iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** V **Month of publication:** May 2025

DOI: https://doi.org/10.22214/ijraset.2025.71564

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue V May 2025- Available at www.ijraset.com

PetAid - A Smart Companion for Pet Care and Well-being

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Abstract: ***This paper introduces PetAid, a smart AI-powered web platform designed to assist pet owners and animal welfare enthusiasts in managing pet care, detecting pet mood, and making informed decisions regarding pet adoption and healthcare. PetAid integrates features like an AI assistant for symptom-based diagnosis, weather-based pet recommendations, a community marketplace, a curated lessons section, and vet consultations with map-based search. Built using React.js and Firebase for seamless UI and real-time data handling, the system also factors in environmental data like weather conditions to offer context-aware recommendations. This paper outlines the design, architecture, and functional modules of PetAid, emphasizing personalized pet wellness, user engagement, and intelligent decision-making.***
Keywords: Pet care, AI assistant, mood detection, weather-based recommendation, Firebase, React.js, animal welfare.

I. INTRODUCTION

With the rise in pet ownership globally, ensuring proper pet care and timely veterinary attention has become a growing need. Traditional platforms often fail to provide real-time, personalized insights for pet health and wellness. **PetAid** bridges this gap by leveraging AI, community-driven engagement, and smart recommendation algorithms tailored for pet owners and animal rescuers.
The project introduces intelligent modules like a symptom-based AI assistant, a weather-integrated pet recommendation engine, and a community platform for adoption pets—all packed into a responsive web application. PetAid supports both mobile and desktop platforms, aiming to enhance convenience and efficiency in animal care and management.

II. LITERATURE SURVEY

A literature survey is a critical component of any research project. It involves reviewing and analyzing existingliterature, research papers, and other relevant sources to gain a comprehensive understanding of the current state of knowledge on a particular topic

S.NO	Title/Year/Authors	Methodology Followed	Observation
[1]	Veterinary Telemedicine: A New Era for Animal Welfare (2024) Ashraf M. Abu-Seida,Abdulrahman Abdulkarim, Marwa H. Hassan	This comprehensive review discusses the current status, benefits, and challenges of veterinary telemedicine across the globe. The authors analyze various telehealth models, legal frameworks, and technological advances that support remote diagnosis and treatment of animals. The paper uses qualitative and quantitative data collected from case studies and global telemedicine practices.	This paper highlights the growing importance of remote veterinary care but also reveals the gap in easily accessible, localized veterinary information for pet owners. PetAid bridges this gap by providing an easy-to-use platform focused on helping users find veterinarians in their city and offering AI-powered health insights, without requiring direct teleconsultations.
[2]	Development of Cattle Disease Diagnosis Expert System (CaDDES): A Web Application for the Diagnosis of Cattle Diseases (2023) P. Krishnamoorthy, H. V. Dharshan, T. M. Chandrasekhar, K. P. Suresh	This study presents a web-based expert system that assists in diagnosing cattle diseases by allowing users to input symptoms and receive probable diagnoses and preventive recommendations. The system leverages	CaDDES demonstrates how expert systems can augment veterinary services for livestock. PetAid extends this concept by integrating AI to provide pet owners with care guidelines and symptom analysis,

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		rule-based reasoning and clinical data integration to support veterinarians and farmers.	tailored to companion animals, filling a niche in pet healthcare awareness and self-help tools.
[3]	The Taurus': Cattle Breeds & Diseases Identification Mobile Application Using Machine Learning(2023) R. M. D. S. M. Chandrarathna, T. W. M. S. A. Weerasinghe, N. S. Madhuranga, T. M. L. S. Thennakoon, Anjalie Gamage, Erandika Lakmali	The paper introduces a cross-platform mobile application that uses machine learning to identify cattle breeds and diagnose diseases by analyzing images and videos of affected areas. Data-driven algorithms support farmers with diagnostics and treatment advice.	The Taurus app exemplifies how AI and ML can be applied in veterinary diagnostics through mobile platforms. PetAid adapts these principles by providing AI-powered symptom analysis and pet recommendations, focusing on companion animals and broader user engagement through features like pet mood detection and product searches.
[4]	Integratin the Philosophy and Psychology of Well-Being An Overview (2024) Brown, L, &Potter,S.	This journal article reviews theoretical frameworks combining philosophy and psychology to understand mental well-being. It synthesizes concepts from both fields to propose holistic approaches to improving emotional health through reflective practice and behavioral interventions.	Although centered on human well-being, this work influences PetAid's AI Assistant and Pet Mood Detector features, which aim to improve pets' health by guiding owners through emotional and physical symptom monitoring, reflecting an integrated approach to holistic pet care.
[5]	Mobile Apps That Promote Emotion Regulation, Positive Mental Health, and Well-being in the General Population: Systematic Review and Meta-Analysis (2021) Bakker, D., Kazantzis, N., Rickwood, D., & Rickard, N.	Through systematic review and meta-analysis, this paper evaluates mobile applications designed to promote emotion regulation and mental well-being. The study categorizes app features, assesses effectiveness, and discusses user engagement strategies.	This analysis provides valuable insights into app design for behavioral and health outcomes. PetAid leverages similar design philosophies by combining user-friendly AI features with educational content to engage pet owners in proactive pet health management.
[6]	Philosophical Dialogue with AI: A Framework for Digital Socratic Assistants (2023) E., & Bishop, J. M.	The paper proposes a framework for AI systems that engage users in philosophical dialogue to foster critical thinking and emotional support. It discusses the implementation of digital Socratic assistants using natural language processing and conversational AI.	While focused on human users, the conceptual framework informs PetAid's AI Assistant design, enabling natural, interactive communication to guide pet owners in understanding symptoms and care options, thereby enhancing the user experience.

