

# The Paw Project

## A Mobile Application for Identifying Stray Dogs

Lakshmi Kochumon, Nikita Niteen, Parvathy Pushpan

*Department of Computer Science and Engineering  
Mangalam college of Engineering, Ettumanoor*

Ms. Roja Thomas

*Assistant Professor*

*Department of Computer Science and Engineering  
Mangalam College of Engineering, Ettumanoor*

*Abstract* -The PAW PROJECT is a veterinary and pet care android application intended for pet lovers and owners. Now a days pet owners are increasing abundantly. This app will help us to find whether a dog is vaccinated or not and thus by identifying this a dog can easily get vaccinated with the help of nearby pet clinics both private or government owned. Another important feature of this app is to get the locations of stray dogs which connects with those who love to adopt and also with pet caretakers. THE PAW PROJECT, as described above, creates an error-free, secure, reliable, and fast system. It can assist the user to concentrate on their activities rather than concentrate on record keeping. Thus, it will help organizations in better utilization of resources. The organization can maintain computerized records without redundant entries. The project is executed in three modules (1) Admin module (2) User module (3) Database. The admin module manages the entire content of the system.

*Index Terms* – *stray dogs, rabies, mobile application, sterilization*

### I. INTRODUCTION

At present the number of stray dogs in India is increasing at a continuous rate as per the current record of animal welfare organizations. The overpopulation of stray dogs has become one of the major threats to the citizens of India. It has been reported that around 92-97% of death due to dog bites have been reported in India. Zoonotic pathogens which are usually found in dogs are mainly transmitted by stray dogs.

A stray dog is defined as any dog that roam around in a public area that had no human control over it. These are dogs that are either owned in the past or never be owned. According to a recent estimate, there are over 17.14 million stray dogs in India [6].

A recent study has shown that people are less bothered about the available applications and 90% of the people never

used it once [1]. There are so many functions that are available nowadays to track stray dog and their attack patterns such as GPS, Surveillance Camera, and video surveillance algorithms. Our approach is based on existing infrastructure to make the manual process easier by making it a computerized system for uploading pictures and details of the dog. Providing the facility to the users that can upload pictures and get details of the dogs and also adopt them. This process is computerized and the details of the user who uploads the pictures of stray dogs are stored in the system. The user can view the details about the dogs in the Android app.

There has been a rapid growth in the number of people who own pet dogs due to the low birth rates, the increasing aging population, and the increasing number of single-person households. As we know there is a wide range of pet care applications available in the marketplace.

Pet tech includes not only robotized litter boxes, automatic food dispensers, and remote-control toys to play with your pets. Here our project focuses more on stray dogs as they are increasing rapidly in our society day by day. The paw project is a unique initiative about which a true passionate animal lover would have certainly dreamt while trying to save/help an injured /helpless stray dog in need. This platform will connect you to a relevant person/resource in real-time.

### II. BACKGROUND AND RELATED WORK

#### A. STRAY DOGS IN THE COMMUNITY

As we know stray dogs are increasing day by day in our society. The free-ranging and roaming dogs are called stray dogs. They are found in most of the cities, especially in developing cities. Stray dogs are increasing because of the abandonment nature of the owner. They are of different classifications such as pure breeds, true mixed-breed dogs, or unbreed. The major problem caused by stray dogs is Rabies and Dog Bites both affect the quality of living.

- i. Rabies – it is a fatal disease that can be easily affected by the human population and make the quality of life worse. As research shows that all warm-blooded animals can get and transmit rabies and till now dogs are the most common carrier. Till today, India has the highest rabies death in the world.
- ii. Dog-Bites- this can happen both accidentally and un-accidently. Most of the time humans gets dog bites because, when the dogs are mating, people in the vicinity try to makethem provoke by throwing stone over them or by simply doing anything to make them aggressive. The other way people usually got bites from dogs by approaching to mother dog which is protecting their pups.

India is the home of pariah dogs, which are one of the world's oldest canine breeds. For almost 14,000 years pariah dogs existed in South Africa as well as in India. Most of the places in India at that period were in rural areas, and the majority of people hold at least one of them. When years passed, most of the villages become cities and these dogs become stray dogs.

