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PETZY: Revolutionizing Pet Care Adoption

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***Abstract*—This paper introduces a comprehensive Pet Fostering Application designed to simplify and enhance the process of pet adoption and care. Utilizing a modern technology stack, including Flutter for cross-platform development, Firebase for real-time data management, and MySQL for robust backend support, the application offers a seamless experience for users seeking to foster or adopt pets [1][4][9][10]. Key features include intelligent matching of pets with potential families, access to veterinary support through integrated telemedicine, and secure health record management [2][3][5][6]. This initiative not only improves the efficiency of the pet fostering system but also contributes to better animal welfare by ensuring pets are placed in suitable, loving environments.**

***Index Terms*—MySQL, Chatbot, Vaccine Appointments, Veterinary Consultation, Flutter (Dart Language)**

I. INTRODUCTION

Pet adoption and fostering have become increasingly vital in addressing the issue of stray animals and overcrowded shelters. Despite the noble intentions of animal welfare organizations, the traditional processes involved in pet adoption are often cumbersome, lacking technological integration and efficiency. Our Pet Fostering Application aims to revolutionize this domain by leveraging modern technologies such as Flutter, Firebase, and MySQL to create an intuitive and efficient platform [1][4][10]. The application offers a seamless experience for users, including potential pet adopters, foster families, and veterinary professionals. By incorporating features such as intelligent pet-family matching algorithms, secure health record management, and veterinary telemedicine, this system addresses key pain points in the current adoption and care process [2][3][5][6].

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By maintaining an organized database, this platform will improve healthcare management and reduce errors in record-keeping. An intelligent algorithm will also be implemented to enhance pet-family matching. By analyzing key criteria such as lifestyle, experience, and pet behaviour, the system will optimize placements and increase the chances of successful fostering and adoption. Furthermore, real-time veterinary consultation services will be integrated, allowing foster families to seek immediate medical advice. This feature will help address health concerns promptly, ensuring better care for fostered pets. By combining digital record management, intelligent matching, and accessible veterinary support, this platform aims to make pet fostering more efficient, transparent, and successful.

A. Evolution of Pet Fostering Systems and the Need for a Centralized Platform

As shown in Fig. 1, survey responses indicate that 57.1% of participants currently own pets, and an additional 17.9% are actively involved in fostering. This highlights a substantial base of pet-engaged individuals who would benefit from improved fostering tools and services. At the same time, 25% of respondents plan to foster in the future, signaling a growing demand for efficient and accessible systems. These insights underscore the need for a centralized digital platform that not only caters to current pet owners and foster caregivers but also anticipates future adoption trends. By integrating medical history, adoption data, and fostering feedback into a unified system, shelters and rescue organizations can overcome challenges in record-keeping, communication, and care coordination—ultimately improving foster success rates and animal welfare outcomes.

B. Key Considerations in Designing an Efficient Pet Fostering System

One big problem in pet fostering is keeping track of medical records and vet visits. In Fig. 2, the survey shows that 46.4% of people book appointments by phone, and 35.7% use a clinic's website. Others use different ways or don't have a set method at all. This shows that there's no

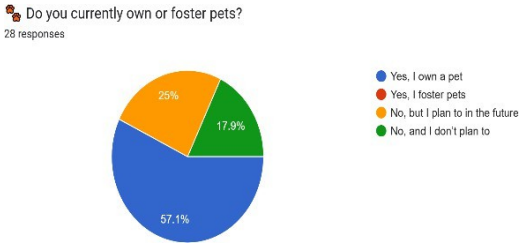

Fig. 1: Pet Owners

single, easy way to manage pet health care. To fix this, a digital platform should let users update and check vet records in real time. The survey also suggests that matching pets with the right foster homes is difficult. Using AI technology to match pets based on things like behavior, home environment, and caregiver experience can make fostering more successful and less stressful for both pets and people.