III. METHODOLOGY

A. System Development Approach:

The application was developed following the agile methodology with iterative development cycles.

- Frontend: Developed using React.js with Tailwind CSS for responsive design.
- Backend & Database: Firebase is used for authentication, data storage, and real-time updates.
- Authentication Module: Login system includes email-based user registration and secure access control using Firebase Auth.

- AI Assistant Module: Allows users to enter symptoms and returns care suggestions.
- Weather-based Pet Recommendation: Suggests suitable pets based on the user's lifestyle, home environment, and current weather.
- Pet Mood Detector:

Users upload behavioral cues or inputs to analyze pet mood.
Offers care tips based on detected mood.

- Vet Consultation:

Regional vet data integrated with Google Maps to provide location-based vet access.
Encourages professional consultation for serious cases.

- Lessons and Blogs:

Educational resources on hygiene, nutrition, training, and emergency car
Promotes responsible pet ownership.

- Community Marketplace:

Firebase-based chat and post system for adoption of pets.
Encourages adoption and proper rehoming.

B. Data Flow Diagram (DFD)

Shows how user inputs travel through modules like AI assistant, weather API, Firebase, and are rendered dynamically On the frontend.

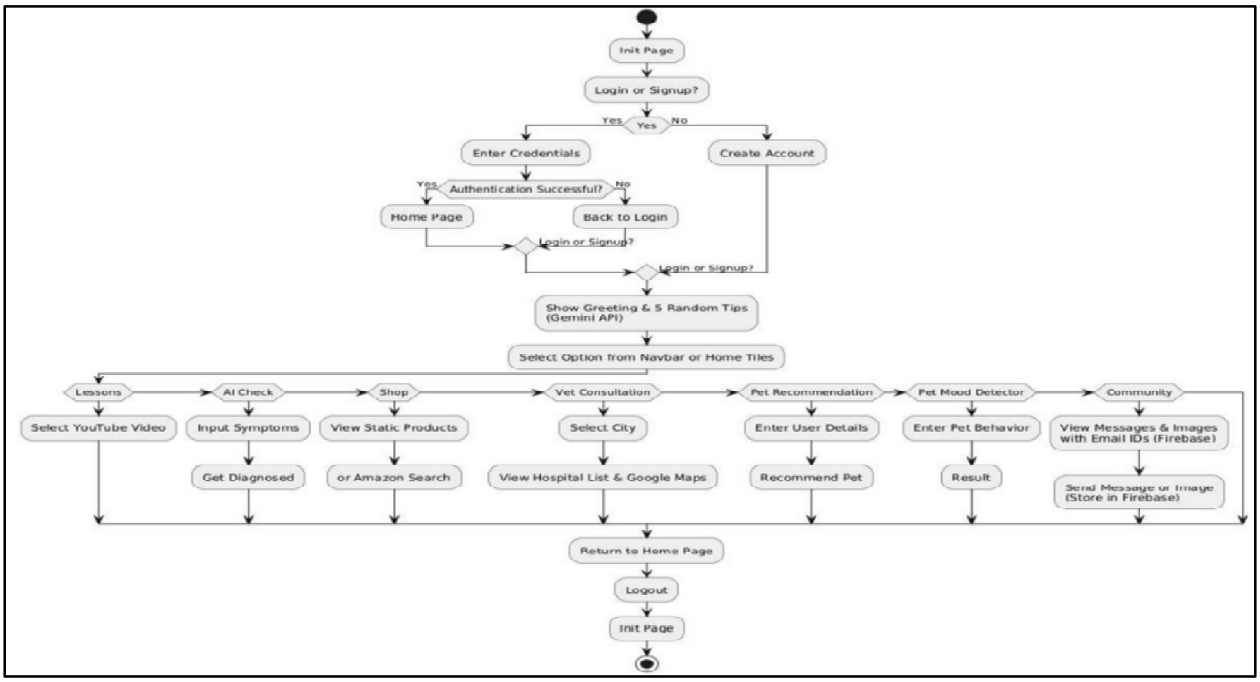


Fig 1- Data Flow Diagram

C. Use Case Diagram

Includes:

- User login
- Symptom input and diagnosis
- Pet recommendation
- Mood detection
- Vet lookup
- Community interaction

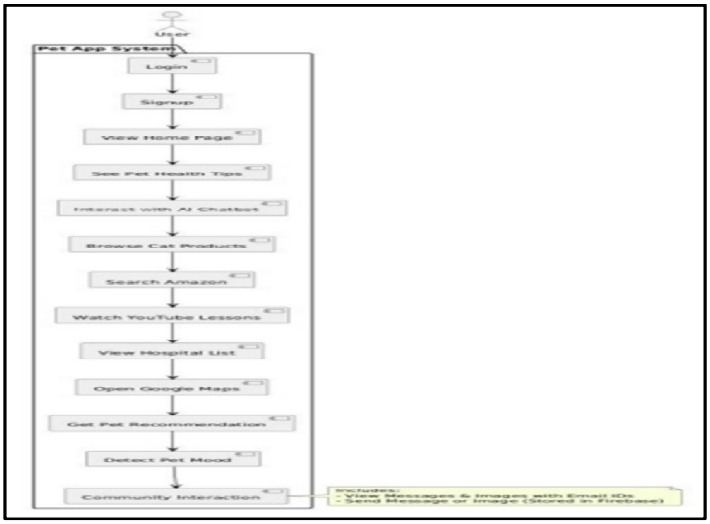


Fig 2- Use Case Diagram

D. Activity Diagram

Details a typical user flow: login → use AI assistant → get diagnosis → book vet consultation or check pet recommendations.

