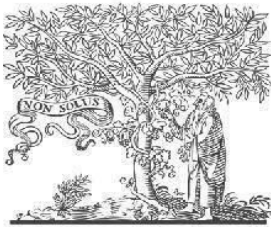


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ADVANCED GPS TRACKING AND FOOD DISPENSOR SYSTEM FOR PETS

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ABSTRACT

In today's perceptive, pets have become a valuable member of a family. However, the prevalence of pet lost poses a significant risk, often attributed to carelessness of parents/owners. To address this, a proposed system utilizing a microcontroller (Arduino), a GPS (Geo Positioning System) Module, a GSM Module and a Pulse (Heart beat) sensor aims to augment safety for both pets and parents/owners. The system's core relies on the GPS module's capability to detect the location of pets when it is lost or escaped. If the pet escapes beyond the geo-fencing area, it collects the location (in the form of latitude and longitude) and pulse (heart beat) rate with the help of GPS module and Pulse sensor respectively and sends those details to the owner with help of GSM module, later on the owner map those co-ordinates into real time map. This innovative approach seeks to proactively address the problem of losing pets, mitigating pet losing/dying risks and fostering a secure and healthy pet. Its implementation holds promise in significantly reducing pet losing problem, ensuring safer and healthier pet keeping and adoption. The smart feeder dispenses precise portions, remotely controlled through the BLYNK IoT app which gives the user complete control of the system and includes sensors that monitor the amount of food remaining and notify the user when it is time to refill the feeder. Sometimes there will be some food which is leftover by the pet which has a great chance of getting contaminated due to the exposure of air in the open. This, when mixed with the upcoming scheduled meal, will affect the pet's health and cause illness too. To prevent this, the system provides timely removal of the leftover food that is present in the dispensing plate at regular intervals. It promotes healthier eating habits by establishing consistent meal schedules along with timely removal of leftovers and enabling real-time monitoring of consumption patterns, thus enhancing responsible pet ownership and overall pet wellbeing. It prevents overfeeding, encourages consistent meal routines, and real-time monitoring enhances responsible pet care.

1.INTRODUCTION

GPS tracking is the practice of monitoring someone's location remotely by using the Global Positioning System (GPS) to determine their location. A GPS tracker for pet is a device that connects to pet's collar, chain or jacket and uses GPS (Global Positioning System) and other technologies to let user know where user's pet is and follow their every move. A piece of material worn around a pet's neck is called a collar. Same as the jacket or the safety cloth that a pet wear is known as jacket. If user's pet ever runs away, disappears or escapes, this is one of the best ways to find them. Pets such as dogs can run for various kinds of reasons, such as

lack of interest, fear, or just a strong hunting desire. The incredibly small cost of a GPS tracker might bring an important return if user's dog misses. These days, our expectations are high for anything and everything that matters to us, such as our children, our loved ones, our cars, and our pets. Pet owners consider their animals to be members of the family, so they have a variety of devices to keep them updated on their activities when they aren't around. Not only does a GPS tracker for dogs and cats allow user's pet more freedom to roam around outside, but it also reduces user's anxiety as the owner. Every year, more and more pets go missing or are stolen in these situations, a GPS may be user's hope for recovery. Collars and wearable technology are becoming more and more popular among pet owners who wish to allow their cats and dogs to roam free. Pet trackers give user peace of mind about user pet's location and can be set to alert you when your pet leaves a specified "safe area," such as user's home. Our pets want to run around and explore the outdoors without any restrictions. Many pet owners want to be able to open the door and let their dog or cat roam the neighborhood without feeling the need to watch over them or try to keep them confined. The geofencing feature with safe zone is included with Tack GPS. By establishing several boundaries, safe zones are created, which helps to maintain order. When the tracking device enters and exits these specified zones, the Tack GPS app will alert user. The primary and important benefit of a pet tracker is being able to find a lost pet. Pet trackers provide location positioning so user can see where user's pet has been going and know where to look for them if they have been missing for a long time and users are concerned. A study on lost pets found that thirty-two percent of pets go missing in their lifetime and that 14% of pet owners lose their pets within five years, which point out the need for pet monitoring. Our Internet of Things (IoT)-based automatic pet feeding system raises the bar for pet care in the rapidly changing fields of pet care and technology. Our cutting-edge system provides modern pet owners with a comprehensive solution that goes beyond simple feeding schedules. The customizable feeding schedules and quantity quantities via an easy-to-use interface are among the best features. This system adjusts to your pet's specific demands, whether it is nutritional restrictions, or you wish to change feeding schedules to fit your daily schedule. Additionally, it offers a great solution for pet owners who could spend a lot of time away from home, guaranteeing that their animal friends never go without food or have erratic feeding schedules. However, our dedication to your pet's health goes beyond meal planning and timing. We are aware that preserving food quality is critical to the well-being of your pet. When food is fed traditionally and left out in the open, it can spoil. With its sophisticated sensors, our automatic pet feeder guarantees that food stays clean and fresh. It accomplishes this by quickly clearing the distributing plate of any leftover food at prearranged intervals. This not only ensures that your pet is receiving the best possible nutrition, but it also encourages better eating practices and lowers the possibility of health problems due to tainted or stale food. Another noteworthy benefit of our IoT-based technology is real-time monitoring. We encourage appropriate pet care by giving pet owners the chance to monitor their pets' consumption trends. This function helps create a regular meal plan that meets your pet's nutritional demands in addition to protecting against overfeeding. You might think of it as having a virtual pet nutritionist who makes sure your pet's health and welfare are top priorities. Our state-of-the-art IoT-based pet feeding system represents the love and care that

