PETFAVES: AN ANDROID-BASED APPLICATION FOR FINDING AND ADOPTING PETS

Undergraduate Capstone Project Submitted to
the Faculty of the Information Technology
Cavite State University - Bacoor Campus
City of Bacoor, Cavite

In partial fulfillment
of the requirements for the degree of
Bachelor of Science in Information Technology

SHAIRA KATE MOLINA
DANIEL A. GARCIA
DARYLL CULAS
January 2024

PetFaves: An Android-Based Application for Finding and Adopting Pets

Shaira Kate Molina
Daniel A. Garcia
Daryll I. Culas

An undergraduate capstone project manuscript submitted to the faculty of the Department of Information Technology, Cavite State University, Bacoor Campus, City of Bacoor, Cavite in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology. Contribution No. _____. Prepared under the supervision of_____.

INTRODUCTION

Finding and adopting pets generally refers to the process of locating and taking in animals, usually from shelters or rescue organizations, with the intention of providing them with a loving home. Families or individuals usually begin by looking into several pet breeds to choose which one best fits their needs, preferences, and lifestyle. People typically need to fill out an application in order to adopt a pet. A sensible and kind way to give homeless animals a home is to adopt a pet. It promotes happy relationships between pets and their owners as well as aids in the decrease of the number of abandoned animals.

There are various concerns with pet shelters, such as the problem of overpopulation and animals becoming ill due to health concerns there. Additionally, without a sponsor, the shelter cannot provide vitamins and other essentials for the animals. Additionally, there are effects on the pet's psychological and emotional well-being. PetfFaves aims to help animals in shelters receive benefits from the application, such as adoption into a suitable home, prevention of overcrowding, prevention of illness in the shelter, and health benefits. The more people are aware of the situation of the animals, the more inclined they are to provide support.

PetFaves is an android-based application designed for finding and adopting pets through authorized online transaction. The application provides a platform for pet lovers to search for pets available for adoption in their area. The application allows users to filter their search based on pet type, breed, age, and location. PetFaves also provides detailed information about each pet, including their name, age, breed, and personality. Users can view photos and videos of the pets and read their stories to help them make an informed decision about adoption. The application also provides a feature for users to create a profile for their pets, allowing them to share their pet's information and photos with other users. PetFaves is a user-friendly application that provides a convenient and efficient way for pet lovers to find and adopt pets. This system includes forums for those who want to adopt or donate their pets, making it easier for people to connect and find their perfect pet match. PetFaves, offers multiple features, such as Pet Matchmaking for suggesting compatible based on the user's answer to a questionnaire, Pet profile, Pet feed for those who wants to post their statuses about their pet care routine, events, public inquiries, or other activities that related to user's connection and interactivity. Also, it includes photos and videos of the pet as well as a description of its personality and history. Pet process is one of the features that provides a user's guide of pet adoption through the steps of adopting. Pet care section for information tips on how to take care of a pet. Lastly, Paws for a cause, this feature allows to collect financial aids to provide aid to animals in need.

PetFaves offers Pet Matchmaking that is designed to simplify and enhance the pet adoption process by suggesting compatible pets based on a user’s answer to a comprehensive questionnaire. Here’s how Pet Match-Making works and the factors it considers; First, Location – so the user plays a crucial role in the matchmaking process. It considers factors such as the user's city, neighborhood, and living situation. This information is vital as it helps identify pets that are available for adoption within the user's geographical area, ensuring convenience and proximity. Second, lifestyle -

Every individual has a unique lifestyle that influences their suitability as a pet owner. The PetFaves matchmaking module assesses the user's daily routine, work schedule, and activity levels. For example, it considers whether the user has an active lifestyle or prefers a more laid-back, relaxed routine. This ensures that the suggested pets align with the user's lifestyle, providing a better match. Third - Personality: Just like people, pets have distinct personalities. Some may be energetic and outgoing, while others are more reserved and independent. The matchmaking feature takes the user's personality traits into account, helping match them with pets that share similar characteristics. For instance, an extroverted and active user might be suggested pets that are playful and sociable. Fourth - Budget: Pet ownership comes with financial responsibilities. The Pet Matchmaking module considers the user's budget and financial capability. It ensures that the suggested pets align with the user's financial resources, helping avoid situations where the cost of pet care becomes a burden. Fifth - Pet Preferences, every potential pet owner has specific preferences when it comes to pets. These preferences include the type of pet (e.g., dog, cat, or other animals), breed, size, and age. The PetFaves matchmaking feature carefully takes these preferences into account, suggesting pets that match the user's criteria.

PetFaves offers Pet Profile that provides a pet profile page that displays the pet's name, age, breed, gender, size, health status, temperament and adoption status. First – Name, the pet's name is the first and most personal piece of information. It helps create a sense of identity and individuality for the pet, enabling a more personal connection between the pet and its future owner. Second – Age, Understanding the pet's age is essential, as it gives potential adopters insights into the pet's life stage and expected needs. Whether you're looking for a playful and energetic young pet or a mature and calm companion, age plays a significant role in making the right choice. Third – Breed, the breed of a pet often contributes to its physical and behavioral characteristics. Knowing the breed provides potential pet owners with insights into

size, coat type, and other breed-specific traits. Fourth – Gender, the gender of a pet can be an important consideration for some adopters. Understanding whether the pet is male, or female allows individuals to make a choice that aligns with their preferences and household dynamics. Fifth - the size of a pet is another essential factor, especially for individuals with limited living space. Whether you're seeking a small, medium, or large pet, the Pet Profile feature helps you identify pets that fit your living arrangements. Sixth - Health Status, Ensuring the well-being of your future pet is of paramount importance. The health status information in the Pet Profile provides details about vaccinations, medical history, and any special healthcare needs the pet may have. Seventh – temperament, Pets, like humans, have distinct personalities. Understanding a pet's temperament, whether they are friendly, outgoing, shy, or independent, allows potential owners to make a choice that aligns with their own personality and lifestyle. Eighth - Adoption Status, the adoption status section informs potential adopters about whether the pet is available for adoption. It provides essential details on the pet's availability, ensuring transparency and clarity in the adoption process.

PetFaves offers the Pet feed feature. This feature serves as dynamic and interactive space where pet owners can share their pet care routines, showcase their pet’s achievements, discuss upcoming events, make public inquiries, and engage with a vibrant community of fellow pet enthusiasts. There are mainly contents of this feature that would be considered. First – Sharing Pet Care routines, one of the fundamental aspects of responsible pet ownership is the daily care routine. Pet Feed provides a platform for pet owners to share their day-to-day pet care activities, from feeding and grooming to exercise and playtime. Sharing these routines not only helps newcomers learn more about pet care but also allows experienced pet owners to exchange tips and insights. Second - Showcasing Achievements and Events, Pets are remarkable creatures with their own unique talents and achievements. Whether it's a dog

mastering a new trick, a cat winning a local competition, or a rescue pet reaching a milestone, the Pet Feed is the ideal place to showcase these heartwarming accomplishments. Pet owners can also announce and discuss upcoming pet-related events, such as adoption drives, pet shows, or charity fundraisers, creating a sense of excitement and engagement within the community. Third, Public Inquiries, Occasionally, pet owners may encounter questions or situations where they seek advice or insights from the wider pet-loving community. Pet Feed offers a space for making public inquiries, enabling users to tap into the collective knowledge and experiences of fellow pet enthusiasts. Whether it's a question about pet health, behavior, or recommendations for pet-friendly places, the community is ready to provide support and answer. Fourth - Community and Interactivity, Pet Feed is not just a place for sharing information; it's a hub for building connections and a sense of camaraderie among pet owners. Users can engage in discussions, leave comments, and offer words of encouragement to one another. This interactive element fosters a vibrant and supportive community where pet lovers can connect, share, and celebrate their shared passion.

Pet Adoption Process is one of the essential for PetFaves application, which provides user's guides of pet adoption through the steps of adopting. First - Scheduling an appointment, the first step in the adoption journey is scheduling an appointment with the adoption center or organization. This ensures that the potential pet owner can visit the facility at a convenient time, view the available pets, and engage with the adoption process. Scheduling an appointment is a vital part of the process, as it allows for a personalized and dedicated experience, ensuring that the pet owner can devote time to making this life-changing decision. Second - Filling Out an Application Form: Once the appointment is scheduled, potential pet owners are required to fill out an application form. This form typically collects essential information about the applicant, including personal details, living arrangements, and pet preferences. It helps adoption

centers or organizations ensure that the pets are matched with suitable owners who can provide a safe and loving environment. Third- Paying Adoption Fee, In the adoption process, there is usually an adoption fee associated with bringing a new pet into the family. This fee often covers vaccinations, spaying or neutering, microchipping, and other initial healthcare costs. The Pet Adoption Process guide ensures that potential pet owners are aware of this fee and can make the necessary financial arrangements to provide for their new furry family member. Fourth - Signing an Adoption Agreement, the final step in the process is signing an adoption agreement. This legal document outlines the responsibilities and commitments of both the adoption center or organization and the new pet owner. It typically covers important aspects such as the care, well-being, and safety of the adopted pet. By signing this agreement, both parties ensure that the pet will be placed in a loving and responsible home.

PetFaves offers a comprehensive “Pet Care” Section, equipping pet owners with essential knowledge and resources on how to take care of their pets. This invaluable feature covers various aspects of pet care, including feeding, grooming, training, health care, and socialization. First – Feeding, proper nutrition is the foundation of a healthy and happy pet. The Pet Care section provides guidance on selecting the right type of food for your pet, establishing a feeding schedule, and ensuring that their dietary needs are met. It offers insights into portion control, dietary preferences, and special dietary requirements for pets with allergies or specific health conditions. Second - Grooming: Maintaining your pet's physical well-being goes hand in hand with grooming. The Pet Care feature outlines grooming routines for different types of pets, whether they have fur, feathers, or scales. It covers essential grooming tasks such as brushing, bathing, nail trimming, and ear cleaning, ensuring that pets are not only clean but also comfortable. Third – Training, A well-behaved pet is a joy to have as part of the family. The Pet Care section offers training tips and resources to help pet owners establish good behavior and obedience in their pets. It covers basic

commands, housebreaking, and addressing behavioral issues, ensuring a harmonious relationship between pets and their owners. Fourth- Health Care, Ensuring the health and well-being of your pet is a top priority. The Pet Care feature provides guidance on regular health check-ups, vaccinations, and preventive care. It offers insights into common health concerns and symptoms to watch for, allowing pet owners to recognize potential health issues early and seek prompt veterinary care. Fifth – Socialization, pets thrive on social interaction and mental stimulation. The Pet Care section emphasizes the importance of socialization, both with other pets and with humans. It offers tips on creating a safe and positive environment for socializing, ensuring that pets grow into well-adjusted and happy companions.

