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# Pet Saver Application Using ML

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***Abstract-*** ***In recent years, due to awareness campaigns and rallies, there has been an unprecedented increase in the number of individual families adopting strays. While most of the families who are willing to have a pet choose to follow the "adopt don't shop" policy, the most unappreciated strays to be adopted are cats. The focus of the adopters is more on dogs rather than cats. This rigid focus has resulted in numerous cat injury, abuse, and abandonment cases going unnoticed. To overcome this, we have developed an application prototype that serves as a platform where a rescuer and a foster can connect. It aims to help a rescuer to post details of an injured cat on the application so that the nearest foster care can connect with the rescuer and foster the cat. In addition, it also aims to promote the adoption of community cats.***

***Index Terms—Pet Adoption, Cat foster, Prototype, UX, Interface, Proto.io, Stray Cats***

## I. INTRODUCTION

Today, many individuals are inclined towards dogs as prospective pets while stray or community cats are ignored. The notion that dogs are sacrificing and loyal, is so staunchly entrenched in society that at times if any injured kitten is found, it gets ignored in many instances. Piku is an application prototype mainly for the cat foster community and for the ones who need assistance on fostering a kitten. The tagline of the application, "Every meow is our baby!", functions as the main goal of the project; not a single community cat should suffer and be left unclaimed or unadopted. This designed application system will allow any user, who finds an injured and abused cat, to post the necessary details of the cat on the application; location, identity marks, and place of injury of the cat. These details will be shared and notified to the nearest foster care person available and assistance will be provided. In addition, if any nearest foster is not available, some other foster can also login to the application and check on the posts requiring emergency foster care at any time from any location. Moreover, a user can check for community cats who are up for adoption with their details and can connect with the concerned foster.

## II. LITERATURE REVIEW

As mankind starts getting more developed, our vision be-comes narrower as time passes. And one such example of a narrow vision is our attitude towards domesticated animals. When we think about pets, we straight away think of dogs. And then come cats and other animals. But we never bother thinking about these animals beyond the fact that they are here for us. These animals are also living creatures susceptible to harm and feeling pain. And the lesser the popularity of the animal, the more indifferent the people are towards its suffering. One such example is cats. Even though they are pets to many people, the damaged and abused cats seldom get the attention that their canine counterparts get. And in this project, we aim to right that wrong. Piku, built explicitly to aid in the betterment of cats in pain and danger, is our tool in helping the world be more caring towards unfortunate cats. Built with an easy-to navigate UI along with options for submitting details of abused cats, adopting stray cats, and other such options, we like to think that this project will help us get one step closer to a world where all hurt animals are viewed equally and taken care of. The first paper aims to predict the location and breed of a given cat using a mobile phone camera through the concept of deep learning method. It uses the image recognition system as a base to recognize cats. In this project, the system first takes an image using the mobile camera and applies detection techniques for further processing. Once the cat has been identified the object classification method is used to categorize the cat. The project uses TensorFlow as a framework to train the object detection model. This project paper

can recognize 14 breeds of cats.[1] The second paper discusses the design of a web-