pets deserve in this day and age when they are treasured parts of our homes. It strengthens the link between a pet and its owner by transforming pet care from a chore to an art. With the ease of remote control, the guarantee of food quality, and the capacity to keep an eye on your pet's nutrition in real-time, this system is proof of our dedication to our furry friends' wellbeing and providing them with the best care possible in our busy, connected world.

II.LITERATURE SURVEY

O. Santos Baquero, L. A. Akamine, M. Amaku, and F. Ferreira, “Defining priorities for dog population management through mathematical modeling,” Preventive Veterinary Medicine, vol. 123, pp. 121–127, Jan. 2016, doi: 10.1016/j.prevetmed.2015.11.009.

We simulated dog population dynamics for a thirty-years period using a logistic growth model. Through sensitivity analyses, we determined the influence of the parameters used in the model. Carrying capacity was the most influential parameter in all simulations. In the owned-dog population, the influence of immigration, abandonment and births was 19%, 16% and 6% of the influence of the carrying capacity, respectively. In the sterilized owned-dog population, the influence of abandonment, female and male sterilization was 37%, 30% and 27% of the influence of the carrying capacity. In the stray population, the influence of abandonment, carrying capacity of the owned-dog population and adoption was 10%, 9% and 6% of the influence of the carrying capacity. In the sterilized stray population, the influence of births, female sterilization and male sterilization was 45%, 15% and 13% of the influence of the carrying capacity. Other parameters had lower influence values. Modification of the carrying capacity requires different interventions for the owned- and stray-dog populations. Dog trade control is a way to reduce immigration. The evaluation of sterilization effects must focus on the variations in the infertile population fraction. Adoption may improve the effects of the reduction in carrying capacity on the stray-dog population. Canine population management aims to modify the determinants of population dynamics (reduction of unwanted births and abandonment, increase in prophylactic treatment coverage and immigration control) to promote the health and well-being of both dogs and people (Garcia et al., 2012). However, these determinants interact in a complex way, and modifications of a given determinant may be intensified, reduced or canceled by changes in other determinants. Additionally, a given objective (for example, reduction in the population of stray dogs) is usually favored by the modification of more than one determinant, and resource limitations may prevent interventions with ideal scope and magnitude. Therefore, there is a need to prioritize the modification of the most influential determinants. Aiming to improve the knowledge of dog population dynamics and to facilitate the evaluation of population management interventions, we developed a logistic growth model based on a coupled system of differential equations. We jointly evaluated the effect of immigration on the population of owned dogs and the effects of abandonment, sterilization and adoption on the dynamics of owned- and stray-dog populations, structured by gender. We considered a net migration equal to zero for stray dogs. Using sensitivity analyses, we determined the influence of the parameters and, consequently, the impact of interventions aimed at these parameters.