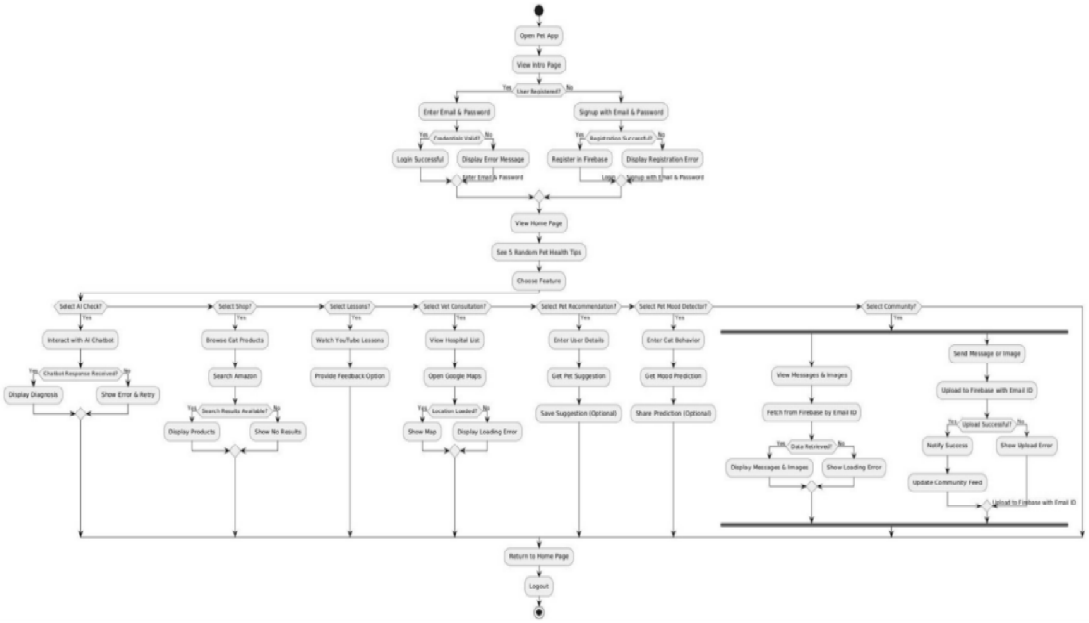


Fig 3-Activity Diagram

E. Entity Relationship Diagram (ERD)

Includes

- Users
- Symptoms
- Pets
- Weather Reports
- Marketplace Posts
- Chat Messages
- Vets

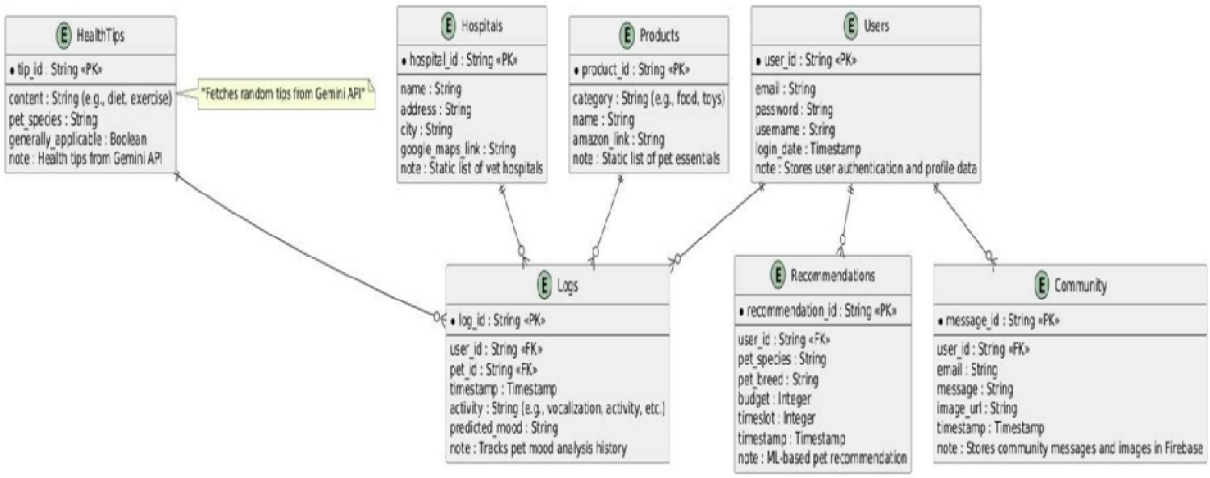


Fig 4-Entity Relationship Diagram

IV. APPLICATION

1) AI-Powered Symptom Checker for Pets:

PetAid helps pet owners analyze symptoms through an AI assistant, providing quick and reliable care suggestions without needing immediate physical consultation.

2) Pet Recommendation System:

By collecting user data such as lifestyle, budget, and regional weather conditions, PetAid recommends suitable pet species, helping users make informed adoption decisions.

