.

Specialists and fans the same, chip away at various parts of the field to cause astonishing things to occur. One of numerous such regions is the space of Computer Vision. The motivation for this field is to empower machines to see the world as people do, see it likewise and even utilize the information for a huge number of assignments, for example, Image and Video acknowledgment, Image Analysis and Classification, Media Recreation, Recommendation Systems, Natural Language Processing, and so on. The progressions in Computer Vision with Deep Learning has been developed and idealized with time, fundamentally more than one specific calculation a Convolutional Neural Network.

II. METHODOLOGY

Animal Detection is the process of finding real-world animals in still images or Videos. It allows for the recognition, localization, and detection of animals within an image. Animal Detection can be done via multiple ways: Feature- Based Object Detection, Viola Jones Object Detection, SVM Classifications with HOG Features and Deep Learning Object Detection. The Above diagram illustrates the proposed block diagram we are implementing in the project. The Arduino IDE is the controller we are employing in the system. The Arduino IDE is a basic embedded system and being a low-cost single board computer used to reduce the complexity of systems in real time applications we have used the board. At First, In the project a pet call is provided using a recorded voice through a speaker to indicate feed time of the pet is initiated.

The Ultrasonic Sensor is placed in order to detect the pet in front of the system. Once the pet detection is done using an ultrasonic sensor, the camera which is connected to PC is switched on and Camera captures image of the pet and processes. If the pet is recognized as required pet, a dc motor will be activated to dispense food. The dc motor is rotated to serve food and the rotation is controlled by H-Bridge. The diet of pet can be controlled by dispensing a proper amount of food. This is done by controlling the rotation of dc motor. And then loadcell is used to detect the presence of food in the bowl. Also, when the food starts to decrease than the set point value, the load cell detects and a message will be sent as pet is fed. This System is implemented to feed one pet or more than one pet of either same species or different species using Image processing. The project implemented is for pets of different species.

