

Paw Care Connecting Pets and People

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Abstract - The rapid increase in global pet adoption has led to a growing need for centralized, intelligent, and user-friendly digital pet-care ecosystems. Despite the availability of various standalone mobile applications addressing different aspects of pet management, these solutions remain highly fragmented, making it difficult for pet owners to efficiently track vaccinations, store medical records, book veterinary appointments, manage grooming schedules, or coordinate emergency rescue operations. PAW CARE introduces an end-to-end Android-based platform that consolidates all essential pet-care functionalities into a single unified interface. The system bridges the gap between pet owners, veterinarians, animal shelters, NGOs, and municipal authorities through real-time data synchronization, AI-driven insights, and community-driven support features. It integrates pet profiling, vaccination reminders, adoption workflows, emergency reporting, lost-and-found tracking, veterinary appointment booking, grooming services, and a digital community forum. The platform leverages Firebase Realtime Database to maintain instant data consistency and uses Firebase Storage for secure and reliable image-based uploads for lost pets, medical reports, and adoption listings. Role-based access ensures secure and authenticated data sharing between all stakeholders. Proposed AI components further enhance the system by analyzing pet health patterns and supporting early disease detection. This research presents a detailed system architecture, extensive literature analysis, user evaluation, and performance metrics demonstrating the platform's effectiveness. PAW CARE showcases how modern technologies such as cloud databases, machine learning, and IoT integration can transform the pet-care ecosystem and promote responsible pet ownership.

Key Words: Pet care management, Android development, cloud-based pet services, animal identification, adoption systems, veterinary booking, IoT health monitoring, Firebase, AI in animal care.

I. INTRODUCTION

The rising global trend of pet ownership has significantly transformed the responsibilities and expectations associated with animal care, particularly in rapidly urbanizing regions. Pets are increasingly regarded as important family members, resulting in a growing demand for structured, convenient, and reliable digital tools that support daily pet-management tasks. However, despite the expansion of veterinary services, grooming centers, training platforms, adoption agencies, and animal welfare organizations, the existing digital ecosystem remains highly fragmented. Pet owners often rely on multiple disconnected applications or offline sources to track vaccinations, maintain medical histories, schedule veterinary appointments, arrange grooming services, monitor dietary routines, report emergencies, or manage adoption-related activities. This scattered approach not only creates inconvenience but also leads to inefficiencies in record-keeping, delayed decisions during urgent situations, and limited data sharing between stakeholders such as veterinarians, NGOs, and shelters.

PAW CARE addresses these issues by introducing an all-in-one Android-based solution designed to unify pet-care services into a centralized, intelligent, and user-friendly platform. The system consolidates multiple essential functions—pet profiling, vaccination reminders, digital health records, veterinary scheduling, adoption workflows, lost-and-found reporting, emergency rescue tools, grooming and training management, and community discussions—into a single, seamless interface. With the integration of Firebase Realtime Database and Firebase Storage, PAW CARE ensures secure, scalable, and real-time synchronization of data across all user roles, including pet owners, veterinarians, NGOs, shelters, and adopters. The platform's architecture supports future enhancements such as AI-powered health monitoring, anomaly detection, image-based pet identification, and IoT device integration for continuous

biometric tracking using smart collars or GPS-enabled sensors.

GPS-enabled sensors.

By bridging critical communication gaps, digitizing essential processes, and providing an intuitive user experience, PAW CARE aims to elevate the standard of pet care and strengthen collaboration among all stakeholders in the animal-welfare ecosystem. Its comprehensive, future-ready design positions it as an impactful technological solution capable of transforming the way pet care, adoption, rescue, and community engagement are managed in modern society

II. LITERATURE SURVEY

The advancement of digital technologies has significantly influenced the field of animal welfare, pet management, and veterinary care, leading to the emergence of several innovative systems aimed at improving pet identification, health monitoring, rescue operations, and adoption workflows. Research in biometric-based pet identification highlights the limitations of traditional approaches such as microchipping, ID collars, and manual matching, especially in situations involving lost pets. Studies by Voinea et al. (2023) and Moreira et al. (2022) demonstrate the effectiveness of advanced deep-learning models, including convolutional neural networks and contrastive-learning techniques, in recognizing pet facial features with high accuracy. These findings show that automated visual recognition can significantly improve the retrieval of lost animals when combined with real-time databases and community alert systems.

Further contributions in the domain of mobile animal-welfare applications emphasize the importance of streamlined data collection and operational efficiency. For instance, field-deployed mobile systems used in large-scale sterilization and street-dog management initiatives have proven effective in tracking animal histories, documenting medical records, coordinating rescue activities, and improving decision-making processes within NGOs and municipal bodies. Such research underscores the potential for centralized platforms to enhance transparency, accuracy, and responsiveness in animal-welfare operations.

Parallel advancements in the Internet of Things (IoT) and wearable technologies have introduced new possibilities

for continuous pet-health monitoring. Smart collars embedded with sensors can capture biometric data such as heart rate, temperature, activity levels, and GPS location. As noted in studies like Lee et al. (2021), integrating these IoT devices with mobile applications enables early detection of illness, behavioral abnormalities, and environmental risks. This synergy of real-time sensing and software analytics provides valuable insights that contribute to proactive veterinary intervention.

Despite these promising developments, existing solutions often suffer from significant fragmentation. Most applications focus on isolated functionalities—such as adoption listings, veterinary appointment scheduling, health record storage, or lost-pet reporting—without providing an integrated, scalable, and collaborative ecosystem. This lack of cohesion leads to poor data interoperability, inefficient communications between stakeholders, and inconsistent user experiences. The literature reveals a clear gap in the availability of holistic platforms capable of consolidating pet-care services, rescue mechanisms, adoption management, health analytics, and community engagement into a unified system.