3) Pet Mood Detection and Monitoring:

Using behavioral inputs like appetite and activity level, the system evaluates pet moods, assisting owners in identifying stress, discomfort, or potential illness early.

4) Digital Veterinary Guidance:

The PetAid connects users with region-specific veterinary specialists and clinics, along with location mapping through Google Maps, enabling timely consultations.

5) Integrated Pet Essentials Search:

Features Through Amazon integration, PetAid allows users to search and shop for pet products like food, grooming kits, and accessories from within the platform.

6) Pet Health Education via Multimedia Lessons:

Users can access structured care lessons including videos and health tips powered by Gemini AI, promoting better pet care awareness and reponsible ownership.

V. RESULTANDDISCUSSION

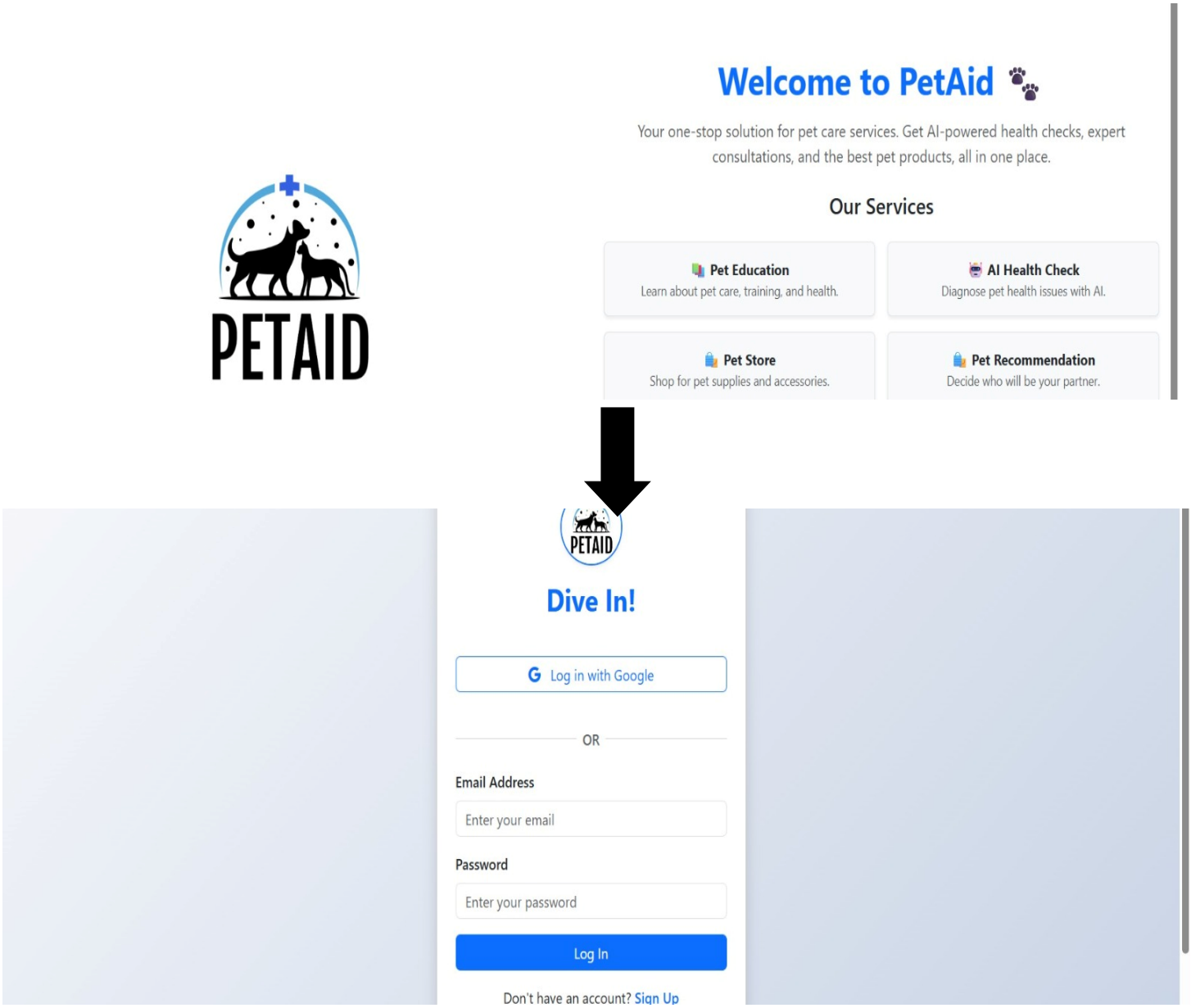
PetAid was tested across multiple devices and user types (pet owners, adopters, rescuers). Functional tests validated successful email login, API responsiveness, real-time chat functionality, weather-driven suggestions, and accurate AI-based symptom interpretation.