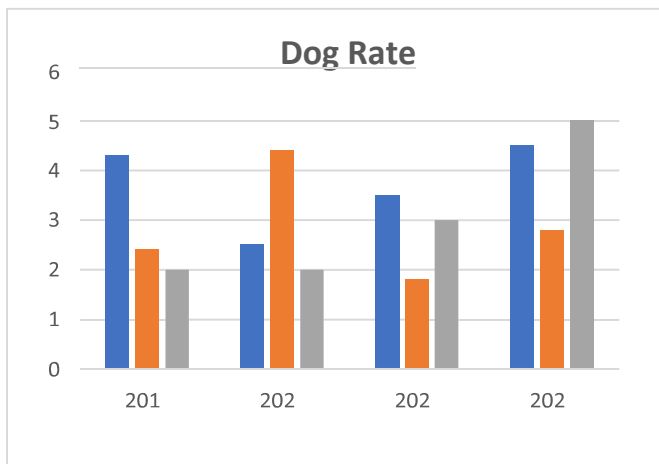


Fig 1: Diagram of the population of stray dogs in the last 4 years In India

Several reasons could contribute to the increase in the number of stray dogs in India over the last four years. Some of

the most significant factors include The blue color bar indicating total dogs and orange color indicating female dogs and the ash color indicating male dogs. There was occur alarge increase in stray dogs each year. In 2019 the female dogs count is larger compared with the male dog which was the main reason of increasing the total number of dogs but wewere coming to the next year there is a large increase in

female dogs but it doesn't affect the total dog. Urbanization: With the rapid growth of cities and towns in India, there has been a corresponding increase in the number of stray dogs. As more people move into urban areas, they often leave behind their pets or abandon them, leading to a rise in the population of stray dogs. Lack of effective dog control programs: India has struggled with effective dog control programs for many years. Many local governments do not have the resources or expertise to effectively manage the population of stray dogs, which can lead to uncontrolled breeding and an increase in the number of strays. prioritize them, leading to a continued increase in the number of stray dogs.

Lack of awareness about responsible pet ownership: Many people in India are not aware of the responsibilities that come with pet ownership, such as providing proper care and ensuring that their pets are not a nuisance to others. This can lead to an increase in the number of abandoned pets and strays. Religious and cultural beliefs: Some communities in India believe that dogs are sacred or have spiritual significance, which can make it difficult to control their population. Additionally, some religious beliefs may prohibit spaying or neutering, further contributing to the problem.

Overall, addressing the issue of stray dogs in India will require a multi-faceted approach that involves better education and awareness about responsible pet ownership, increased accessto spaying/neutering programs, and effective dog control measures at the local

*B. Stray Dog Tracking*

Stray dog tracking is one of the most important aspects and most difficult to tackle. Nowadays, numerous technologies are emerging now such as GPS, Bluetooth, Micro chip implants, and Radiofrequency (RF). It is stated that GPS is one of the most effective and popular technologies because it can track in a global range and can locate pets [1].

The intelligent video surveillance system has helped to solve problems with ease nowadays. Using the existing video surveillance camera and infrastructure we can identify the attack patterns of the stray dogs. The main algorithm we used here is a video processing algorithm and the SVM classifier made the detection of stray dog attacks more accurate [2].

*C. Diseases in Stray Dog*

Stray dogs are making more threats if they are not treated properly. diseases can often spread through stray dogs that are present in our society. Both viral and noroviral infections can spread through stray dogs. Zoonotic Pathogens and parasitic

diseases are found reported in India. One of the diseases that are found in pets is rabies, therefore people should be aware of the diseases that can be easily get transmitted by dogs [1].

D. Existing application

Over the past years, so many ventures are begun to reduce the stray dogs in our society and make a more socio-friendly culture with stray animals. One such application was,

- Let it Wag- it is more of a mobile application that allows NGOs, vets, and people to come and rescue millions of stray animals [5]
- Four Paw- it is the first ambulance in India for street animals. It is launched in Tamil Nadu, by Blue Cross and an animal welfare organization [6].

E. Proposed System

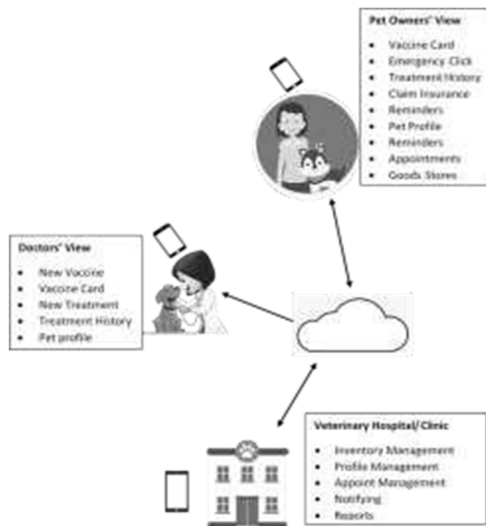


Fig 2: Overview of the application

The dog vaccination system architecture is designed to efficiently manage and track the vaccination process for dogs. It involves various components that work together to ensure accurate record-keeping, timely reminders, and effective administration of vaccines. These components include a central database to store all relevant information about dogs, owners, and vaccinations, a user-friendly interface, registration and identification, a reminder system, vaccine inventory management, vaccination administration, reporting and analytics, integration with other relevant systems, and security and privacy. By implementing this architecture, the system can streamline the vaccination process, improve record-keeping accuracy, enhance communication between stakeholders, and contribute to better overall dog healthcare management.