PetFaves understands the power of this community and has created an expansive "Pet Community" section that serves as a hub for interaction, information exchange, and support among like-minded individuals. This feature empowers users to connect with other pet owners, share experiences, and access valuable resources through forums, blogs, groups, events, and reviews on pet-related products and services. First – Forums, the forums within the Pet Community serve as a virtual meeting place where users can engage in discussions on a wide range of pet-related topics. Whether it's seeking advice on pet care, sharing personal experiences, or discussing current pet-related events, these forums provide a platform for users to connect and learn from one another. Second – Blogs, many pet owners have captivating stories to tell about their pets or valuable insights to share. The Pet Community allows users to create and publish blogs, offering a space for personal narratives, expert advice, and in-depth explorations of pet-related subjects. This feature encourages users to become storytellers, educators, and advocates in the world of pet ownership. Third – Groups, Users can join or create groups based on specific pet-related interests, breeds, or locations. These groups foster a sense of community by connecting users with others who share similar passions and

experiences. Whether it's a group dedicated to a specific breed, a local pet owners' group, or a group focused on a particular aspect of pet care, the community feature allows users to find and connect with like-minded individuals. Fourth – Events, The Pet Community also hosts and promotes pet-related events, including adoption drives, fundraisers, pet shows, and educational seminars. Users can discover upcoming events, participate in or organize their own, and connect with other pet enthusiasts who share their interests. Fifth - Events, the Pet Community also hosts and promotes pet-related events, including adoption drives, fundraisers, pet shows, and educational seminars. Users can discover upcoming events, participate in or organize their own, and connect with other pet enthusiasts who share their interests. The Pet Community on PetFaves is more than just a digital meeting point; it's a vibrant ecosystem of shared experiences, knowledge, and support. It fosters a sense of belonging and unity among pet owners and enthusiasts, enriching the lives of pets and their human companions.

Project Context

There are various concerns with pet shelters, such as the problem of overpopulation and animals becoming ill due to health concerns there. Additionally, without a sponsor, the shelter cannot provide vitamins and other essentials for the animals. Additionally, there are effects on the pet's psychological and emotional well-being. Another problem is that shelters want to have a proper pet adoption process that will help their pets and also gain help by improving the shelter's necessities. However, pet shelters lack a system or platform that will help people adopt pets in their shelter by browsing online, so what they do is talk to recipients who want to adopt the pets personally or through chat without having them check their background because they do not have a proper pet adoption process; they just give the pet, and that's all; therefore, there's no proof of where the adopters bring the pets they adopt and how they will take care of the pets.

With the use of the application, Petfaves intends to help animals in shelters obtain advantages, including adoption into a good family, preventing overcrowding, preventing illness in the shelter, and health benefits. People are more willing to offer assistance when they are aware of the animals' situation. The application aims to provide people with convenience and assurance when it comes to the certificate they will receive once the transaction is done.

Objectives of the Study

The study's general objective is to develop a user-friendly and accessible application for a lot of people who are able and willing to provide their pets with love, care, and shelter. It also helps people who want their pet to be adopted by appropriate fur parents. It is called PetFaves, an Android-based application for finding and adopting pets.

Specifically, it aimed to:

1. Design an android-based application that:

    a. enhance interface that will manage the different features that are essential for the application and allow the user to use it conveniently;
    b. covers many features that allow users to use it for browsing and adopting pets.
    c. assesses the process of pet adoption by browsing pets through pet matchmaking and pet feeds in each module.

2. Develop an Android-based application using the following:

    a. Visual Studio Code fmobile application development;
    b. scrcpy for Android emulation and mirroring;
    c. Firebase as a Backend as a Service (BaaS) for the database;
    d. Flutter with Dart for the development framework.

e. Github for version control manager
f. Canva for graphic design
g. Draw.io for visual diagrams
h. Microsoft Word 2021 for documentation

3. Test the system in terms of unit, integration, and system testing;

4. Evaluate the system using the adapted ISO 25010 evaluation instrument; and

5. Prepare an implementation plan.

Purpose and Description

The system will be conducted in order to assist people when it comes to finding and adopting pets by using the Android-based application for finding and adopting pets. By doing this, the clients may pick who they wish to adopt and who they want to adopt their pets to. It is good for people who want to adopt their pets and want their pets to be free for adoption. It is a safe way of doing so because, for them to be able to use this kind of application, they should fill up their personal information, lifestyle status, and capability of providing love, care, and shelter for pets. Once the application had been established, clients would greatly benefit from being able to choose their desired pets and offer their pets for adoption.

The Android-based application for finding and adopting pets has the following capabilities:

1. Offers pet match-making that suggests compatible pets based on the user's answer to a questionnaire. The matchmaking module considers factors such as the user's location, lifestyle, personality, budget, and pet preferences.
2. It provides a pet profile page that displays the pet's name, age, breed, gender, size, health status, temperament, and adoption status.

3. Has pet feeds, which include photos and videos of the pet as well as a description of its personality and history.
4. Its pet adoption process provides a user's guide to pet adoption through the steps of adopting.
5. Provides pet care sections that offer tips and resources on how to take care of a pet, such as feeding, grooming, training, health care, and socialization.
6. It includes a pet community section that allows users to interact with other pet owners and enthusiasts through forums, blogs, groups, events, and reviews on pet-related products and services.
7. It has location-based search, where the application or website should allow users to search for pets based on their current location or a specified area.

Once an Android-based application for finding and adopting pets is implemented for its clients, these are the beneficiaries of the above-mentioned.

1. Fur Parents. By using PetFaves, fur parents can easily and safely adopt their pets to their homes. They may also use the application to offer their pets for adoption at no cost.

2. Marden's Shelter. Through this capstone project, the shelter will help with the application that the authors are currently working on. It will provide pets that can be adopted and contribute to raising donations that are solely used to support the shelter and the animals' needs for food, water, vitamins, and shelter.

3. Pet Adopters. They can choose what pet they want to adopt and wait for the owner of the pet to accept their application to adopt the pet. They must also be financially stable and be able to provide shelter for the pets. If the expectations are met, there's a possibility they will be chosen.

4. Research advisers and technical critics. They will benefit from the capstone project in terms of research-related concerns, as it will facilitate communication between the authors and their advisers and technical critics, providing them with the guidance and instructions they require for their capstone project.
5. Students. This project will facilitate communication between the students and their unit research coordinator, technical critic, and thesis adviser. Students can benefit from this project to help them pass their thesis or capstone project and to meet their needs by making it easier for them to find resources through student outputs like capstone projects that they may use for their own research projects.
6. Researchers. Through this research, they will be able to increase their level of proficiency in creating and building a system that will provide potential adopters and pet owners a better adoption experience. Utilizing the proper technology and management techniques that might possibly change the current, undesirable situations, the researchers will also look into the concerns expressed by concerned clients. Along with improving their comprehension of system design considerations, it will also help students research PetFaves, an application for finding and adopting pets.
7. Future researchers. They will have sufficient information from this study to develop and construct a PetFaves an application for finding and adopting pets. The results and recommendations of this project will be important in the future and beneficial to them should they want to pursue the same subject for more study.

Time and Place of the Study

The study was conducted in the first week of October 2023. The system will be developed in the first week of February 2024. This capstone project

will take place in Marden's Shelter under the supervision of Mrs. Marden L. Estero. It was located at 1670 Juan Luna Street, Tondo, Manila. The application allows staff, administrators, and users to use it easily, and its user interface is designed with a focus on crafting an intuitive and user-friendly interaction model. This capstone project is entitled PetFaves, an android-based application for finding and adopting pets.

The Agile methodology was used for the development of the system. Questionnaire interviews and observations were conducted with the client; requirements gathering was the first level of the agile process that was done from the last week of October 2023 to the last week of November 2023. The researchers conducted an actual interview with the owner of the shelter. The last week of January 2024 and the first two weeks of February 2024 are when the developers conduct the second phase of the agile model, which is design. This involves designing the overall architecture, user experience, and graphical interface, ensuring that the application aligns seamlessly with the identified user needs and preferences. In the last week of February 2024 and the last week of March 2024, the developers proceed to the third phase, which is development, where the actual coding and implementation of the PetFaves application take place. This has been conducted for almost a month. The next phase is testing, which is conducted from the first week of April 2024 until the third week of April 2024, where the PetFaves application undergoes rigorous testing to identify and rectify any bugs or issues. Testing involves various scenarios to ensure the reliability, security, and functionality of the application. In the last week of April 2024, the next phase is conducted, which is deployment, where the research team rolls out the application to end-users. This phase involves making the application accessible to the target audience, allowing them to interact with its features, and providing valuable feedback. The final phase is review, which involves a comprehensive evaluation of the entire development process. The research team

gathers feedback from users and stakeholders, assesses the application's performance, and identifies areas for improvement.

Scope and Limitation

The purpose of the proposed study is to provide an application that is very useful for people who love pets and would like to offer their pets for adoption. The application should be used as evidence of adopting a pet based on the certificates they will be receiving. The clients are required to fill out their personal information, lifestyle status, and capabilities for providing for the needs of pets.

The scope of the Android-based application is that the user must download the Android application from the Google Play Store in order to access its features. Once the application has been downloaded, the user must register or create an account in order to explore or employ its features. The user will get access to pet activities, pet feeds that will show a variety of pets, pet care with tips and information on how to take care of a pet, and a pet community where they may engage with other users on pet-related topics. The application has a pet matching feature that displays suggested suitable pets based on the user's responses to a series of questions. An Android-based application called PetFaves is also cross-platform, so you can use it on mobile devices and on websites as well. Also, the scope of this android-based application is to process adoption by browsing pets and filling out a questionnaire that is needed for pet matchmaking. The users need to find a pet, talk to the owner, and after clarifying and confirming the process of adoption, they will proceed to pay a donation fee that will go directly to the shelter and receive a certificate as proof of adoption.

The limitations of an Android-based application may include a lack of certain features or functionality that are specific to a particular shelter. Pet nutrition and budget management are not included in the application.