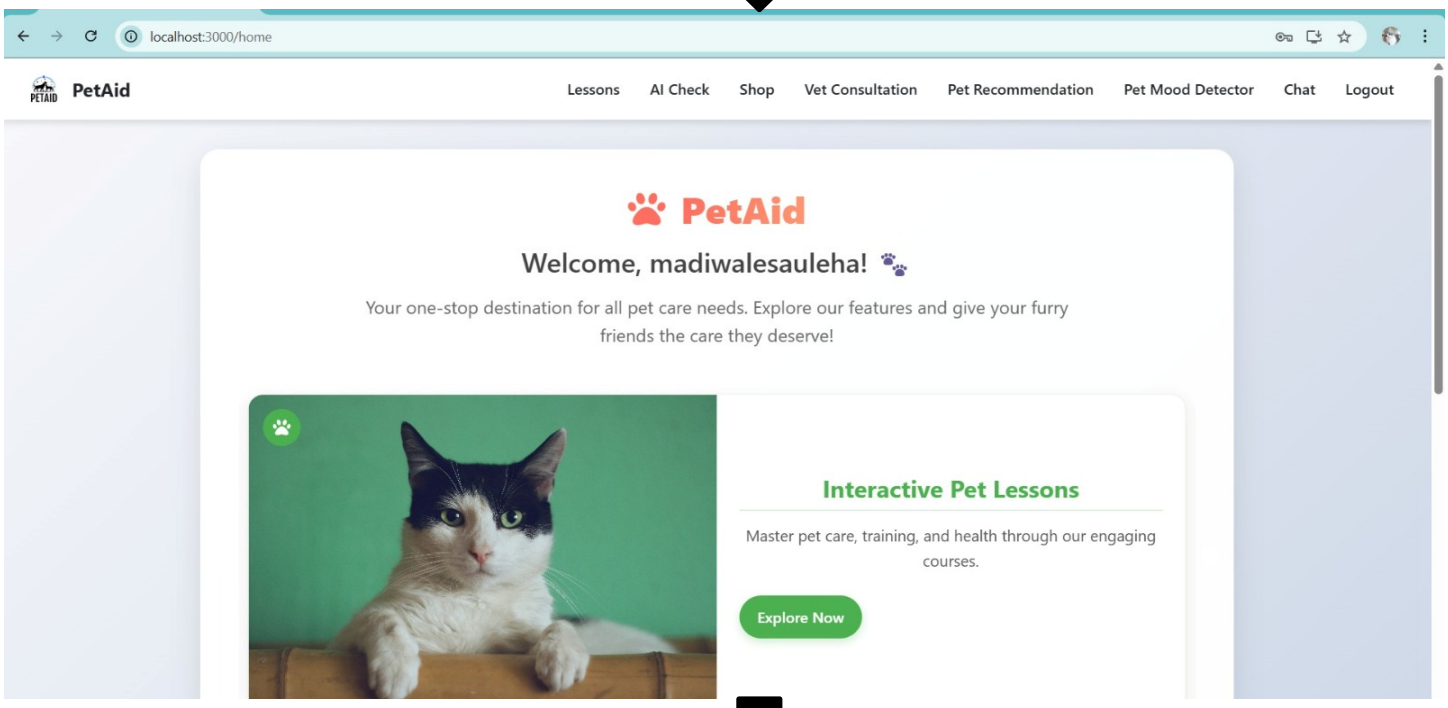
User feedback emphasized the relevance of weather-based pet suggestions **and** ease of accessing vet info via maps. The mood detector was particularly appreciated for behavioral insights. Firebase ensured fast sync across components and real-time interactivity in the community section.