based pet adoption system. The web systems consist of four management chapters: member, pet information, pet adoption, and pet statistics. The application requires the user to register first, this registration can be done in two ways as a prospective adoptive family or an authorized person who can post infor-mation on adoption. When the user from the pet information management system is logged in, it can add, delete and modify any information or entry from the database and system. When the user from the pet adoption management system is logged in, the user can fill adoption form, inquiry form and check for adoptions. The pet statistics module shows the statistics of the charity funds, pet type, and pet status. The project uses Eclipse, MySql, SSM framework, bootstrap framework, and JSP technologies.[2] The third paper describes a layout of a blockchain-based system for the Turkish animal shelters for adoption and fostering needs. The project aims to have a system that would allow donations through cryptocurrencies. Moreover, the project proposes to have a three-phase adoption system. At the first phase, several attributes of the adopter will be recorded: work duration, lifestyle, fence height, driving license, house structure, and children information. In the second phase, it proposes to have animal and human meetings at the shelter house. In the final phase, the shelter staff would visit the home. The project terms itself as a BAdopt system, this system does not rely on any intermediate or centralized levels. In fact, it will be a decentralized system recording information about each animal in the shelter house and in which phase of adoption the animal is at currently. The user has to log in with a valid address and fill the adoption form, if the form is approved only then the user can schedule an appointment with the shelter for the further adoption process. The fundamental goal of the project is to deliver a safe and trustworthy web application, working autonomously.[3] without any authority and The fourth paper proposes the idea of an application that will be built using ReactNative, the backend of the application will run on NodeJS and will be developed using android studio. The project has been developed with a parallel idea to social networking sites, similar to Facebook forums or discussion groups. This project will act as a web based forum where users can post pictures of their pet, provide information and shop for pet accessories. [4] The fifth paper portraits an application called “E-adopt” which is developed extensively for Indonesia. It describes a survey study covering various aspects of the need for pet adoption applications in Indonesia. The results on the same have been discussed in the paper. Through this application, users can apply for adoption, buy products for pets, can comment on pet adoption posts, and the foster care unit has the access to accept or deny the adoption application. The notification of acceptance or denial of application will be sent to the adopter. The application acts as a system that allows pet adoption and carries e-commerce.[5] From all the above reference papers, we have gathered a fundamental knowledge of our project topic and information on the additional areas related to the implementation of our project. The above-mentioned papers guided us in the implementation and designing of our project.

All these papers implement only one or less than any two features which are similar to our project. We have made all the above-discussed features come under one design. In conclusion, we aim to build a system that is easy to understand and brings all the main functionalities like posting rescue information, providing foster care to needy community cats, and adoption. [?].

## III. METHODOLOGY

### *A. Proposed Work*

A. Project System This project is designed on Proto.io which is a prototyping platform that allows creating seamless and effective UX prototypes. The working of the project is based upon the combined implementation of its three main parts. The entire prototype working is divided into three angles through which three different aims of the project will be achieved; rescue notification, foster care, and adoptions. With reference to figure 1, the application would open with the main splash screen which showcases the logo, Piku, and the tagline, “every meow is our baby!”. Once the user taps on the screen, it would be directed to the login page with its

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registered credentials. If the user is not registered, it can create an account by swiping on the sign-up tab. Here the user can register by making an independent account or can sign up using Google, Facebook, or Twitter accounts. Post this step, the user would be able to access the application and at this step, the main page will be displayed which provides three angles of the project that can be used; to post information about rescue, to foster a rescue, and to adopt a cat.