Conceptual Framework

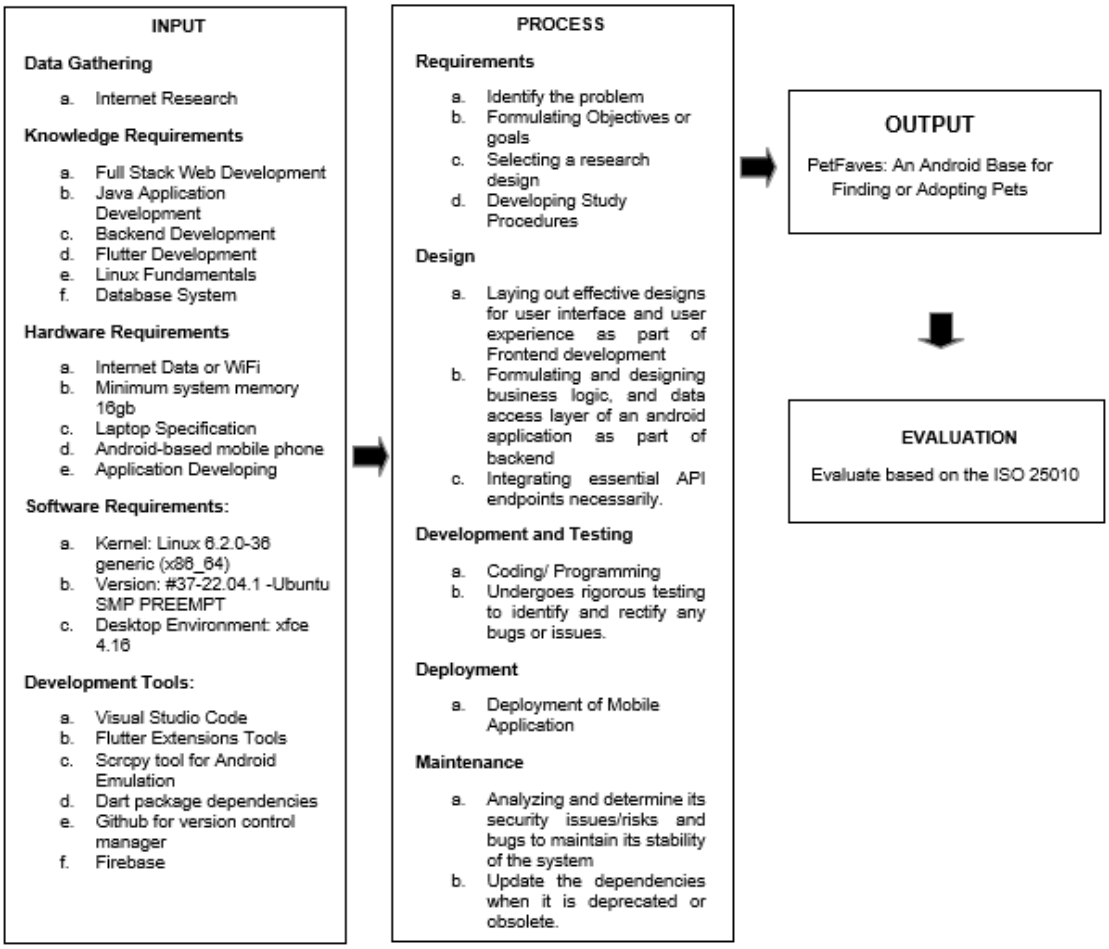

Figure 1. Conceptual framework of PetFaves: An Android-based Application for Finding and Adopting Pets

Figure 1 shows the conceptual framework of the project, where the author used the input process and output (IPO) model. Our framework outlines the steps required in developing a system. The input is the set of elements required to create the system; this is when the authors gather data from the internet through research; while doing so, this is where the knowledge requirements are applied. In this input, the developer's skills and knowledge are shown to develop the system; this is where languages are taking place. The authors will show the hardware and software requirements needed for developing the system, as well as the development tools that are needed for the system.

The process is the method by which the system generates the output. The process has requirements that will include identifying the problem, formulating objectives or goals, selecting a research design, and developing study procedures. The process is the part where the design phase takes place; this is when the developers make the system design.

After the design phase, development and testing will take place; this is the start of creating and developing the actual system, and lastly, the deployment of the system. Before proceeding to the output, maintenance will also take place, including analyzing and determining its security issues, risks, and bugs to maintain the stability of the system. The output is the outcome of the input and the process of planning and developing the system.

Definition of Terms

The following concepts are operationally defined for your understanding of the study:

PetFaves - It is an Android-based application designed for finding and adopting pets through authorized online transactions.

Spaying - refers to the surgical procedure of removing the ovaries and uterus of a female animal.

Authorized Online Transaction - The process of adopting pets through a legitimate and approved online transaction.

Paws - A feature that allows the collection of financial aid to provide assistance to animals in need.

Temperament - It is a person's or animal's nature, especially as it permanently affects their behavior.

Neutering - also known as castration, is the surgical procedure during which both testicles are removed from a male animal.

Pet Breeds - Different types of animals are usually categorized by specific characteristics such as size, coat type, and temperament.

Pet shelters - Facilities where homeless animals are housed temporarily until they can be adopted into permanent homes.

Pet Matchmaking - A feature that suggests compatible pets to users based on their answers to a questionnaire, considering factors such as location, lifestyle, personality, budget, and pet preferences.

Pet Profile - A detailed information page about each pet available for adoption, including their name, age, breed, gender, size, health status, temperament, and adoption status.

Pet Feed - A dynamic and interactive space where pet owners can share their pet care routines, achievements, and upcoming events and engage with other pet enthusiasts.

Pet Adoption Process - A step-by-step guide to assist potential pet owners through the process of adopting a pet, including scheduling an appointment, filling out an application form, paying adoption fees, and signing an adoption agreement.

Pet Care Section - A comprehensive section offering essential knowledge and resources on how to take care of pets, covering aspects such as feeding, grooming, training, health care, and socialization.

Pet Community Section - An expansive section that serves as a hub for interaction, information exchange, and support among pet owners, offering features such as forums, blogs, groups, events, and reviews on pet-related products and services.

REVIEW OF RELATED LITERATURE AND STUDIES

The chapter presents a review of related literature and studies that provided proper guidelines to create and formulate the requirements needed to start the project. Moreover, the chapter was designed to identify related research to set the current research within a conceptual and oriented context that supports the present study.

Related Foreign Literature

Mobile Application of Pet Adoption System

During the pandemic, adoption of stray animals from animal shelters has increased. Even though many people still opt for buying pets from pet shops, through this application, we encourage them to adopt instead of shop. In India, most adoptions are done by buying dogs, cats, and many other animals from pet shops or from people whose pets have had babies. Today, most adoption processes are time-consuming and exhausting. The main purpose of the project is to develop a platform to make those processes easier and give a new life to the stray animals. We chose this application to be a mobile app because, since the pandemic, everyone has come to know the importance of smartphones, and their usage has increased many times more than before. Thus, it makes it easy for the user and the animal rescue shelter to commute with each other quickly and efficiently. The project was developed using Flutter technology. It involves Flutter for front-end work and Firebase for back-end work. The purpose of this app is to facilitate the adoption of stray animals. The application provides a user-friendly interface to help automate the process of serving pets' welfare. To develop the app, we are using Flutter for the application and Firebase as the database because Flutter is Google’s free, open-source software development kit (SDK) for cross-platform mobile application development. It develops high-performance, scalable applications with attractive and functional user interfaces. This

foreign literature will help the current study in developing the system by using the same language, which is Flutter technology, where the developers will have an idea of how to execute the app development using that language (Akanksha Magdum, 2023).

E-dopt: A Mobile Application for Pet Adoption in Indonesia

In this research, we discuss the current trend in pet adoption in Indonesia and introduce a mobile application called e-dopt to encourage more pet adoption in Indonesia. Pet adoption mobile applications are not yet popular in Indonesia, thus the benefit of conducting this research. Within this research, a mobile application to help the pet adoption process has been developed. The mobile application is developed on the Android platform, and the requirements are gathered through interviews, surveys, and research that has been conducted. The mobile application developed provides convenience for those who want to adopt or give out pets, and it also allows businesses in the pet product industry to use the mobile application as a sales channel. This literature will help the current study in the adoption process. This literature says that they developed a mobile application on the Android platform, which is similar to the current study (Ryan Karuna, 2018).

Pet Adoption and re-home Mobile Application

The "Pawfect Home" mobile application was developed to address the pressing need for a streamlined platform dedicated to pet adoption and rehoming. This mobile application prioritizes a user-centric design, ensuring a seamless user interface and experience, complemented by reliable functionality. The key features include the ability to create and manage adoption listings, share awareness of missing pets, and conduct location-based searches for available pets. Additionally, users can view veterinary services nearby and initiate direct communication with pet owners through the

application. Accordingly, this literature will give idea to the present study in finding the location of pets near the location of the user (Yip Kean Fong, 2023).

AI-Based Pet Adoption System

Every year, 3.3 million canines visit animal shelters, out of a total population of 200 million. Only 2% to 17% of pets are returned to their owners. The remaining animals are euthanized due to a shortage of room in shelters. The present procedures for adapting or finding a pet are inefficient and haphazard. People disseminated leaflets to the general public and spread the word to others in the vicinity of the pet's disappearance. When individuals print fliers, they waste paper and money since there is no good impact. People also share their stories on social media sites like Instagram and Facebook. There are also several fraudsters who attempt to fraudulently claim the incentive for returning the pet to its legitimate owner. We want to provide a platform for all animal lovers to provide a pet partner of their choosing by giving all of the required information, which is generally missing when compared to any other platform or shelter, so that you can care for your new little buddy. Accordingly, this literature will support the current study's features by facilitating the pets in finding adopters and providing the knowledge and expectations necessary for an effective adoption (Sumit Kajbaje, 2022).