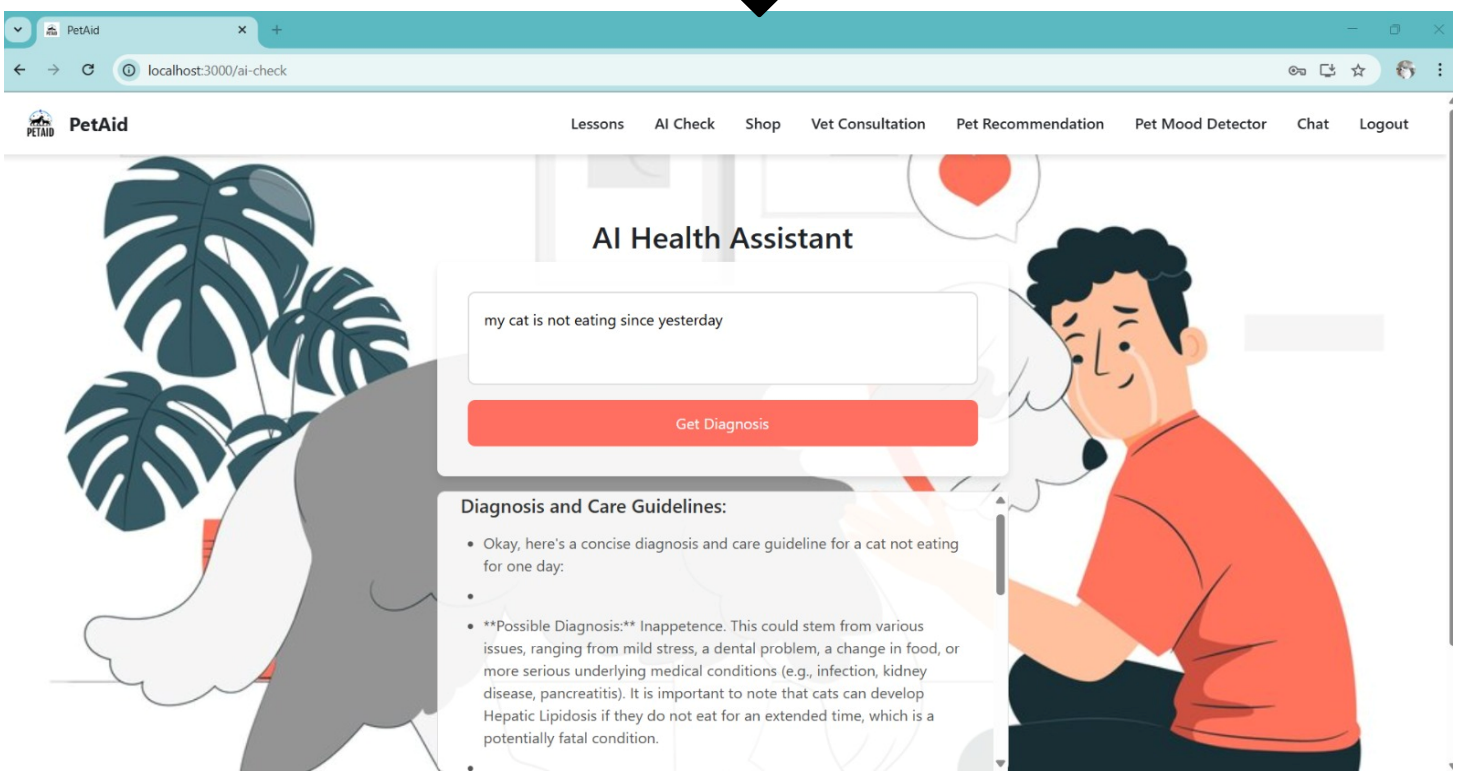
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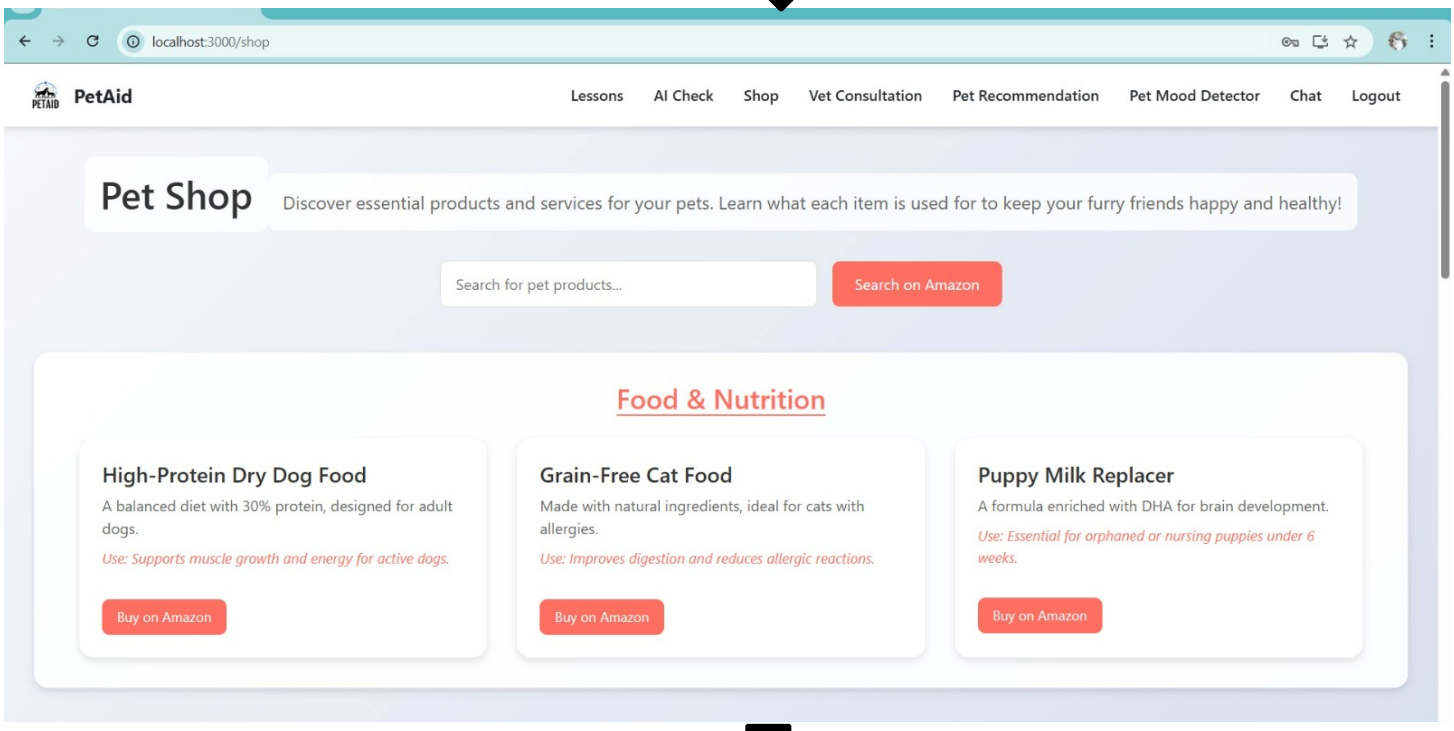
Table 1. Feature Testing Summary