PAW CARE is designed specifically to address this gap by leveraging cloud technologies, real-time synchronization, and modular architecture to integrate all essential pet-care functionalities. Through its holistic approach, the proposed system reflects the direction suggested by contemporary research, emphasizing the need for comprehensive, interoperable, and intelligent digital platforms capable of supporting the full spectrum of pet-care and animal-welfare activities.

III. PROPOSED SYSTEM

The proposed system, PAW CARE, is an Android-based application designed to provide a unified platform for pet owners, veterinarians, shelters, and NGOs. It resolves the fragmentation in existing pet-care services by integrating multiple features such as pet profile management, adoption, health tracking, lost-and-found assistance, and community engagement into a single mobile interface.

3.1 System Overview

PAW CARE connects all stakeholders in the pet ecosystem through a centralized digital platform. Users can register and log in to access personalized dashboards that display pet information, upcoming appointments, and

service options. The system allows pet owners to maintain detailed profiles for each pet, including vaccination dates, medical history, and breed information. PAW CARE connects all stakeholders in the pet ecosystem through a centralized digital platform. Users can register and log in to access personalized dashboards that display pet information, upcoming appointments, and service options. The system allows pet owners to maintain detailed profiles for each pet, including vaccination dates, medical history, and breed information. Through the adoption module, users can browse or list pets available for adoption, while the Lost & Found feature helps reunite missing pets with their owners via quick reporting and photo uploads.

3.2 Key Features

- **User Authentication:** Secure login and registration system to ensure authorized access for pet owners and NGOs.
- **Dashboard:** Displays all essential pet information, upcoming appointments, and quick links to services.
- **Pet Profile Management:** Allows users to add, edit, and view pet details such as name, age, breed, vaccination status, and health updates.
- **Health & Veterinary Services:** Enables users to book vet appointments, receive reminders, and maintain digital health records.
- **Adoption Module:** Provides a platform for NGOs and pet owners to post adoptable pets with details and images.
- **Lost & Found Feature:** Allows users to report missing or found pets by uploading images and location details to alert the community.
- **Community Forum:** Offers an interactive space for users to share experiences, seek advice, and discuss pet-care topics.
- **Emergency Support:** Provides quick access to nearby animal shelters, rescue teams, and veterinary services during emergencies.

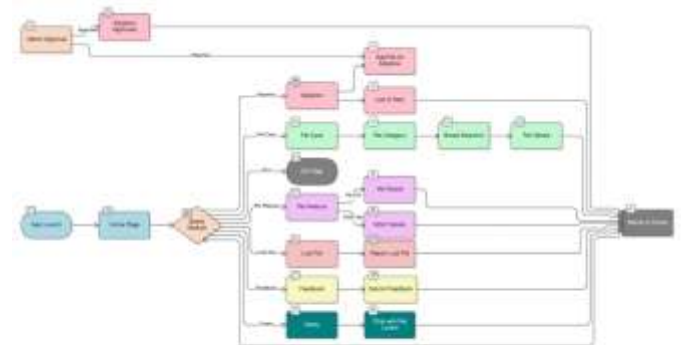
3.3 System Architecture

The system follows a client-server model:

- The frontend is built using XML for layout design, providing a responsive and user-friendly interface.

- The backend logic is implemented in Java, handling user interactions, data validation, and feature operations.
- Firebase Realtime Database (or SQLite, depending on your setup) is used for data storage and synchronization.
- Android Studio serves as the primary development environment for coding, debugging, and testing.

3.4 Flow Chart



IV. RESULTS AND DISCUSSION

The PAW CARE application was tested to see how well it works and how easily users can interact with its features. Since this project was developed by computer science students, the main goal was to build a simple, functional, and easy-to-use pet-care management app.

Functionality Testing

All major features—such as creating pet profiles, adding medical records, booking vet appointments, posting pets for adoption, and reporting lost pets—worked successfully during testing. Users were able to upload images, update information, and navigate through the app without facing major issues.

Performance and Speed

Because Firebase Realtime Database was used, data updated quickly and appeared instantly on other devices. Image uploads were also smooth, usually taking only a few seconds. The app responded fast and did not lag during normal use.

User Feedback

Testers found the app simple and easy to understand. First-time users were able to create accounts, add pets, and explore the features without needing instructions. Pet owners liked the idea of storing all pet information in one place, and NGOs appreciated the adoption and lost-and-found sections.

Overall Outcome

Overall, the project achieved its primary objective: creating a beginner-friendly, student-built mobile application that helps pet owners manage basic pet-care tasks. The app successfully combines essential features in one platform and makes it easier to keep track of pets, find missing animals, and support adoption.

V. CONCLUSION

The PAW CARE application successfully demonstrates how technology can bridge the gap between pet owners, veterinarians, shelters, and animal welfare organizations through a single, unified platform. By integrating essential features such as health record management, adoption services, lost-and-found assistance, and community interaction, the system simplifies pet care and promotes responsible ownership. The Android-based design ensures accessibility, while the real-time database provides seamless data management and synchronization. The project not only addresses the fragmentation of existing pet-care services but also encourages compassionate engagement among users. Through its intuitive interface and user-centric design, PAW CARE enhances the human-animal bond and contributes to a broader culture of animal welfare.

In the future, the system can be expanded with AI-driven health prediction, GPS-based tracking for lost pets, multilingual support, and cloud-based data analytics to further improve scalability and functionality. Integrating wearable devices and IoT sensors will also enable continuous health monitoring and personalized care insights. These advancements would make PAW CARE an even more comprehensive and impactful platform for pet lovers and animal-care communities worldwide.

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