III SYSTEM MODEL AND RESULT

Animal vaccination is mostly done by veterinary doctors and the records of it are stored in a book than computers. These records can be easily damaged and can be lost. This is one of the most problematic scenarios when it comes to stray dog vaccination.

There are a lot of pet and stray dog applications in our country but none of them are fully digitalized. QR code is used to identify whether the dog is vaccinated or not. Most of the pet care apps focus on pet owners but here we focus more on abandoned street dogs and their vaccination procedures.

The Paw Project

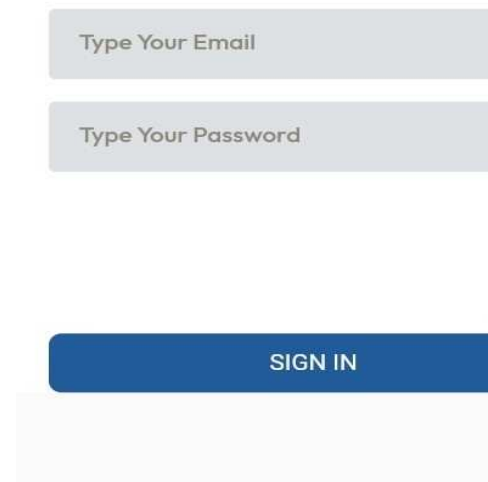


Fig3: Login page

In the first phase of the app, we will collect information regarding stray dogs from community cleaning workers because we know that stray dogs are mostly seen in areas where food waste is being thrown around.

The app has been developed in a way that enables the public to upload information directly if they spot a stray dog. People can inform the authorities through the app in case of stray dog menace. The details from catching a stray dog to releasing it can be recorded in the app. This app also provides us with adoption facilities as well as fostering information about stray dogs. Animal biometrics has been a promising area of study in the fields of computer vision and machine learning in recent years. It involves extracting discriminative features by considering morphological or biometric traits, such as visual appearance, facial features, coat patterns, and nose-print patterns.

Accordingly, animal-biometric-based identification systems have been applied in various areas for animal identification, management, and behavioral analyses.

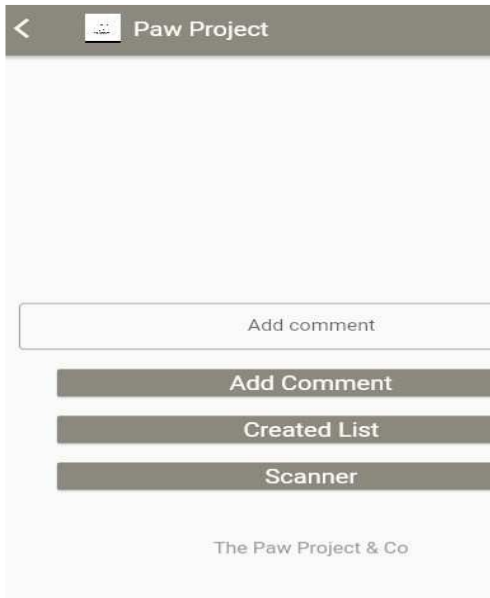


Fig 3: User home page

Animals, especially cats, and dogs, are common companion pets in our society and have shared a familiar environment with humans for a long time.

The perspective of effective registration and management of companion pets requires handling insurance frauds and prompt handling of missing companion pets. Therefore, the vaccinated animal- identification system is a vital tool for managing and monitoring companion pets. The number of incidents associated with missing animals can be significantly minimized through identification and tracking by clearly connecting the owners and pets. Moreover, by enabling successful data registration, valuable data can be collected to overcome the limitations imposed by insufficient datasets.