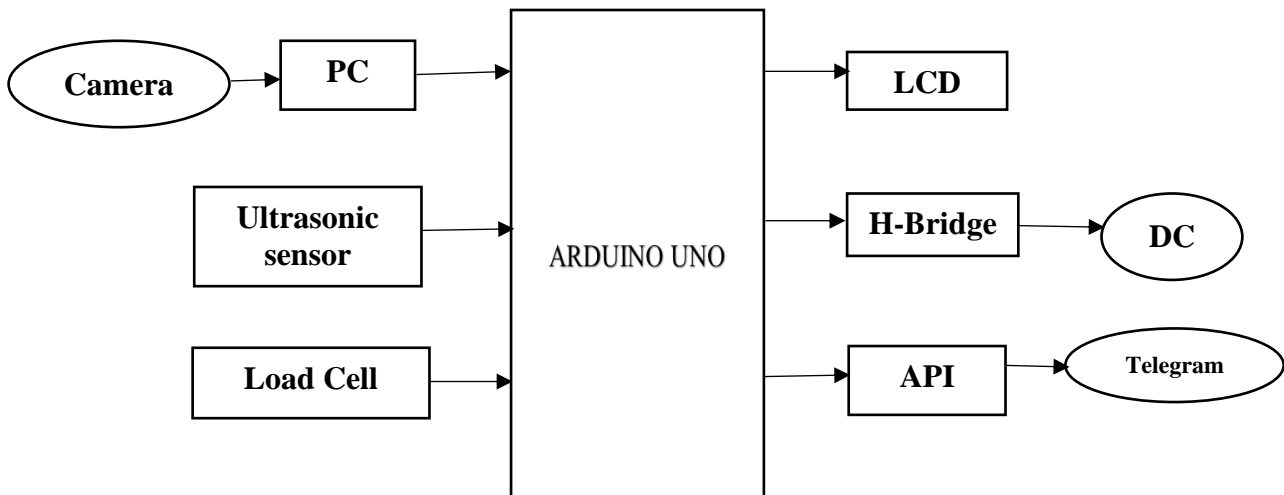


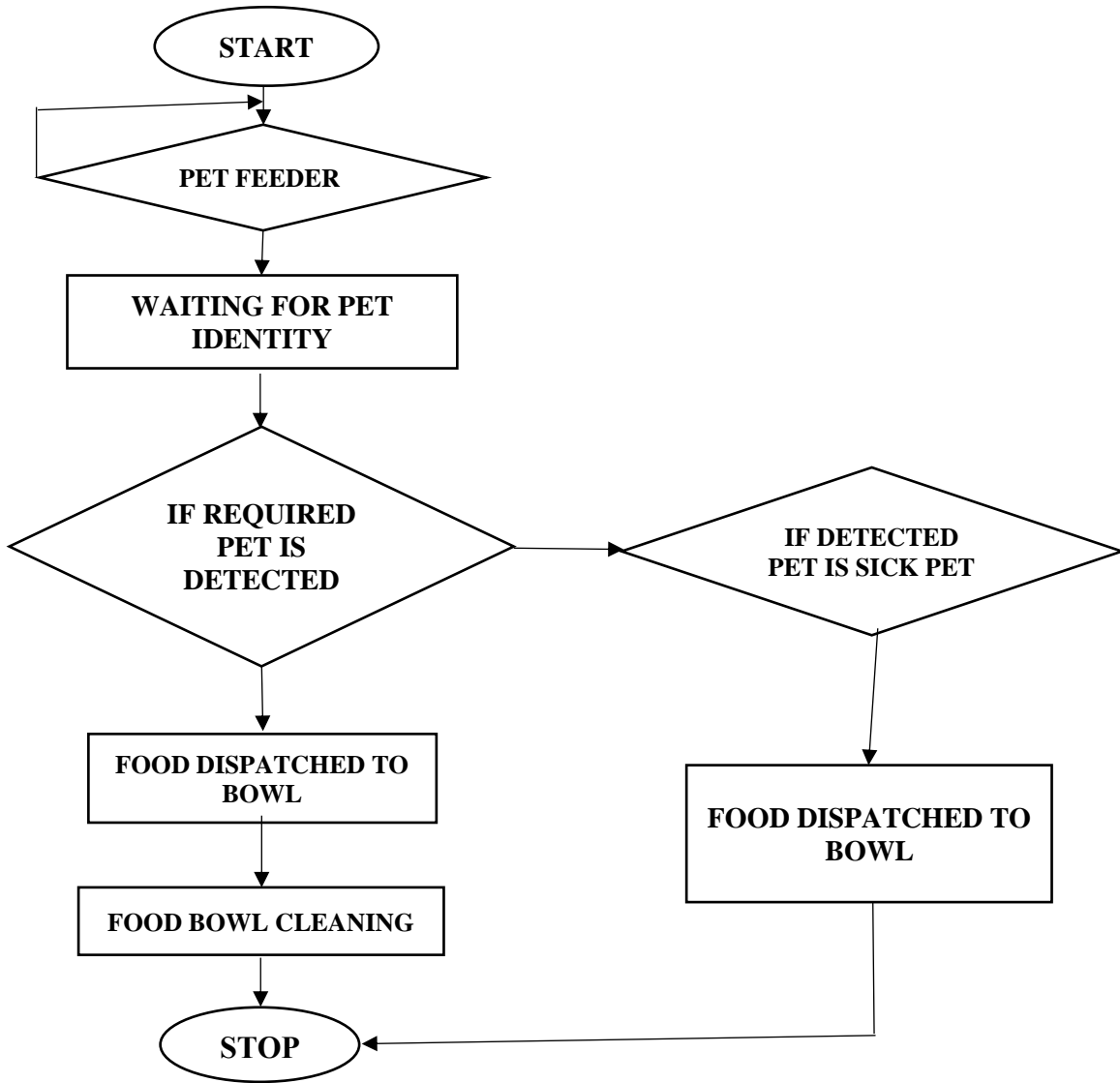
Fig 1: Block diagram of automatic pet feeder

Hence, we have employed dc motors to dispense different kinds of food for different pets. So, food containers and food bowls are provided in this design. Once the required pet is fed successfully, the message will be sent to the owner's mobile number using a Twilio API and the message sent to telegram through node MCU. Pets Detection and recognition is done using Convolution Neural Network technique. For model training first we need create dataset. TensorFlow Object Detection API uses the TF Record file format, so at the end we need to convert our dataset to this file format. TensorFlow is a free open source software library for data flow. To prepare the input file for the API you need to consider two things.

- 1) Image must be in the form of jpeg or png.
- 2) we need a list of bounding boxes for image and class of the object in the bounding boxes.

III. IMPLEMENTATION

- The proposed Flow diagram we are implementing in the project.
- The Arduino IDE is the controller we are employing in the model.
- The Ultrasonic Sensor is placed in order to detect the pet in front of the system.
- The camera which is connected to PC is switched on and captures image of the pet.
- If the pet is recognized as required pet, a dc motor will be activated to dispense food. The dc motor is rotated to serve food and the rotation is controlled by H-Bridge.
- The diet of pet can be controlled by the DC motor and loadcell which weighs the amount of food in the dispensing bowl.
- When the pet is detected using camera message will be sent to telegram through API.



IV. RESULTS ANALYSIS





This design of pet feeder provides the features which will make pet care more convenient for both owner and the pet this system also provides all the information about the pet's feeding like is it taking feed or not, is it taking feed in proper quantity or not which help in get rid of over feeding problem. This design also helps in stopping wastage of feed by providing the left feed first. And as go for the advancement some of the features can be modified as using camera at place of sensor for priority feed of pet.

V. CONCLUSION

Each pet owners lifestyle is not the same, some may use their residence in the house to feed the pets, but some may not have residence or time to do. This proposed pet-food feeding machine is the solution to the problem and helps taking care of their pets more conveniently.

REFERENCES

- [1] "Intelligent Food Dispenser (IFD)" Hari N. Khataavkar, Rahul S. Kini, Suyash K. Pandey, Vaibhav V. Gijare, 2019
- [2] "Digital Image Processing-A Quick Review" R. Ravikumar, Dr. V. Arulmozhi, 2019
- [3] "A Remote Pet Feeder Control System via MQTT Protocol" Wen-Chuan Wu, Ke-Chung Cheng, PeiYu Lin, 2018
- [4] "Automatic Pet feeder" AasavariKank, Anjali Jakhariye, 2018
- [5] "Pet Feeding Dispenser using Arduino and GSM Technology" Smruthi Kumar, 2018
- [6] "Automatic Pet Monitoring and Feeding System Using IoT" S.Subaashri, M.Sowndarya, D.K.S. Sowmiyalaxmi, S.V.Sivassan, C. Rajasekaran, 2017
- [7] "Remote Controlled and GSM Based Automated Pet Feeder" Prashant Singh, Amit Kumar Sharma, PayalSood, Paramdeep Singh, 2015
- [8] "Automatic Pet Feeder" Manoj M, 2015
- [9] "Smart Dog Feeder Design Using Wireless Communication, MQTT and Android Client" Vania, KanisiusKaryono, Hargyo Tri Nugroho I, 2016
- [10] "Programmable Pet Feeder" TessemaGelilaBerhan, WorkuToyibaAhemed, TessemaZelalemBirhan, 2014
- [11] R Sindhoori, "Digital image processing. Multi feature face recognition in PSO -SVM" SSRG International Journal of Electrical and Electronics Engineering 1.3 (2014): 1-6.