Pet analytics: Predicting adoption speed of pets from their online profiles

Many animals are put up for adoption. In turn, having many available animals can overburden shelters if this number rises above a shelter’s maximum capacity. Pet adoption websites need to identify which characteristics or general information about the animals are most salient to potential pet adopters to increase adoption speed and avoid overcrowding. To solve this problem, we have applied several data mining techniques, including regression, decision trees, random forests, gradient boosting, and neural networks, to find which technique is best at predicting adoption speed

(a.k.a., length of stay, or LOS) and which variable(s) are considered significant. We applied topic modeling techniques to discover latent features using information extracted from description scripts and fed it into our predictive models. Our ensemble model produced an impressive average squared error (ASE) of 1.15584 weeks. While the use of textual data helped improve the performance of regression and gradient-boosting models, other models did not receive any additional benefit from textual data. Our results indicated that pet characteristics such as age, breed, quantity, and sterilization status are key factors that influence adoption speed. This study could further help shelters around the world optimize their adoption processes. This literature gives the current study an idea to conduct a research project on establishing a pet profile, which will be found in the features of the current study. It will also help the current study prioritize the adoption process, which it will execute (Amir Zadeh, 2022).

Related Local Literature

PetCare: a smart pet care IoT mobile application

Pet ownership has become an interesting addition to the lives of Filipino families. Keeping domesticated pets has been a practice around the world, and taking good care of them is already part of our humane culture. With the advancement in the development of the Internet of Things (IoT), taking care of our pets can already be done remotely. The use of microcontrollers and sensors, designed to connect to the Internet, enabled the monitoring of pets through a mobile application. In the developed system, the researchers designed a remote-activated smart pet door, a defecation pad, and a food and water dispenser. The project also has the potential for commercial viability, especially in urban lifestyle living, compared to other means of taking care of and monitoring your pets through pet facilities. The developed mobile application provides the virtual presence of pet owners by acquiring information about pets' eating time schedules, music activation with pet-parent voice activation, room temperature

sensing, and camera service monitoring through a web cam. The mobile app has been successfully tested and proven effective in delivering on what has been promised. Thus, this literature will support the current study on pet care, which is one of the study's features. By evaluating this study, this study will enhance the pet care feature of the current study (Alexis Anne A. Luayon, 2019).

Adoption Preference on Stray Animals: Basis for Animal Welfare Campaign

This study aims to focus on the preferences of the community regarding the adoption of stray animals in Morong, Rizal. The data collection was conducted with five (5) pet owners in each of the 8 barangays in Morong, Rizal, in 2023. Based on the findings of this study, the researchers found that the pet owner-respondents in Morong, Rizal, are most likely ready to adopt stray animals based on their preferences in terms of type, breed, condition, and color. Their reasons correspond to the subjective theory of value since they talk about how valuable the animal's life is to them. The pet owners of Morong, Rizal, who are ready to adopt mostly prefer dogs and cats; due to that, they prefer types that are beneficial to the owners with good physical state and behavior (type), askal/aspin as their most preferred breed; due to that, their most preferred breeds are any breeds and breeds don't matter to the pet owners or respondents (breed), healthy, as they want animals that ensure better living and a long lifespan (condition), mostly prefer brown color, and have color that is interesting, lovely, and color they like (color). When adopting stray animals, the respondents' choice of preferences is subjective in two (2) ways. These seem to be the basis for individuals when selecting a pet to please their satisfaction in their different judgments. The researchers will propose an advocacy campaign promoting the adoption of stray animals, specifically encouraging the attributes that are not mostly preferred in stray animals. The key themes from the thematic analyses of the different preferences showed that although they valued animals' lives regardless of their kind, some tended

to select them due to their appearance and benefits. This literature is related to the pet matchmaking that is included in the features of the current study; it is all about the desired things that the user wants to see in the pets they will be adopting (Jed Capistrano, 2023).

StandForPaw: Animal Rescue and Pet Adoption Mobile Application

Companion animals, better known as pets to most people, could provide their owners or keepers with both physical and emotional advantages, which have been proven by numerous scientific studies and researchers. However, within society, even though quite a number of animal people and rescuers have surrounded us, news and articles regarding animal cruelty, abuse, or neglect are frequently published on the Internet, television, and newspapers, including on social media, with Facebook being the top source. In light of the fact that the study's application includes a forum and pet care that will benefit the animals, this will aid in the present study's goal of inspiring more people to end animal cruelty (Lyana Livan, 2021).

CAHM: Companion Animal Health Monitoring System

The Internet of Things, or IoT, changes everyone's lives. It generally changes the way humans interact with their environment and objects. In this project, IoT was conceptualized to improve human and pet interaction through medical or health opportunities through information retrieval. This study is about the development of a mobile application paired with a customized hardware device strapped on to the dog's collar called CAHM. Companion Animal Health Monitoring Application, or CAHM, is an application intended for the use of both pet owners and veterinarians.

The system features a smart collar that has location tracking, heart rate tracking, body temperature monitoring, and monitoring of a dog's activity. Functionality and usability testing were done in order to attain the developed systems' full features

and gather feedback from the intended beneficiaries of the system. Testing results show that every component of the system works accordingly, and the intended beneficiaries are satisfied with the application. As a result, since the current study includes an aspect known as "pet care," which is all about giving pets the right treatment and maintaining their health, this literature will support the ongoing research (Van Keith B. Almazan, 2020).

IoT applications for monitoring companion animals: A systematic literature review

The capabilities of the IoT concept have turned into a promising game changer in human-animal iterations. Pet owners can already use smart sensors to find ways to monitor the animals' health, location, behavior, and/or environment. On the other hand, even after years of this concept being in use, there are still common issues that need to be addressed. In this survey, the author presents the current panorama of what has been the main focus of academic studies in the last 5 years through a systematic literature review, detailing the technologies in use, motivations, what is being monitored, and the animals under study. This work suggests areas of interest, provides relevant data for future researchers, and inspires more work in this field. The components of pet care covered in the current study will be supported by this literature. It seems to add something to the ongoing research concerning proper pet care, which is one of the features of the current study (Roberto Lima Junior, 2020).

Related Foreign Studies

Development of Android-based Petmily Application

A pet is a loyal companion animal that always gives companionship and entertainment to people, especially pet lovers. Pet lovers treat their pet as one of their family members and always record their every moment in photos and posts to social media as a memory. This is because pets can give an advantage in both emotional

and physical ways to pet lovers. For example, a pet plays the role of a loyal companion to pet lovers, especially for those who are alone and feel lonely. The objective of this project is to develop a Petmily application for a mobile-based Android platform. The Petmily application is a social and lifestyle application for pet lovers. It is developed in English. This application serves as a pet social media platform and, at the same time, provides a pet information platform regarding common pet emergencies and basic obedience pet training. Task recording platform development, like a to-do list, is also included. The methodology used in the development of this Petmily application is an Agile model. Generally, satisfying results with 93.33% positive feedback have been obtained from the testing, and it can be concluded that the Petmily application is accepted by the target users based on the system usability scale. This application will be monitored from time to time to improve its performance, and it is hoped that this will benefit its target users. Accordingly, the research will support the present study to make an application to help pets find their shelter and also help the pets be recognized by using the pet social media platform and providing information on it (Tan, C. Y., and Murli, N., 2022).

JSP-Based Pet Adoption System

In recent years, the pace of people's lives has accelerated and the pressure has increased, resulting in an increase in the number of abandoned pets. More and more displaced animals have not only affected the animals of nature but also the lives of human beings. In addition, a large number of stray animals have also created a huge hidden danger to the city's surrounding environment, public transportation, and public health security. At present, people's rescue of animals is still in its early stages. There are a series of problems, such as restrictions on the location of rescue, the remoteness of rescue places, high investment demand, the update of relevant news, and difficulty in publishing. These situations directly or indirectly lead to the situation of "getting more and less" in the pets of animal rescue facilities. The system is mainly divided into four modules: the user handling module, the pet handling module, the pet

adoption module, and the pet statistics module. Through Eclipse, MySql, etc., using the SSM framework, bootstrap framework, various plug-ins, and related JSP technology. Among them is the modal box in the bootstrap framework to reduce the number of JSP pages. When browsing pets, I chose a plug-in written in pure CSS to complete the waterfall stream layout for users to browse. In the adoption of the pet statistics module, the plug-in provided by Echarts is used to complete the production of the chart, making the data look more vivid and more intuitive. It also provides the function of downloading the image to the local server for administrators to download and use.

When the user logs in, the users name is determined according to the user's name that is logged in, and the identity of the user is an ordinary member or an administrator to identify the right and jump to the page corresponding to the permission. When you log in, you have the ability to remember your password; you can log in with two functions to make the design more user-friendly. In connection, it will help the current study with this study about the features they used in their studies; it has similarities with the features that the current study will be having (Haoran Liu, 2019).

Pet Charity Mobile Application

In today's advancing world of technology, mobile applications are rapidly growing in various fields. This research aims to create a mobile application for NGO animal shelters to provide the public with a platform for easier access to related information about animal shelters. In Malaysia, currently there are only websites and social media for the public to access the related information that is managed by the animal shelters, which is rarely found out by society. By creating the mobile application, it gathers useful information and significant features to provide the public with access to animal shelters. And this mobile application can help to increase the appearance of NGO animal shelters and improve the animal environment. This study will support

current studies in developing a mobile application for a charitable organization about animal shelters, giving the general public a platform for quicker access to relevant information about animal shelters (Teoh Jin Mei, 2021).

Implementation of Smart Pet Care Applications in an IoT Based Environment

The idea of information technology and machines has become a rising demand, leading to the concept of interconnection between humans and machines. This concept has had a negative impact on human lives and their well-being. Because of this negativity, people tend to adopt pets to get emotional support. Pets require extra care, and it is not as easy as it used to be with today's busy lifestyle. As a result, one of the significant challenges has been figuring out how to grow pets in a simple manner. The best solution for this kind of problem is to use new, innovative technologies. For this matter, an IoT-based solution should be included. The question that led to this research was, "How to implement a smart pet care application within a proper IoT-based environment?" Implementation of a smart pet care application that satisfies every requirement of petting would ensure greater comfort and peace of mind for pet owners. This paper discusses the characteristics and technologies of the latest smart pet care applications and proposes solutions that satisfy the current requirements of pet owners.

Before implementing this smart pet care application, a study was performed to identify features and facilities of existing pet care applications using related research papers. This research explores the impact of the IoT concept on the potential of smart pet care applications across modern technologies to facilitate human contact with pets. The outcome is an IoT-based mobile application that satisfies users' requirements by analyzing data. In connection with the current study, it would be a great help when it comes to developing a feature that has to do with pet care (WLSV Liyanage, 2021).