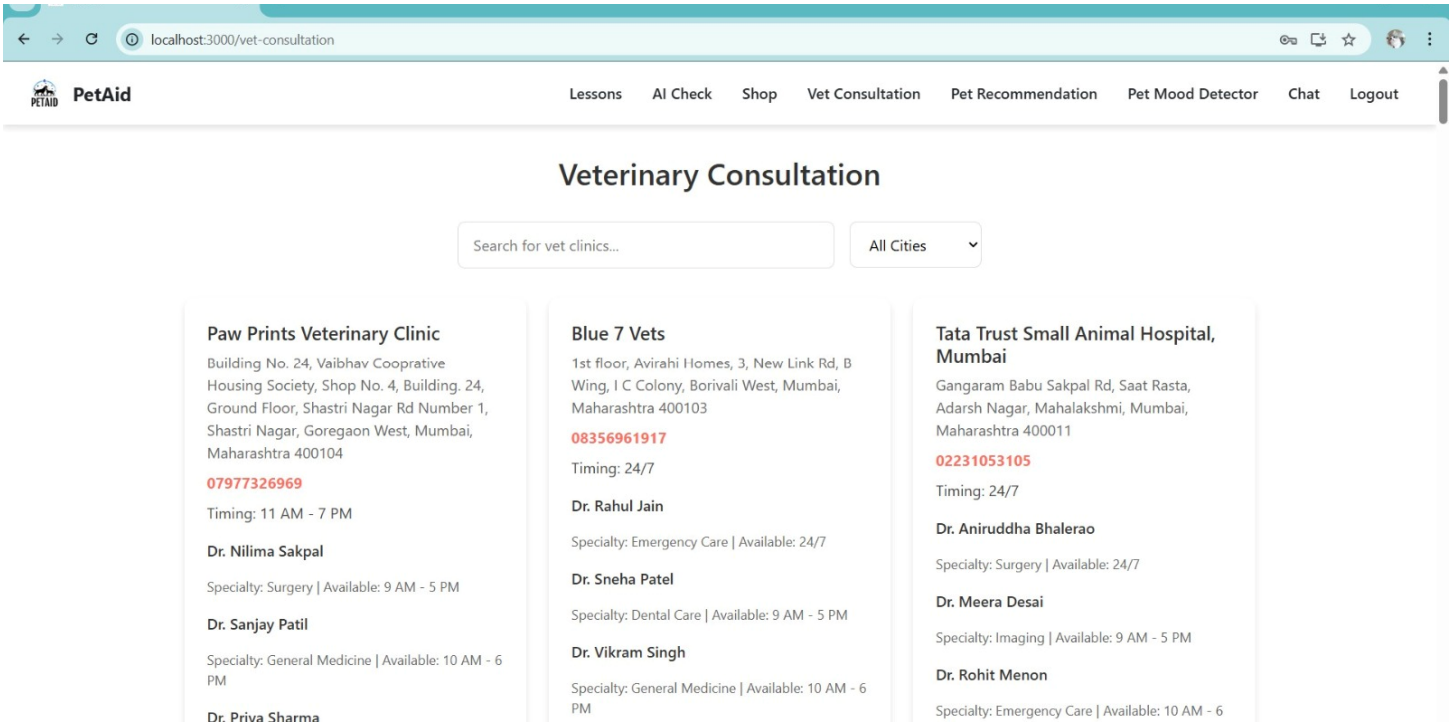
SN.	Feature	Status
1	Firebase Authentication	Working
2	AI Symptom Diagnosis	Functional
3	Weather-based Recommendation	Accurate
4	Pet Mood Detection	Verified
5	Vet Consultation via Google Maps	Working
6	Community Chat	Functional
7	Educational Lessons	Available
8	Mobile Optimization	Verified