III.EXISTING SYSTEM

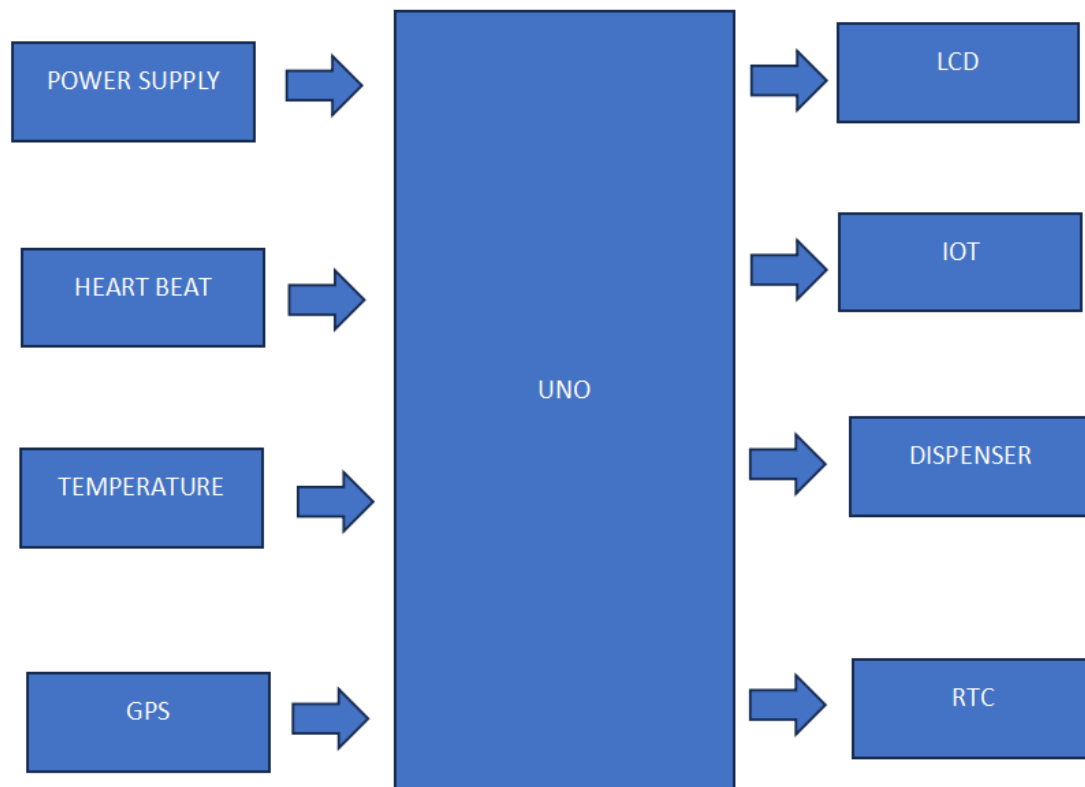
Here is the provided literature survey on the existing tracking system: Some design or system of tracking system some uses GPS module to get location of the lost pet. Some new versions of the GPS detection system use Wi-fi module.

1. O. Santos Baquero, L. A. Akamine, M. Amaku, and F. Ferreira have presented a paper, in this paper entitled “Defining priorities for dog population management through mathematical modeling”, the efficiency of GPS trackers in locating lost pets was investigated in this study [1]. The researchers discovered that GPS tracking boosted the recovery rate of lost dogs significantly, with 82% of tracked dogs successfully recovered within 24 hours.
2. S. J. Ward, S. Sherwen, and F. E. Clark have made a research in the paper entitled “Advances in Applied Zoo Animal Welfare Science”, examined into whether GPS trackers reduce wild animal’s poaching [2]. The data indicate that animals with GPS trackers are less likely to be poached than animals without tracking devices
3. Tannop Sangvanloy, et al [1] use Internet of Things (IoT) technologies to develop an autonomous pet food dispenser. This creative technique was created by Tannop Sangvanloy and Kingkarn Sookhanaphibarn at Bangkok University and is intended to help pet owners feed their small animals, including dogs and cats, even while they are not at home. The usage of the Arduino IDE and an ESP32 microcontroller for programming and connectivity, an MG995 servo motor for food dispensing, a load cell with a HX711 amplifier for precise weighing, and Blynk software for mobile app control are the main elements of this Internet of things system. To promote healthy pet care practices, the system enables pet owners to plan feeding times, determine food amounts, and keep an eye on their pets' eating patterns

IV.PROPOSED SYSTEM

This paper introduces our innovative design aimed at ensuring the safety of the pet by tracking the real time location and prevent them from getting into trouble. Our proposed system utilizes a GPS module to continuously monitor pet location and a WIFI module is required to share location and pulse rate to the user phone And As Per Time The Food Will Be Distributed.

Block diagram



V.CONCLUSION

The proposed system is advance real-time GPS tracking system designed for pets which also senses the pulse of pet with a click from user's connected smart phone. It continuously monitors the pet's location using a GPS module installed in it. Whenever the pet crosses the safe zone (geo fencing) which is already set, the owner receives the notification. Upon the request or when the pet leaves the safe zone the location and the heart rate can be monitored in the registered or connected devices. this project presents a promising solution for pet safety and well-being, offering real-time location tracking, pulse rate monitoring, and potential for further development in animal health monitoring. This proposed system will revolutionize the way of tracking our pets or monitoring them. It will be proven very useful in context of monitoring their movement . It can be conclude that this system is specially designed to track location of pet animals reather than non-living things. This system has also included pulse sensor as a primary component to determine aminal health which was not previously used.

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