Developing An Android-based Mobile Application for Temporary Animal Shelter Activities

With the rapid development of technology, studies on mobile devices have increased. By combining smart systems with mobile devices, mobile devices have gained simple computer functionality and have begun to simplify human life. In this study, an Android-based mobile application has been developed in order to carry out activities related to the animals in the temporary animal shelter more effectively and easily. The system consists of two main components: a web server and a mobile application. The location of the animal shelter, information on the animal shelter, and data on employees and registered animals can enter this system. Data management has been performed independently from the application via a web server. Records created on the website are reflected in the mobile application. The mobile application part has been developed with the Java programming language that can be used in the Android operating system for the use of local animal protection volunteers and community members. The application is based on location, including the selection of provinces, districts, and animal shelters. Thus, necessary activities related to temporary animal shelters can be carried out more effectively and easily. Accordingly, this study is all about android-based mobile applications that carry out activities related to the animals in the temporary animal shelter more effectively and easily, and it will be a big help to the current study when it comes to developing an android-based application (Tarık TÜRK, 2019).

Related Local Studies

CareForPaws: A Mobile Application for Pet Adoption and Other Services with Location-based Technology Developed in React Native Framework

The research centered on the utilization of a mobile app with location-based capabilities created in the React Native Framework for the purpose of pet adoption.

The core inquiry revolved around assessing the efficacy of the CareForPaws mobile app's functionalities, which encompass pet adoption management, monitoring systems, and personality and location-based matching. To gather data for the study, a selective sampling method was employed. This method entailed handpicking respondents from a specific subset within the Facebook community. This approach was chosen because it empowered the researchers to exercise their judgment in selecting participants who were most suited for the study's objectives. The chosen participants were granted the opportunity to engage with and evaluate the app, ensuring that all its features were accessible and functional. Subsequent to this testing phase, the researchers integrated necessary modifications to the app based on feedback received from the testers. The study findings indicated the effectiveness of employing a mobile application equipped with location-based technology, developed using the React Native Framework, for the purpose of pet adoption. The app's features proved instrumental in identifying adoptable pets, and the questionnaire component facilitated the assessment of a pet's compatibility with potential adopters. Additionally, the inclusion of a community forum within the app was found to be beneficial in connecting individuals who share an interest in pets. This forum not only aided in finding like-minded individuals but also enabled the app users to extend invitations to fellow pet enthusiasts and organizations, encouraging broader adoption and use of the mobile application. Accordingly, the research will support the present study in designing and building an application that will benefit users of the system. The study mentioned above has similarities to the ongoing research being conducted by the developers; in particular, it will support the ongoing investigations into location-based technologies and online forums (Eric B. Blancaflor, 2023).

PawBreedster: A Website Application for Dog Owners and Enthusiasts

This study aims to help dog owners and dog lovers connect and communicate with dog experts who can share their knowledge on how to properly take care of dogs.

It also builds relationships with people who share similar lifestyles and interests through an interactive website application. The need for such an application is based on the need to address some possible problems that dog owners encounter, especially in finding a match breed for their dogs as well as in choosing an affordable and reliable way of breeding dogs. The system is an accessible web-based application that supports dog owners and dog lovers in their lifestyle interests. In order to fulfill the project, the proponents used Agile methodology for the development of the system, which included interactive and incremental development and solutions. The system was developed and designed using MySQL Server, XAMPP, Adobe Photoshop, CodeIgniter, HTML, CSS, PHP, MYSQL, JavaScript, Sublime Text, and Bootstrap. It was also tested using the Windows 10 operating system. The application was evaluated in terms of functionality, efficiency, compatibility, usability, reliability, security, maintainability, and portability by 50 users, including three IT experts. This study will support the aspects of pet matchmaking and pet care in the current study. It appears to contribute to the current study in relation to the right care of pets, particularly dogs, which is one of the pets that the current study is undertaking (Cristina Marie M. Baluyut, 2020).

VetPaw Pet Care Application: An Assessment of the Proposed Business Application using SWOT Analysis

The animal welfare application aims to increase attention about the care of animals during or ever after the pandemic, which would examine the potential clients and service providers who may render better services to them. The prime objective of this study is to evaluate the VetPaw Finder application—a local pet care application—that aims to provide the utmost service for local pets and pet owners. It will also allow veterinary professionals to connect with their patients safely, even from a distance. The study was based on a qualitative survey—formulated with the guide of the Six Thinking Hats—through convenience and random sampling distributed to pet owners

and veterinarians. The strengths, weaknesses, opportunities, and threats (SWOT) were the basis for the strategic plans to improve the application and possibly surpass the local popular pet care applications. From 52 respondents, the result showed that due to the application being new to this kind of platform, VetPaw has multiple weaknesses and threats based on its competitors. One of the characteristics of the current study is having a "find pet location" where users can find or locate pets by using the application covered in the study. One aspect of the current study is that it appears to contribute to the ongoing research on location finders (Buena Meiye Guerrero, 2022).

DogMate: Dog Breeding, Grooming, Health and Vet Locator Information System for Dog Parents

Dogs are the earliest animals to be domesticated and accompany man in his journey through history. Despite the massive differences between breeds like Newfoundland Pugs and Chihuahuas, they are still members of the same species, Canis familiaris. However, with many breeds comes the problem of distinction and generalization, and applying general knowledge to a dog can be difficult. Dog parents not understanding that caring for a dog is not as simple as just setting down a food bowl with treats or walking them for thirty (30) minutes a day often led to cases of neglect and abandonment. Knowing about the basics of a breed is the key to ensuring that the dog thrives in a household. Dog parents need information, and although much of it is accessible through the internet, not all of it can be found on just one website or one application. Using similar technology and a wider range of research, the developed website and mobile application, DogMate, showcases all three hundred forty-four (344) breeds, including general information on health and hygiene, both online and offline, in place of needing to search for the same information through different websites online. One aspect of the current research is the pet matchmaking tool, which allows

pets to breed with other pets, particularly dogs. This feature not only facilitates breeding but also searches for suitable pet adoptive homes. This study will assist the current study in increasing the likelihood that the feature of pet matchmaking is much more like this study (Shaira Mae B. Isada, 2021).

TerraVet: A Mobile and Web Application Framework for Pet Owners and Veterinary Clinic

The lives of pet animals are equally essential as human lives. Pet owners and veterinarians are responsible for providing good welfare for pets, despite the problems. However, the rise of COVID-19 temporarily disturbs the veterinary services, where some of them limit or stop their operations, resulting in the absence and difficulties for pet owners to locate the available veterinarian, especially when there is an immediate need for treatment, vaccination, or consultation. Aside from that, setting an appointment and meeting the pet's needs are seen as problems with regards to the situation since most pet owners are afraid to go outside because they might be infected with the virus. In line with this, TerraVet: A Mobile and Web Application Framework for Veterinary Clinics and Pet Owners is proposed to resolve the underlying dilemmas in administering and facilitating veterinary care.

The main objective of this suggested project is to develop and design a platform where pet owners may locate their nearby veterinarian using Global Positioning System (GPS) technology. In addition, the application enables the pet owner to arrange an appointment, a product reservation, and an online consultation. The veterinary clinic may post details regarding their offered services, products, and medicines. TerraVet will also design an electronic pet card to monitor their health status. Accordingly, this study will help with the pet profile feature of the current study, where the profile or health history of pets is visible (John Carlos Enriquez Llaneta, 2023).

Technical Background

The developers aim to conduct a study about an Android-based application, which is an example of a mobile application. The developers gathered some related literature and studies based on the technology needed by the system. The use of this technology helps the fur parents find pets according to their wants and also helps the pets find their fur parents according to their needs. PetFaves: An Android-Based Application for Finding and Adopting Pets is developed exclusively for the Android platform. It stands out as a prime illustration of mobile technology's capabilities. It offers a comprehensive solution for managing diverse aspects of pet activities, encompassing adoption, care, profiles, and feeds, all within a versatile cross-platform framework that includes Android and web interfaces. The developers' efforts involve a thorough review of relevant literature and studies to inform the system's technological requirements. As a mobile application, PetFaves prioritizes user-centric design, serving as a valuable tool for pet enthusiasts, affectionately known as fur parents, to discover pets aligned with their preferences. Simultaneously, the application facilitates pets in connecting with potential fur parents. This study explores the full potential of Android-based applications in revolutionizing and streamlining processes within the realm of pet care and adoption. PetFaves introduces a suite of features to enhance the user experience and optimize the pet adoption process. These include the Pet Matchmaking, Pet Profile, Pet Feed, Pet Process, Pet Care, and Paws for a Cause features. The technical foundation of PetFaves relies on the Flutter framework for mobile application development, ensuring a seamless and responsive cross-platform experience. Supported by Firebase as a robust backend-as-a-service and database solution, the application's technical infrastructure manages data storage, processing, and account authentication with security and efficiency. Crucially, PetFaves' development is grounded in user requirements gathered through interviews, surveys, and comprehensive research, ensuring a meticulous alignment with the diverse needs

and preferences of pet enthusiasts. This user-centric and innovative approach solidifies PetFaves' position as a pioneering solution in the landscape of Android-based pet adoption applications.

Synthesis

This study and literature are related to the authors study, PetFaves: An Android-Based Application for Finding and Adopting Pets. This can support current studies on developing the system and its features. Some of the languages used in this study are also being used by the authors, which is similar to the system they are developing. It will benefit the ongoing research on the use of these languages. Every written study and related literature have unique qualities and significance that will support the present research. This kind of research and literature has been compiled in order to support the current study and improve its significance for users and clients. This study supports the present study in its goal of helping the developer design a user-friendly application. Similar aspects of the current study appear in some of the published studies regarding pet care; these features revolve around caring for pets according to the recommendations of different kinds of fur parents. Also, there are studies that are similar to pet matchmaking, in which the user fills out a questionnaire provided by the system with the pets they desire and would want to adopt. In order to get a concept of how to implement that sort of feature, this kind of study will support the current study. The contrast between the studies and the studies of the authors is that there will be a certificate in the current study as proof of adoption, which the user will receive after adopting a pet using the application. The research that the authors are conducting differs from previous studies and literature and has particular features of its own. Even though several aspects of the related literature and studies have similarities to the features of the current study, there are still gaps in technique, technology, and other areas.

METHODOLOGY

This chapter discusses the materials, methods, design of software, systems, products, or processes, system development, system testing and evaluation, data analysis, and implementation plan of the study.