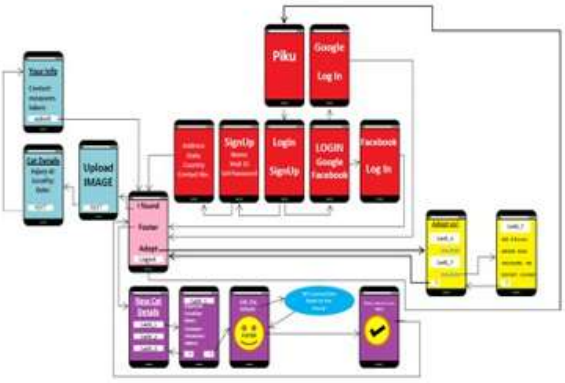


Fig. 1: Flowchart

If the user wants to post about a rescue, it should tap on “I found”. The action will direct the user to upload the image of the cat or kitten rescued. This image should be clicked through the camera of the device. The application would have no direct access to the gallery. Once the image is loaded and saved, the user would be asked to enter the required details of the rescue. Information or data which will be entered into the fields will help the foster to identify the cat or locate the cat if the user is not found. The place of injury, the locality where the cat is found, and the date on which it is found are required. In addition to these, the details of the user such as contact, measures taken after the rescue, rescue is a cat or kitten are also required to process the information further. At any step, the user can go back to the previous page and once the information is entered, the user can tap on “submit” and the user would see a page stating, “Information is recorded (Tap here)” indicating the information is saved to be displayed for fosters. The application would then direct the user to the main page. If the user wants to foster a cat who is in need of medical assistance, it should tap on “I am ready to foster”. The action will provide a list of cats or rescues which need foster care. Here, each post would have a unique ID, through which a foster can access the photograph and details of the injured cat. On the details page, the foster gets a unique feature to call and connect with the rescuer directly through the contact number provided in the application. After checking the details posted, the foster can tap on “foster it” and the rescuer would be notified of the acceptance to foster the rescue. If any user wants to adopt a rescued cat, it has to tap on “I want to adopt” and the application would provide it with a list of cats that are up for adoption. This information about the adoptions can be put up by few specific verified users who are officially registered as fosters. Upon tapping on the unique ID, the details of the cat would be displayed; photo, gender, vaccination status, contact of the authorized person, date, and whether it is a cat or a kitten. The person who is interested in adopting the cat cannot directly adopt the cat from the application. The user must contact the authorized person personally and the further adoption procedures such as house visits, interviews, past experience will be carried out manually. Since, the chances of misuse of any such feature can lead to any uncertain behavior with the rescued cat, the direct option for adoption from the application will be disabled. Throughout the process, the user can log out only at the main screen by tapping on the “action overflow” button which would be found on the left corner of the top navigation bar on the main page from where these three options can be accessed. B. User Interface(UI) Design Referring to the UX mockups shown in figure 2, the project uses 13 main screens for the whole application to be functional. The splash screen being the main project start screen is designed in yellow and blue theme. The main logo is in a yellow Baumans style regular font. The login and sign-up page use Roboto font while the rest of the information is in Arial font. The prototype uses slide left and right transition, and ease out cubic easing with a duration of 400 ms and delay of 0 ms. Status bar, navigation bar, floating labels, and tab bar are used on the screen, while icons are also used; action overflow, cancel, upload, right arrow, left arrow, index, and phone call. For simplicity, less complicated shapes like oval and rectangle are used.

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In Stage I, the model performs a binary classification task that differentiates between benign and malignant samples. This preliminary filtering step reduces computational complexity and ensures that only clinically relevant malignant samples are forwarded for detailed analysis. The Stage II classifier then takes the malignant samples from the first stage and cat- egorizes them into four specific cancer types—Breast, Lung, Ovarian, and Skin Cancer. This two-tier design allows the sys-tem to reduce classification ambiguity while maintaining high diagnostic precision and improving overall decision reliability. The datasets used for training were sourced from publicly available repositories such as Kaggle. All images were stan-dardized through resizing, normalization, and noise reduction to maintain uniformity and enhance feature clarity. Subse-quently, data augmentation techniques such as rotation, flip-ping, and zooming were applied to improve model generaliza-tion, increase dataset diversity, and minimize overfitting. These preprocessing steps ensure that the network remains resilient to variations in orientation, scale, and illumination commonly observed in real-world medical imaging environments.

Fig. 2: Enter Caption

C. Personas From the observation about real people, we will take into account three fictional characters as our personas which would represent different types of users using the application. These personas helped in understanding the needs, experiences, goals, and behaviors of the user. We have shaped them iteratively, having an end goal and the successful com-pletion of the goal of one user is the starting point for another user. For instance, consider the action of a rescuer posting the information of an injured cat on the application as the goal of the first user. Now, the foster care unit would begin working on its goal, providing medical aid and care, using the end goal achieved by the first user. Further, we will consider the goal of the second user as achieved when after giving medical aid, the same cat would be put on adoption whose details will be visible to prospective adopters. This end goal will help prospective adopters to view the cats who are up for adoption. In this way, the end goal of the entire application would be achieved. The project serves as a platform to connect rescuers as well as foster care representatives. We have considered three personas or profiles, one each as rescuer, foster, and adopter, for whom this project would be an ideal one.