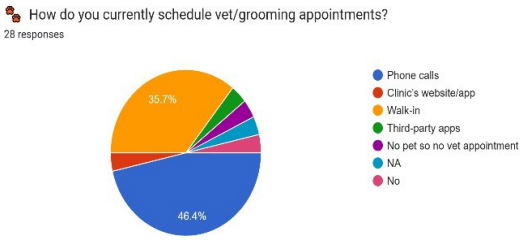

Fig. 2: Vaccine Appointments

C. Technological Framework for an Integrated Pet Fostering Platform

The need for better digital tools is clear from the survey shown in Fig. 3, where many people said they haven't used any tech for pet fostering or adoption. This shows a gap in easy-to-use, reliable systems for managing fostering. To solve this, a digital platform should be built using cloud technology and mobile apps. It should make it easy for users to access medical records, track placements, and get online vet support. Security and ease of use are also very important. The bar chart on 'Factors Rated by Importance' shows that people care most about privacy, medical tracking, and user-friendliness. A good system must focus on these

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needs to encourage more people to use it and keep using it long-term.

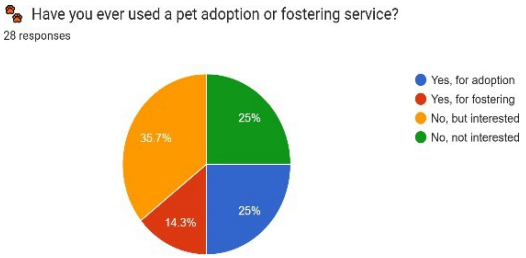

Fig. 3: Adoption Services

The feature prioritization bar graph (Fig. 4) highlights that users value integrated veterinary support the most, with vet consultations via video chat receiving the highest number of top-priority rankings. This finding aligns with the growing adoption of telemedicine in pet care, which has been proven effective in improving accessibility and continuity of treatment [6]. Similarly, medical record storage was ranked as highly important by many respondents, reflecting a need for secure and accessible digital health records, consistent with trends in digital health solutions [3]. Features like adoption/fostering platforms and appointment scheduling were moderately valued, indicating their importance in facilitating smoother operational experiences. On the other hand, pet grooming booking was ranked lower, suggesting that while useful, it is not a core expectation from such platforms.

These insights reinforce Petzy's core focus on healthcare and adoption services as primary pillars of the user experience. By aligning the app's development priorities with user expectations, Petzy aims to ensure higher adoption rates and long-term engagement. Additionally, these results underscore the importance of user-centric design in creating tech-driven solutions that are both functional and meaningful in real-world contexts.

II. Methodology

The methodology adopted for this Pet Fostering Application revolves around a structured multi-tier architecture, combining frontend development,

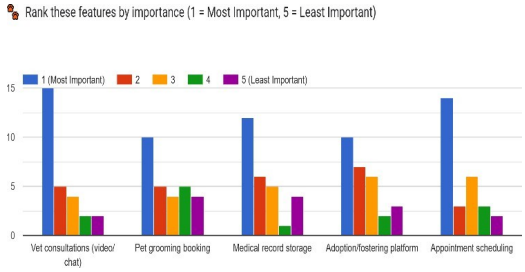

Fig. 4: Feature Prioritization

cloud services, database management, and intelligent features. At the frontend, Flutter is used to ensure a consistent and responsive user interface across Android and iOS platforms [1][9]. It supports core user interactions such as registration, pet exploration, scheduling telemedicine sessions, and viewing health records.

The backend comprises Firebase and MySQL. Firebase facilitates real-time data synchronization, authentication, and secure cloud operations, whereas MySQL supports relational data storage and complex querying needs, especially for managing structured information like user profiles, medical records, and adoption history [4][10].

A. System Architecture and Design

The application will have a modular structure, with separate components for different functionalities:

- **User Authentication Module:** Firebase Authentication will be used for secure login and role-based access for foster families, shelters, and veterinarians.
- **Health Record Management Module:** MySQL will store vaccination details, medical history, and treatment records, allowing easy retrieval and updates [2].
- **Pet-Family Matching Module:** An algorithm will be designed to match pets with suitable foster families based on predefined criteria.
- **Veterinary Consultation Module:** A feature for real-time consultation with veterinarians via chat or video calls will be integrated.