Materials

The development of the PetFaves Application involves a carefully curated set of materials and tools to ensure a robust and efficient software creation process. The primary hardware utilized is a laptop equipped with an Intel(R) Core (TM) i5-6300 CPU@ 2.40GHz processor, 16GB of RAM, and a 256GB SSD, providing a powerful and responsive development environment. The programming language chosen for implementation is Dart, known for its versatility and compatibility with the Flutter framework. Flutter serves as the Software Development Kit (SDK) for building the application, offering a comprehensive set of tools and libraries for cross-platform development. To enable real-time synchronization between users, the database management system selected is Firebase, facilitating seamless data interaction and updates. Material 3 is employed for designing the user interface, ensuring a modern and cohesive front-end experience across Android, Flutter, and the Web. The Integrated Development Environment (IDE) of choice is Visual Studio Code, complemented by scrcpy for Android emulation and mirroring, streamlining the development and testing processes. This carefully selected suite of materials aims to optimize the development workflow, enhance collaboration, and ultimately contribute to the successful realization of the PetFaves Application.

Methods

The development approach chosen for the PetFaves Application is the Agile Software Development Life Cycle Methodology. This methodology is recognized for its dynamic and iterative nature, emphasizing continuous communication, adaptability, and ongoing improvement throughout the project's life cycle. Agile project

management aligns with the idea that a software project can be enhanced continuously by swiftly incorporating changes and adjustments as needed. The Agile methodology promotes a collaborative and flexible environment, allowing the development team to respond promptly to evolving requirements and feedback from users and stakeholders. Its adaptability, iterative cycles, and emphasis on users' feedback have established Agile as a widely adopted and effective approach in software development, making it particularly suitable for the PetFaves Application as it aims to create an intuitive and responsive platform for pet adoption.

Design of Software, Systems, Products, and/or Processes

The PetFaves application, an Android-based platform, is designed to streamline the process of finding and adopting pets. It provides a user-friendly interface that allows users to search for pets in their area, filter their search based on pet type, breed, age, and location, and view detailed information about each pet. Key features of PetFaves include Pet Matchmaking, which suggests compatible pets based on a user’s answers to a comprehensive questionnaire; a Pet Profile feature that provides a detailed profile of each pet; a Pet Feed feature for posting updates about pet care routines, events, public inquiries, or other activities; a Pet Adoption Process feature that provides a user's guide to the pet adoption process; a Pet Care section for tips on how to take care of a pet; and a Paws for a Cause feature that allows users to collect financial aids to provide aid to animals in need.

Figure 2 depicts the data flow diagram of the PetFaves application, an Android-based platform developed for pet adoption. The application comprises five primary features that drive the data flow process. Upon launching the application, end-users initiate the process by signing in or registering their accounts via the login portal. The administration handles the user login authentication, ensuring the account is appropriately managed, verified, and confirmed. Following successful authentication, users engage with the pet-matchmaking feature, which identifies suitable pets based on preferences inputted on a questionnaire. The pet matchmaking feature extracts pet

preferences from the completed questionnaire and generates a list of pets that align with the user's preferences. Following pet selection, the pet adoption process module takes over, transforming the selected pet details into adoption process details. These details are subsequently passed to the transaction module for further processing. Meanwhile, the adoption process details are concurrently stored in the administrator's dashboard.

In the final phase, the transaction module simulates the setting of appointment details as though the payment or donation details have been processed by the staff. The staff then verifies the appointment details set by the transaction module and dispatches them to the end-users, thus completing the adoption process.

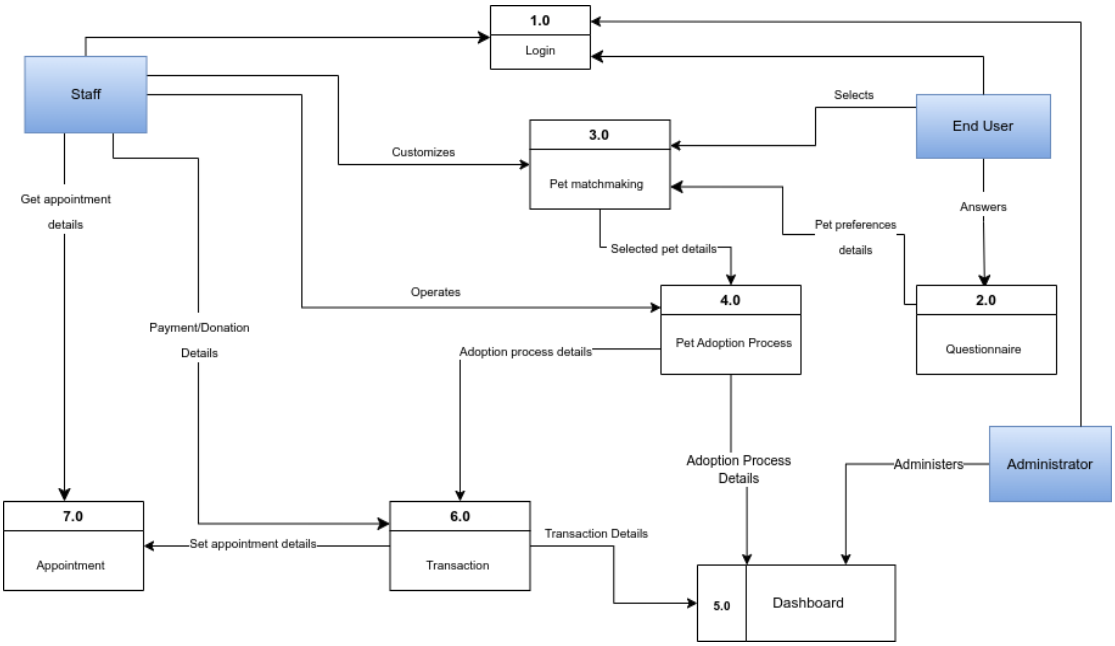

Figure 2. Data flow diagram of PetFaves Application

Figure 3 illustrates the use case diagram of the PetFaves application, an Android-based platform designed for pet adoption.

The diagram shows that users can access the PetFaves application to answer a questionnaire about their pet preferences, view details about their pet preferences, view details about pet matchmaking, view details about the adoption process, and

utilize the pet matchmaking feature to find and select their perfect matched pet. They can also set the appointment and adoption process.

On the other hand, administrators and staff members have an administrative role responsible for overseeing the configuration and customization of the pet matchmaking feature, managing the adoption and transaction process, especially either payment or donation through the e-Payment method, and setting appointments and agreements for pet adoption.

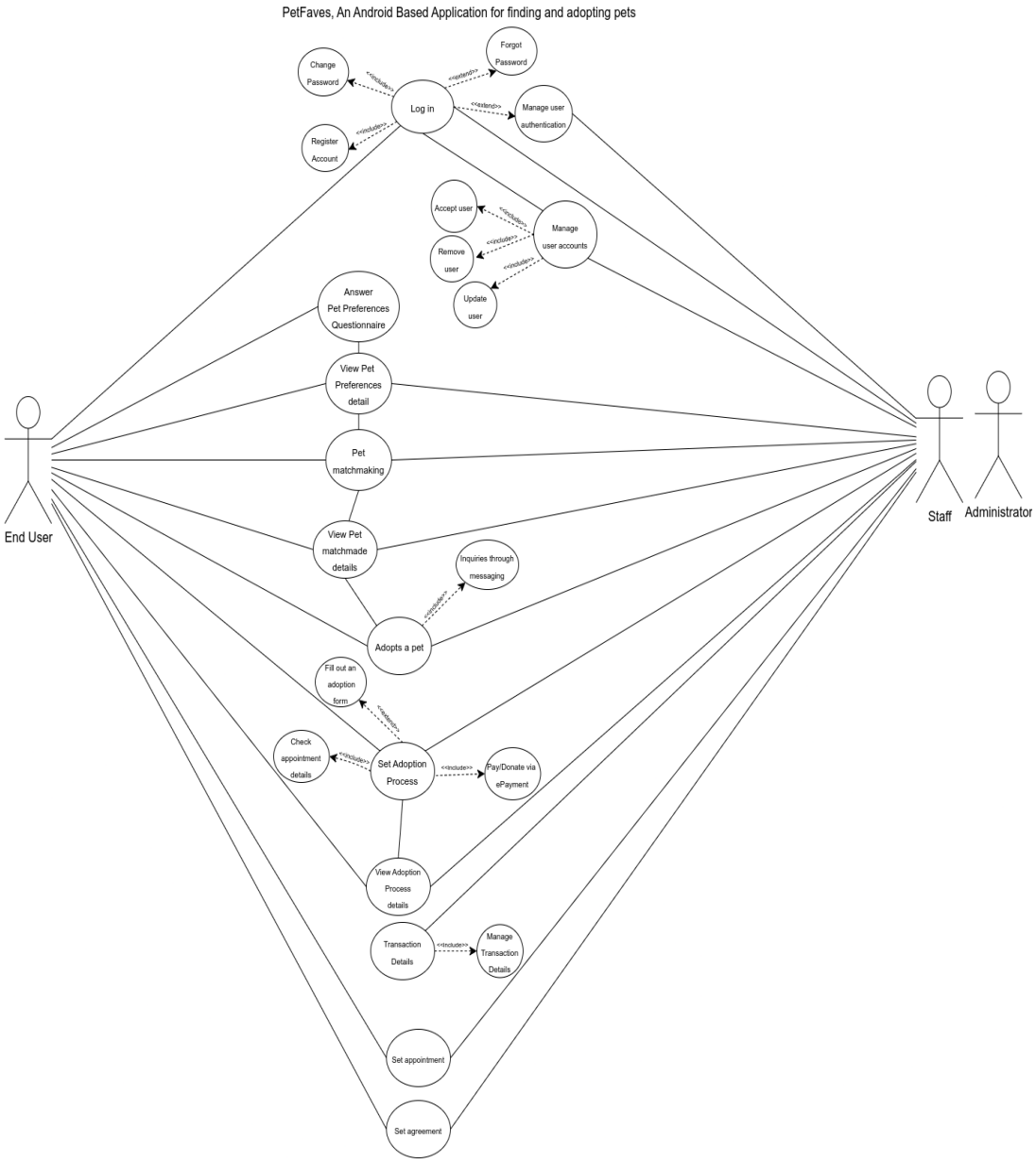

Figure 3. Use Case diagram of PetFaves Application

Figure 4 illustrates the graphical user interface design of both the user and admin sides of the PetFaves application. This Android-based platform for finding and adopting pets presents a user-friendly and intuitive interface. The user side of the application allows users to search for pets, filter their search based on pet type, breed, age, and location, and view detailed information about each pet. On the admin side, administrators can manage user logins, handle the pet matchmaking feature, oversee the pet adoption process, and manage the Paws for a Cause feature.