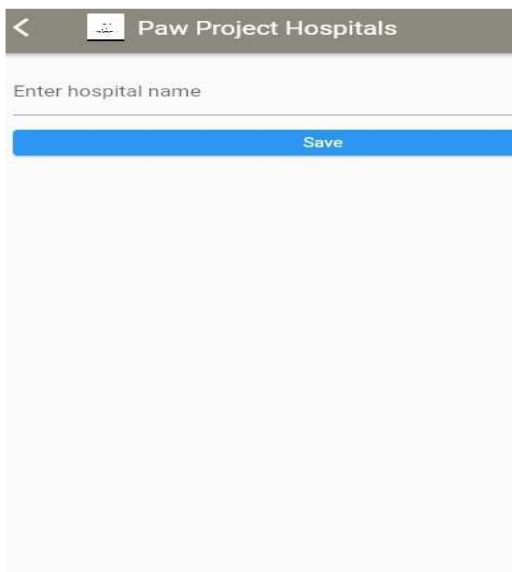


Fig 4: Hospital details

The main aim of this project is to digitalize the process of animal vaccination and vaccinating street dogs in our society. So, it will help to reduce diseases caused by animals and all the paper-based cards and forms from the process. Overall, an app on stray dog vaccination would be a useful tool for anyone who wants to help protect stray dogs from diseases and improve their well-being. By using technology to track and manage vaccinations, we can make a positive difference in the lives of these animals and the communities they live in.

#### IV. CONCLUSION

In summary, our system can find street dogs who are to be vaccinated. The Barcode classification state was excellent but it depends highly on proper breed identification. As it is an Android application, usage was consistent and it may be the first important step for training people to use such devices. Collecting data was effective, once the users were trained. However, we uncovered some challenges and limitations to the current approach. The first one is the usage of the camera as it will not provide good image recognition. The second one is robustness under a wide variety of conditions that may affect the image contrast. These findings will be incorporated into the reduction of our system followed by testing in a wider pool of individuals. We can embed the ambulance system in this proposed system as a future scope. The application should be in cooperating adoption facility, where it helps us to reduce the number of stray dogs in society. We can make this app connect with the nearest veterinary hospitals so that they can easily locate the dogs and make the vaccination as soon as possible.

#### ACKNOWLEDGEMENT

First and foremost, we would like to express our sincere gratitude and heartfelt indebtedness to our guide Roja Thomas, Assistant Professor, Department of Computer Science and Engineering for her valuable guidance and encouragement in pursuing this project. We also extend our hearty gratitude to all the teachers of the Department of Computer Science and Engineering and all my friends for their help and support.

#### REFERENCES

[1] S. Tangsripairoj, P. Kittirattanaviwat, K. Koophiran, and L. Raksaitong, "Bokk Meow: A Mobile Application for Finding and Tracking Pets," 2018 15th International Joint Conference on Computer Science and Software Engineering (JCSSE), Nakhonpathom, Thailand, 2018, pp. 1-6, doi: 10.1109/JCSSE.2018.8457351

[2] M. Baba, D. Pescaru, V. Gui and I. Jian, "Stray dogs behavior detection in urban area video surveillance streams," 2016 12th IEEE International Symposium on Electronics and Telecommunications (ISETC), Timisoara, Romania, 2016, pp. 313-316, doi: 10.1109/ISETC.2016.7781120.

[3] Senanayake, Pubudu Wickramasinghe, Samanth Hettiarachchi, Sunesh 2021/09/09 "Mobile-based Animal Vaccination System for Sri Lanka"

[4] "Happy Paws – Android Pet Application". International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056. Volume: 07 Issue: 06 | June 2020

[5] <https://play.google.com/store/apps/details?id=com.letitwag>  
.mobile&hl=en\_IN&gl=US

[6] <https://www.four-paws.org/>

[7] <https://www.thebetterindia.com/122995/fed-delays-26-year-old-creates-app-helps-rescue-animals-real-time/>

[8] R. O. Sinnott, F. Wu and W. Chen, "A Mobile Application for Dog Breed Detection and Recognition Based on Deep Learning," 2018 IEEE/ACM 5th International Conference on Big Data Computing Applications and Technologies (BDCAT), Zurich, Switzerland, 2018, pp. 87-96, doi: 10.1109/BDCAT.2018.00019.

[9] S. Swain, A. Deepak, A. K. Pradhan, S. K. Urma, S. P. Jena and S. Chakravarty, "Real-Time Dog Detection and Alert System using Tensorflow Lite Embedded on Edge Device," 2022 1st IEEE International Conference on Industrial Electronics: Developments & Applications (ICIDeA), Bhubaneswar, India, 2022, pp. 238-241, doi: 10.1109/ICIDeA53933.2022.9969906.

