

Lost Pet Tracking and Recovery

Vision Statement

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Abstract—Losing a pet can be very tough on a family, often being seen as losing a member of the family. When this happens, the right resource need to be in place for an individual to get the word out, provide quick access to missing animals in a given area, and make contacting the appropriate person a breeze. This is why there needs to be a reliable, universal website where users are confident they have the best chance of getting their lost pet back, including one that is used by animal shelters to post new stray animals.

I. DESCRIPTION OF PROBLEM

Many pet owners have experienced losing a pet unexpectedly. When the pet first goes missing, a search is usually conducted in the surrounding neighborhood. If unsuccessful, the next step is to get the word out to as many people as possible to get more eyes looking, whether that is through fliers, social media, or other internet resources. The situation is never pleasant and can be difficult to sort out and bring the pet home safely.

The American Society for the Prevention of Cruelty to Animals (ASPCA) released a survey in 2012 with statistics about lost pets. The ASPCA reported, of those who had lost a pet in the past five years, 85% were successfully recovered, more of which were dogs than cats [3]. The majority of dogs were found simply by searching the neighborhood or because it was wearing a collar or had a microchip, while most cats returned home on their own volition [3]. What is alarming is how few pets were reclaimed from the local shelter at only 6% of dogs and 2% of cats [3]. Can we do better? Does there need to be another resource to aid in the identification of a lost pet?

II. SOLUTION

With the internet being as popular as it is today, it is a natural resource to turn to. That is why there should be a reliable, universal website/application that houses information about lost and found pets. Although there do already exist websites with similar functionality, how many of them actually check each others inventory? What if a pet was posted somewhere and the owner doesn't know about the resource to check that website? An ideal resource would be able to search websites like these, compare pet inventory, and ultimately become a one-stop resource for all lost-pet needs.

A. User Profile

First and foremost, this website/application should allow the user to create a listing for their lost or found pet. This starts with the user creating a profile linked to either an existing social media platform (Facebook, Twitter, etc.) or any existing email address. The following features would be incorporated to ensure maximum usability and security:

- **Email address confirmation:** Send an email containing a secure account confirmation link to the provided email address for password recovery, a method of contact, and to help ensure the user is a real person.
- **Encrypted login tunnel:** Use a secure login portal, such as HTTPS.

B. Lost or Found Pet

If an existing user has lost or found a pet, they should have the option to easily create a public posting with all the information necessary for identification. This includes:

- Pet species
- Pet breed
- Pet gender
- Pet age
- Pet size
- Pet color
- Pet picture
- Microchip number, if applicable
- Other miscellaneous information

In addition to the post, a map should be made visible to the user, allowing them to drop a pin in the approximate area the pet was lost or found. This is a much more effective way to locate the lost animal, especially if they were not lost or found near any common roads or civilization.

C. Database

Since this application is going to revolve around the internet, it should have all the appropriate account/pet information stored on a networked database. This can be an existing public service, such as Amazon Web Services or Google Cloud Datastore, or a private database solution. In either case, the database should be quick to post, query, update, or delete, no matter how many users are connected.

D. Access

In today's society, people use a variety of different devices to access the internet and all of its resources. There are different computer operating systems, separate mobile operating systems, and even separate internet browsers within each specified operating system. Below outlines the ideal accessibility of the service:

- Accessible from the most popular computer operating systems, such as Mac OS X, Microsoft Windows, Chrome OS, and major Linux distributions.
- Accessible from the most popular internet browsers, such as Google Chrome, Mozilla Firefox, Apple Safari, Internet Explorer, and Microsoft Edge.
- Available as either a mobile application or via a mobile browser on the major mobile operating systems, such as Android, Mac IOS, Chrome OS, and Windows Mobile.

Being part of a mobile OS, push or SMS notifications should also be used where necessary. This includes notifications for recent posts for lost or found animals near the user or communication messages left (more on this in section 2 part E).

E. Communication

Communication is another piece that will make this service worth while. Users may be more comfortable including a phone number or private email address for communication purposes, but they will also have the option to message users through the build-in messaging center. This will be a separate feature within the website or application resembling a standard email box. It will allow for quick access to messages and would be accompanied by push and SMS notifications, if desired.

F. Animal Shelter Cooperation

Another critical piece to this website's success is getting all the local shelters to participate by reporting any new stray animals they find. PetFBI, a popular online resource for lost pets, identifies how few strays are actually reported by animal shelters and the room for potential improvement in getting lost pets back to their family [4]. This can be changed with a little cooperation from the shelters and a simple search and post interface on a separate location within the website and database. This helps keep the website organized and allows for easy isolation of animals in a shelter or someone's home.

III. DESCRIPTION OF METRICS OF SUCCESS

With the successful implementation of this system, the most obvious improvement would be increased rates of returning lost pets to their owners, both through individuals and the local humane societies. In addition, these are the specific usability requirements that would make this system successful:

- The website or application should be made available to the most popular computing platforms, as outlined in section 2 Part D.

- The user should be able to create and access the same profile among all the available platforms.
- Users should only be able to edit or delete posts they made themselves.
- Pet posts should be made available to the public within 1 minute of submitting to the database. This includes any updates made to the original post.
- All posts will be made viewable to everybody.
- All database operations will be ACID (atomicity, consistency, isolation, and durability) compliant, as outlined by TechTarget [2].
- The website/application should accept pictures associated with pet posts/user profiles up to 5 MB.
- Animal shelters should be able to make a post to a separate section on the website or application for organizational purposes.
- All database queries should accept all appropriate pet characteristics, as outlined in section 2 part B.
- All query results should be further filterable by remaining pet characteristics, as outlined in section 2 part B.
- According to Shaun Anderson of Hobo, web page access speed is an important factor in keeping users happy [1]. As such, web pages or application queries should load within 10 seconds.

IV. CONCLUSION

Having a lost pet is never an easy situation to deal with, but the right resources can resolve the problem more quickly and with less hassle. One such resource is a reliable, universal and easy to use website. It would allow users to post information about their lost pet and search for lost pets if they found a stray. In addition there should be a separate search and post area for the local animal shelters to keep their inventory separate and organized. Ultimately, a web service like this will help in the search and return of lost pets.

REFERENCES

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