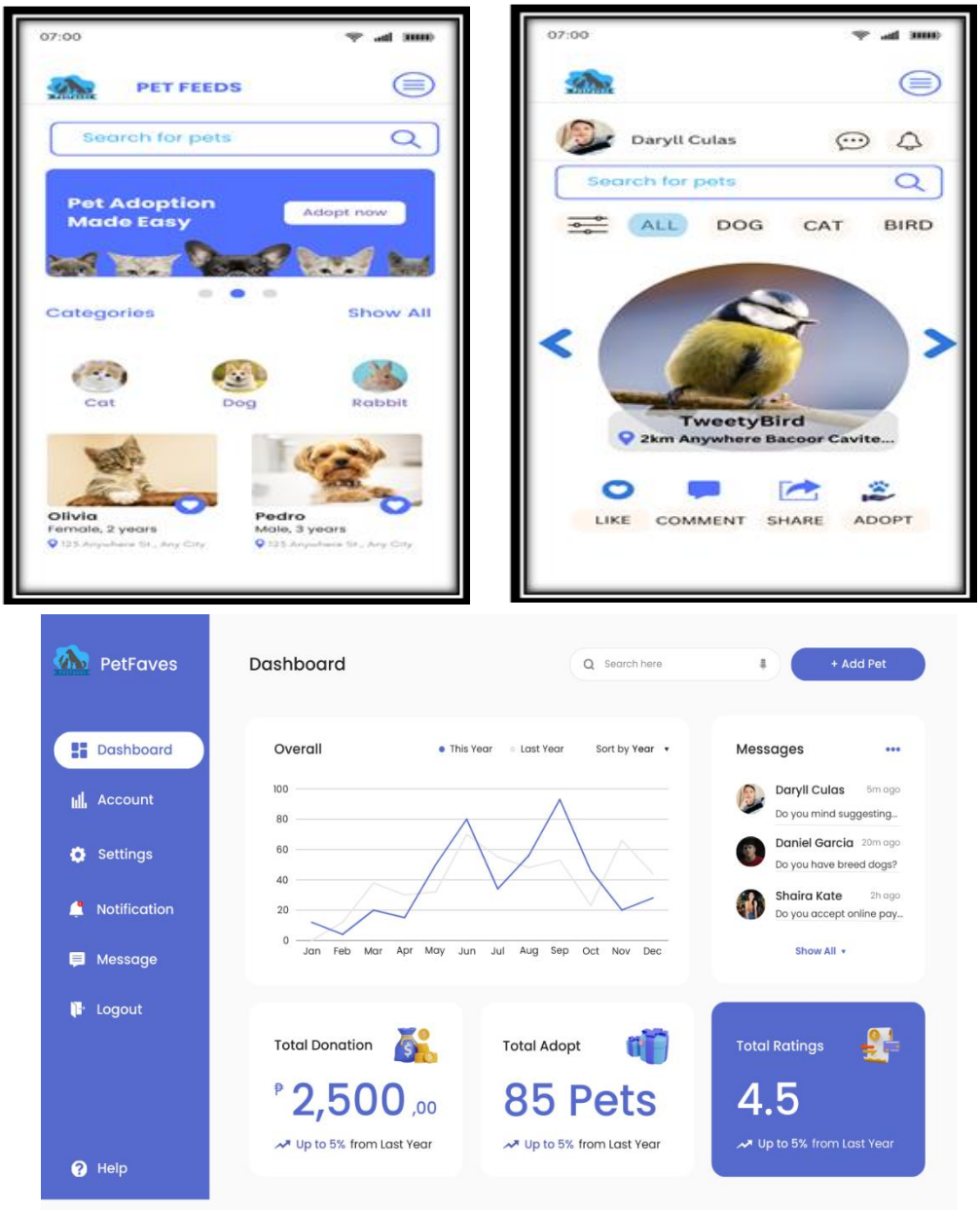

Figure 4. Graphical User Interface Designs of PetFaves Application

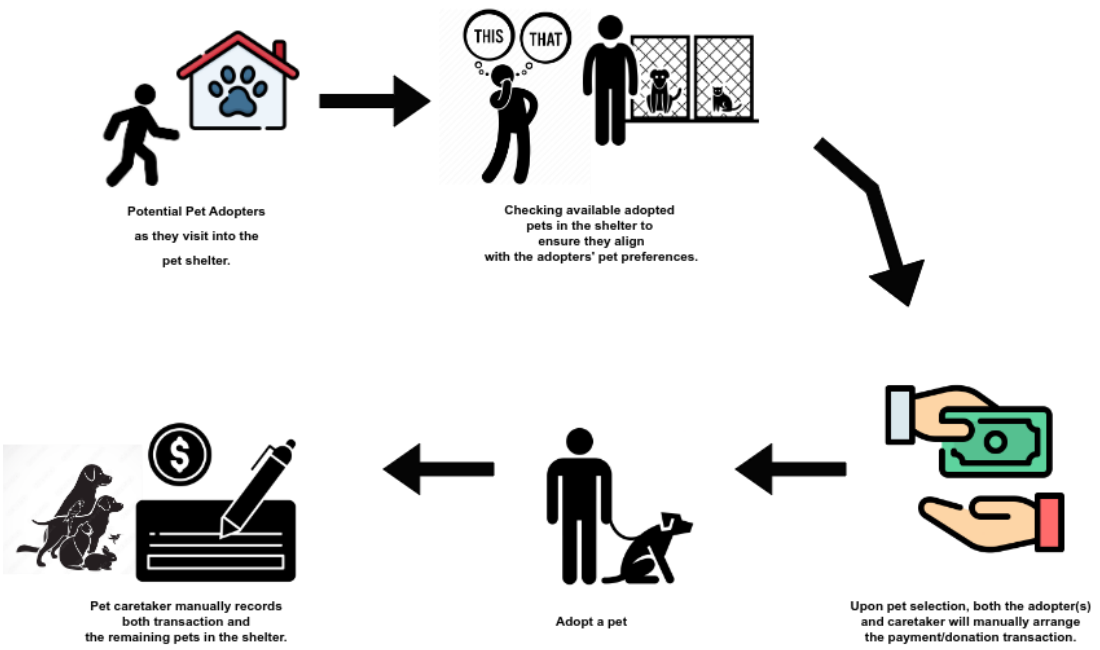

Figure 5. Current Technical Situation

In the current process for pet caretakers, potential adopters visit the pet shelter, where caretakers help them assess available pets to ensure a good match with preferences. Once a pet is selected, a collaborative effort between adopters and caretakers involves the manual arrangement of payment or donation transactions, a critical step in the adoption process. The successful adoption is then formalized, and caretakers meticulously record both the adoption details and maintain comprehensive records of the remaining pets in the shelter. This streamlined and hands-on approach ensures an efficient and personalized adoption experience while highlighting the caretakers' vital role in managing and documenting various aspects of the pet adoption process.

Table 1 presents list of technical resources available in the organization that can be used to run the project that can be used to run the project to be developed. This includes personal laptops as hardware, software includes Programming languages, database management system, Designing UI, and Integrated Development Environment.

Table 1. List of technical resources available

RESOURCES	DESCRIPTION
Laptop/Personal	Includes with Processor – Intel(R) Core (TM) i5-6300 CPU@ 2.40GHz, 16GB of RAM and 256GB SSD. Also, the resolution is 1920x1080 pixels.
Programming Language	Dart
Software Development Kit	Flutter framework
Database Management System	Firebase for allowing real-time synchronization between users.
Designing UI	Material 3 for front-end application development. It includes in-depth UX guidance and UI component implementations for Android, Flutter, and the Web.
Integrated Development Environment	For application development, Visual Studio Code will be used along with scrcpy for android emulation and mirroring

Table 2 presents the estimated cost of the project. Resources such as Materials, Web hosting, Printing Services, Travel expenses, Training expenses, and Miscellaneous expenses that serve purposes throughout the project lifecycle. Here are some key purposes of estimating the cost of a project.

Table 2. Estimated cost of the project

PARTICULARS	AMOUNT (₱)
Google Play Store Publish Application	1,404.00
Printing Services	3,000.00
Travel Expenses	5,000.00
Training Expenses	3,000.00
Miscellaneous Expenses	2,500.00

Table 2. Continuation…

PARTICULARS		AMOUNT (₱)
Web hosting		1,000.00
Domain name		1,000.00
	TOTAL	**16,904.00**

Requirement Documentation

Based on the interview conducted with the client, the following features have been agreed.

Table 3 Presents the features of the proposed system. The main features are Maintain user profile, provide preferences questionnaire, provide pet matchmaking, provide a pet feed, provide a pet adoption Process, and Provide a pet care section.

Table 3. Features of the proposed system

MAIN FEATURES	DETAILED FEATURES
Maintain User Profile	The system shall have a user profile feature, serving as a personalized dashboard for users. This feature will hold information about the user, including their contact details, pet profile, account settings and the pets they are interested in or have adopted. Furthermore, the system will enable the user to create a profile.
Provide Pet Feed	The system shall have a Pet feed feature in which is a dynamic and interactive space where pet owners can share their pet care routines, showcase their pet's achievements, make public inquiries and engage with vibrant community of fellow pet enthusiasts.
Provide a Preferences Questionnaire	The PetFaves application shall feature a concise Preferences Questionnaire, aiding in aligning potential pet owners with pets that match their preferences.

Table 3. Continuation…

MAIN FEATURES	DETAILED FEATURES
	The questionnaire covers location details, lifestyle, personality, budget, preferred breed type, gender, and pet age range. It ensures a personalized and efficient pet adoption process by considering the user's location, daily routine, personality traits of pets, financial capability, and specific preferences regarding breed, gender, and age of pets.
Provide a Pet Matchmaking feature	The system shall incorporate a Pet Matchmaking feature that optimizes the pet customization. This feature evaluates user responses to a comprehensive pet preferences questionnaire, which encompasses aspects such as lifestyle, personality, budget, preferred breed type, gender, and age range. Based on these inputs, the system generates matches with pets that closely correspond to the user's specified preferences, thereby increasing the likelihood of successful adoptions.
Pet adoption process	The system shall have a user-friendly interface where potential adopters can fill out a pet adoption form. Following submission, users shall be provided access to check appointment details upon visiting the shelter. Additionally, the system shall include an ePayment method, enabling users to conveniently pay or donate for the adoption process.