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B. Data Collection and Integration

Data will be collected and stored in Firebase and MySQL databases, ensuring seamless integration between different modules:

- **Pet Profiles:** Includes breed, age, medical history, and behavioural traits.
- **Foster Family Information:** Captures experience, living environment, and preferences.
- **Veterinary Records:** Stores vaccination schedules, prescriptions, and medical recommendations.
- **Adoption and Fostering History:** Maintains records of previous fostering and adoption cases to refine matching accuracy.

C. Implementation of Veterinary Support System

The veterinary consultation module will provide essential medical support for fostered pets:

- **Chatbot for Basic Queries:** AI-powered chatbot will offer general pet care advice [6].
- **Live Consultation Feature:** A chat/video call option for foster families to connect with registered veterinarians.
- **Automated Health Alerts:** Notifications for vaccinations, check-ups, and medications [3], [6].

D. Application Development and Testing

The app will be developed in Flutter for both Android and iOS platforms, ensuring a smooth and user-friendly interface:

- **Frontend Development:** Flutter will be used for UI/UX, ensuring responsiveness and accessibility.
- **Backend Development:** Firebase will handle real-time data synchronization, while MySQL will manage structured pet records.

E. Advantages of the Required Software for Development Environment

Flutter (Dart Language):

- Single codebase for Android and iOS, reducing development time.
- Rich UI widgets for a smooth and responsive user experience [1].
- High performance and fast rendering using Skia graphics engine.

Firebase:

- Real-time database synchronization for instant updates.
- Scalable authentication services with Google, Facebook, and email login.
- Secure cloud storage for pet health records and user data.

III. Methodology

The methodology adopted for this Pet Fostering Application revolves around a structured multi-tier architecture, combining frontend development, cloud services, database management, and intelligent features. At the frontend, Flutter is used to ensure a consistent and responsive user interface across Android and iOS platforms [1], [9]. It supports core user interactions such as registration, pet exploration, scheduling telemedicine sessions, and viewing health records.

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IV. Conclusion

The Pet Fostering Application bridges the gap between pet seekers and providers while ensuring quality healthcare through telemedicine and secure health records. By integrating intelligent matchmaking and a cloud-powered backend, this application offers a scalable and impactful solution to pet fostering challenges.

The application successfully addresses the challenges of inconsistent health record tracking, difficulty in finding suitable foster families, and limited access to veterinary support. By leveraging Flutter, Firebase, and MySQL, the application provides a centralized and user-friendly platform for pet shelters, foster families, and veterinarians to collaborate efficiently. The system ensures secure user authentication, real-time pet tracking, AI-driven pet-family matching, and automated health record management, making the fostering process seamless and transparent.

Through real-time veterinary consultations and vaccination reminders, the app enhances pet care and ensures timely medical support. While the current implementation is effective, future enhancements such as AI-based recommendations, blockchain for health records, multi-language support, and social features will further improve usability and scalability. With continued development, the platform has the potential to revolutionize pet fostering, encourage responsible adoption, and strengthen the pet welfare ecosystem.

V. Future Work

The current pet fostering application successfully addresses core challenges, but future enhancements can further improve usability, efficiency, and scalability:

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A. AI-Based Smart Recommendations

- Enhance the pet-family matching algorithm using machine learning to provide more accurate foster suggestions based on user preferences, past fostering history, and pet behaviour analysis.

B. Advanced Veterinary Support

- Implement AI-powered chatbots for instant pet health consultations.
- Integrate telemedicine features for real-time video consultations with veterinarians.

C. Blockchain for Health Records Security

- Use blockchain technology to securely store and verify pet medical records, ensuring tamper-proof data and better transparency for shelters and veterinarians.

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