Fig. 4: UX of Application

The first persona and profile Name: Anushree K. Age: 24 Description: Anushree is a workaholic woman who works at a corporate company. She lives at her corporate cottage and is very much inclined towards working for the development of society, more towards stray animals. Due to her busy schedule, in many cases when someone connects with her

*B. The Second persona and profile*

informing her about an injured stray, she has to carry the daunting task of finding a foster care unit. The second persona and profile Name: Smruti K. Age: 20 Description: Smruti runs her foster care unit at her house. She is extremely caring and compassionate towards animals, especially cats. Moreover, she is professionally trained in handling emergency cases. As the foster care unit is situated at her own house,

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no individual will find hoardings of her foster care unit across the city.

*C. The third persona and profile*

The third persona and profile Name: Meet M. Age: 28 Description: Meet is a calm and composed man, who loves and cares for strays, and has already adopted two dogs. While recently one of his adopted dogs passed away. To mourn its absence, he wants to provide shelter to another homeless stray as a homage to his passed away dog. He is looking for cats who are up for adoption. Now, the project would serve as an appropriate platform for these three to connect and help each other as well as the feline community. When Anushree would sign up as a rescuer, she can immediately post the details of the injured cat while Smruti on the other side, when signed up as a foster, will be notified regarding the new post and will connect with her to provide further assistance. Similarly, when Meet signs up as a prospective adopter he can access the page carrying information about all the cats who are up for adoption.

*D. Communication Architecture*

Due to the strong objective and much potential of the project, when the application will be launched in the future it will follow the architecture described in figure 3. Referring to figure 3, the architecture diagram demonstrates the com-munication between the users and the application. The dotted arrow indicates the direct communication between the users, while the other connections portray the communication taking place through the application. Information from rescuer (R) and foster care unit (FC) is provided as input to the project. When the injured cat (IC) is found by the rescuer (R), the rescuer inputs the rescue.

*E. Data Flow*

The application will make use of a relational database that is in the normalized form. Normalization will help in minimizing the redundancy from a relation or set of relations. SQLite is an open-source SQL database that stores data to a text file on a device. The built-in SQLite database implementa-tion in Android makes it easy to connect the applications to the database. SQLite supports all the relational database features. It has methods to create, delete, execute various SQL commands, and execute other database management tasks. In the proposed system, the input is obtained from the user via the application interface. Every entry from the rescuer, after validation, is stored as a new row in the normalized relational database. Furthermore, this information is verified by the foster care and then made accessible, as output, to the prospective adopter. Additional analysis performed on the collected data can furnish in depth and beneficial insights. Challenges like, areas with the most common sighting of the injured cats can be identified and preventive measures can be implemented. 5.

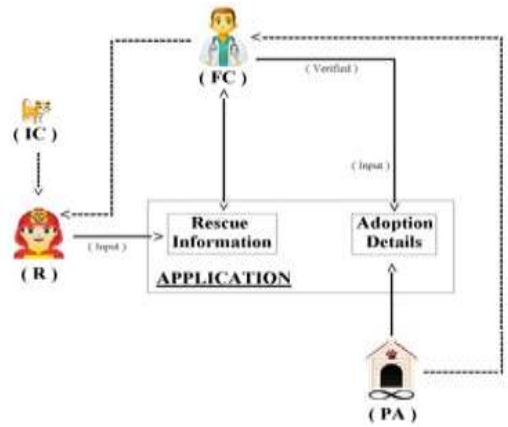


Fig. 5: Communication Architecture

## IV. CONCLUSION

This project mainly focused on building an application prototype using proto.io which can help the feline community to get adopted, medical assistance, and the fosters who can take care of injured cats. Considering the design of the project, it has been successfully shown much potential for use due to its main reason that it provides all three functionalities in one single application. To post information on an injured cat, to foster a rescue and to adopt a stray cat, are the three main functions that a user can find under one design. The project also has a large potential for a future updated version with a discussion forum and a donation to fosters tab.

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