Table 4 presents non-functional requirements of the system that has quality attributes which are Accessibility, Accessibility, Accuracy, Simplicity, Time behavioral, Security, and Scalability. These are the quality attributes that define the overall quality attributes that the system must possess.

Table 4. Non-functional requirements of the system

QUALITY ATTRIBUTES	DESCRIPTION
Accessibility	The system shall provide multilingual and user-friendly support.
Accuracy	The system shall provide accurate information to the users.
Simplicity	The system must be easy to understand and explain to the user.
Time behavioral	The system must load within 5 seconds
Security	The system shall automatically log out the entire user's information after a period of inactivity.
Scalability	The application limit must be scalable enough to support 200 users at a time.

Software design

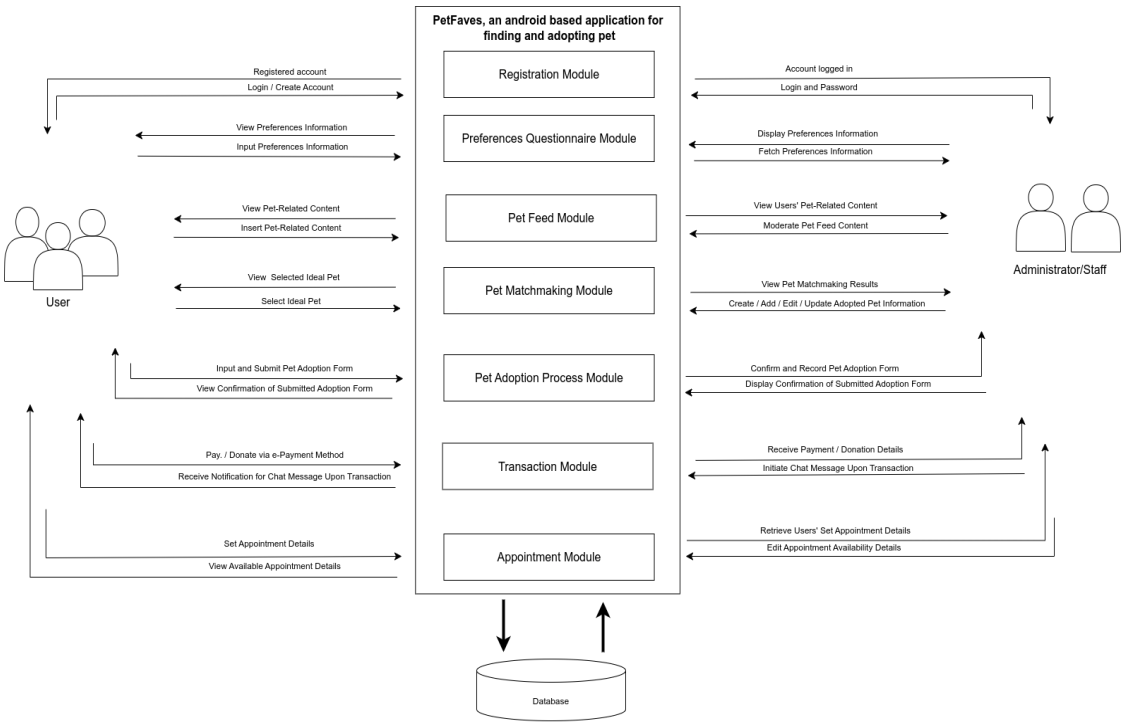

Figure 6. System Architecture

The system architecture, presented in Figure 3, is composed of different modules:

Registration Module. The Registration Module manages all user registration data, storing comprehensive user information. It ensures the accuracy of data to uphold system security. Users, as well as administrators or staff, can initiate the registration process by providing essential information, including personal details (name, contact information) and login credentials (username and password).

Preferences Questionnaire Module. The Preferences Questionnaire Module is designed to capture users' preferences by gathering information on various aspects. Users are prompted to provide details such as location, lifestyle, personality, budget, preferred breed type, gender, and the ideal age range for a pet. This module plays a vital role in the pet adoption process as it serves as the foundation for the Pet Matchmaking Module. The information collected through the questionnaire is utilized by the Pet Matchmaking Module to facilitate the matching process. This logical connection ensures that the pet suggestions generated align closely with the preferences outlined in the users' submitted questionnaire. By seamlessly integrating these modules, the system enhances the efficiency of the pet adoption experience, providing users with tailored matches that suit their individual preferences and requirements.

Pet Feed Module. The Pet Feed Module operates as a user-friendly platform, allowing users to share and engage with a diverse range of pet-related content. Users have the flexibility to post various pet-related content, including inquiries, pet adoption requests, and highlights of their pet-related activities. Notably, the module incorporates features like Like, Share, and Comment for each pet-related post, enriching user interaction within the pet adoption community. Administrators or staff members possess concurrent abilities to view and moderate the pet-related content submitted by users. Consistent moderation follows established policies, ensuring that the content aligns with the platform's guidelines and standards. This dual functionality not only

enhances the user experience by creating a dynamic and interactive space for pet enthusiasts but also ensures a controlled environment through responsible content moderation.

Pet Matchmaking Module. The Pet Matchmaking Module is a crucial component that provides users with suggested pets for adoption based on their submitted preferences questionnaire. This module is logically connected to the Preferences Questionnaire Module, enabling users to select their ideal pet from the suggested adoption options that align with their preferences. Additionally, users can view images and details of their selected pets, including pet name, age, gender, breed type, vaccination history, height, weight, and adoption history. Administrators have the capability to access the overall pet matchmaking results of users, and they can perform actions such as deleting, updating, editing, or adding adopted information within the Pet Matchmaking module. This ensures a seamless and interactive experience for both users and administrators, enhancing the efficiency of the pet adoption process.

Pet Adoption Process Module. In the Pet Adoption Process Module, users actively engage by providing input through the completion and submission of the Pet Adoption Form. This essential step allows users to input details about their adoption preferences and submit the form, with the output being the ability to view confirmation that their adoption form has been successfully submitted.

On the administrator/staff side, the primary output involves confirming and recording the submitted Pet Adoption Form. This action ensures that accurate records are maintained within the system, facilitating efficient tracking of adoption processes. Additionally, administrators and staff input information by creating, adding, editing, or updating details related to the adopted pet. This input is crucial for keeping the platform's database current and comprehensive, contributing to the overall success of the pet adoption process. The collaborative efforts between users and administrators/staff within the Pet Adoption Process Module result in a well-coordinated and effective adoption experience for all users.

Transaction Module. In the Transaction Module, users initiate payments or donations via e-payment, receiving notifications for chat messages as transaction confirmations. Administrators/staff receive and process payment details, responding with chat messages to facilitate communication and address transaction-related inquiries. This streamlined interaction ensures transparency and effective communication throughout the financial transactions within the pet adoption platform.

Appointment Module. Within the Appointment Module, users actively contribute by providing their preferred appointment details, enabling them to access available appointment slots. Administrators and staff focus on managing the schedule by editing appointment availability details. This bidirectional interaction streamlines appointment coordination, fostering efficiency between users and administrators/staff within the platform. The seamless exchange of information ensures a well-organized and dynamic scheduling process, enhancing the overall user experience and operational effectiveness in appointment management.

Development and Testing

The computer unit designated for mobile development will operate on the Linux kernel 6.2.0-36 generic Ubuntu 22.04.3 LTS 86_64-bit system, featuring a robust configuration, including 16GB DDR4 RAM, an Intel(R) Core (TM) i5- 6300U CPU @ 2.40GHz with 1 physical processor, 2 cores, and 4 threads. The graphics capability encompasses Mesa Intel(R) HD Graphics 520 (SKL GT2) with a screen resolution of 1920x1080. The motherboard in use is the Thinkpad x260/ 20F5S08Q00 (LENOVO), and for a lightweight and efficient development environment, Xfce 4.16 (xUbuntu) is employed. The essential software tools for mobile application development comprise Visual Studio Code as the integrated development environment, scrcpy for Android emulation and mirroring, Firebase as a Backend as a Service (BaaS), and for the database, and the utilization of Flutter with Dart for the development framework. This setup is complemented by Flutter extension tools and necessary Dart packages and

dependencies. The researchers will use Canva for graphic design, Draw.io for visual diagrams and Microsoft Word 2019 for documentation. In the development of the software, the researchers will use the Agile Software Development Life Cycle Methodology as their guide in developing the software which is composed of six (6) phases: Requirement Gathering, design, development, test, deployment, and review.

Figure 7. Agile Software Development Life Cycle Methodology

The Agile Software Development Life Cycle Methodology serves as the guiding framework for the development of the PetFaves application. In the first phase, Requirements, the research team initiates the process by conducting interviews and surveys with pet caretakers to comprehensively understand their needs and expectations. This phase focuses on gathering detailed insights into the preferences, challenges, and requirements of potential users, laying the foundation for the subsequent development stages.

Moving on to the second phase, Design, the research team leverages the gathered requirements to create a systematic and intuitive user interface for the PetFaves application. This involves designing the overall architecture, user experience, and graphical interface, ensuring that the application aligns seamlessly

with the identified user needs and preferences. The emphasis is on creating a user-friendly platform that enhances the pet adoption experience.

In the third phase, Development, the actual coding and implementation of the PetFaves application take place. The research team utilizes tools such as Visual Studio Code, Flutter with Dart, and Firebase for backend services to bring the design concepts to life. This phase is characterized by iterative development, allowing for continuous feedback and adjustments to ensure that the evolving software aligns closely with the project goals and user requirements.

Following the Development phase is the fourth phase, Testing, where the PetFaves application undergoes rigorous testing to identify and rectify any bugs or issues. Testing involves various scenarios to ensure the reliability, security, and functionality of the application. The iterative nature of Agile allows for prompt identification and resolution of issues, ensuring a robust and stable application.

As the PetFaves application progresses to the fifth phase, Deployment, the research team rolls out the application to end-users. This phase involves making the application accessible to the target audience, allowing them to interact with its features and provide valuable feedback. Deployment is a pivotal step in the Agile process, as it marks the transition from development to real-world usage.

The sixth and final phase, Review, involves a comprehensive evaluation of the entire development process. The research team gathers feedback from users and stakeholders, assesses the application's performance, and identifies areas for improvement. This iterative review process contributes to ongoing enhancements and updates, ensuring that the PetFaves application remains adaptive and responsive to the evolving needs of its user base.