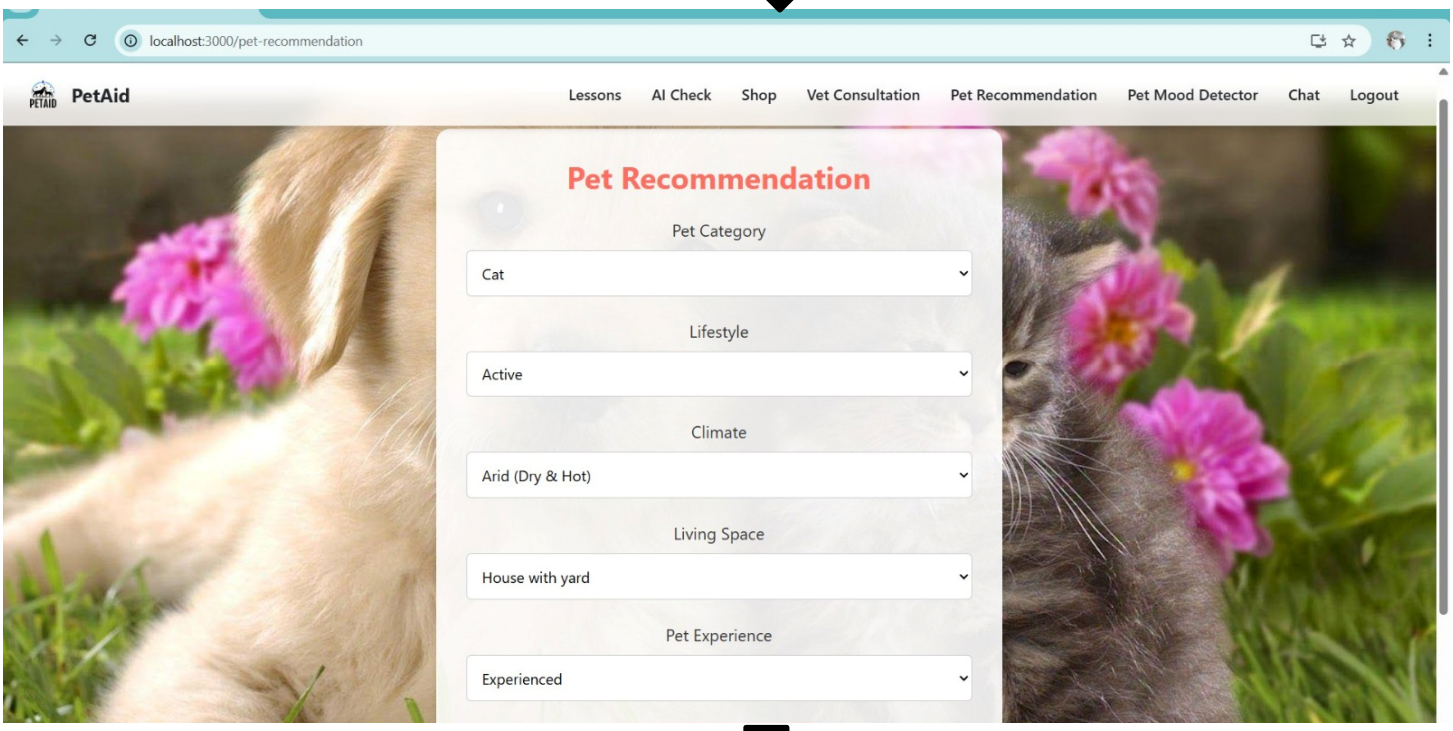


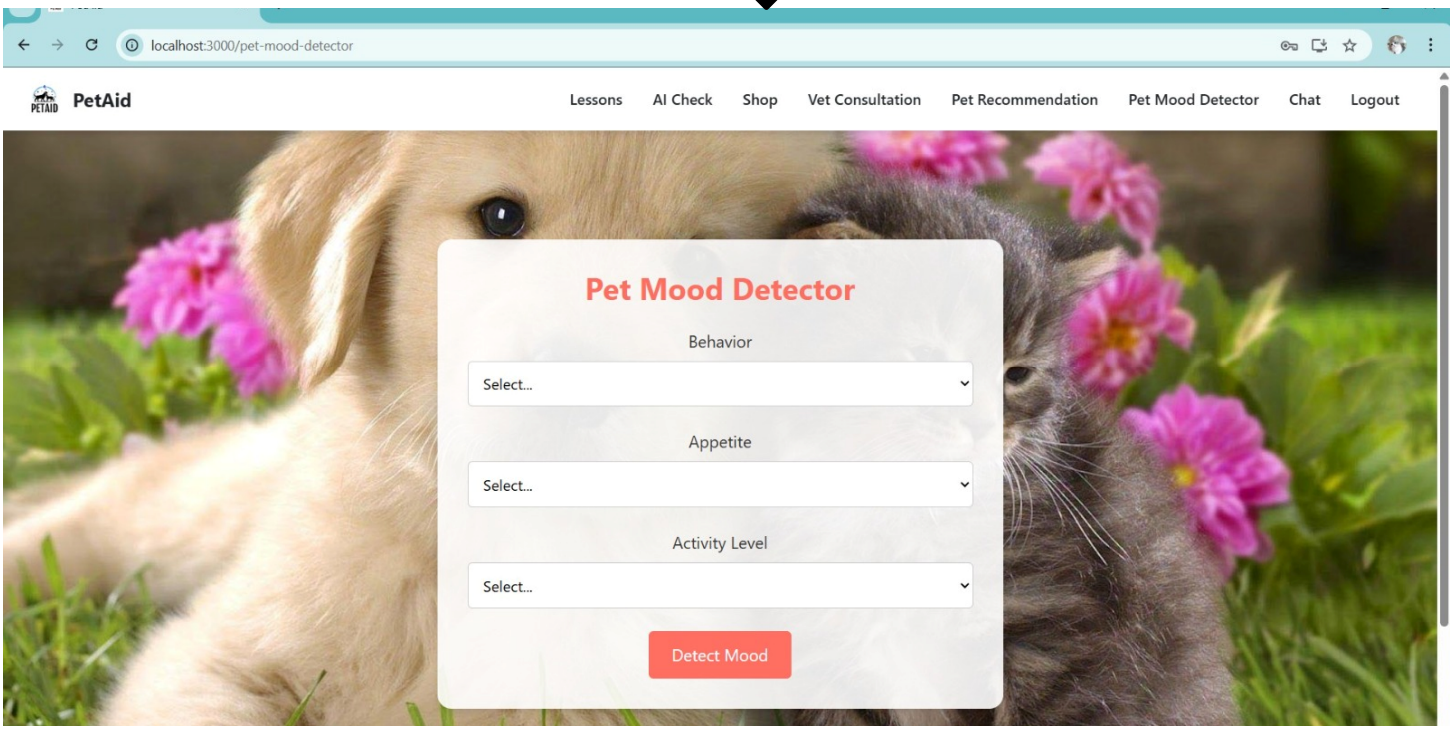

localhost:3000/home
PetAid
Lessons
AI Check
Shop
Vet Consultation
Pet Recommendation
Pet Mood Detector
Chat
Logout
PetAid
Welcome, madiwalesauleha!
Your one-stop destination for all pet care needs. Explore our features and give your furry friends the care they deserve!
Interactive Pet Lessons
Master pet care, training, and health through our engaging courses.
Explore Now

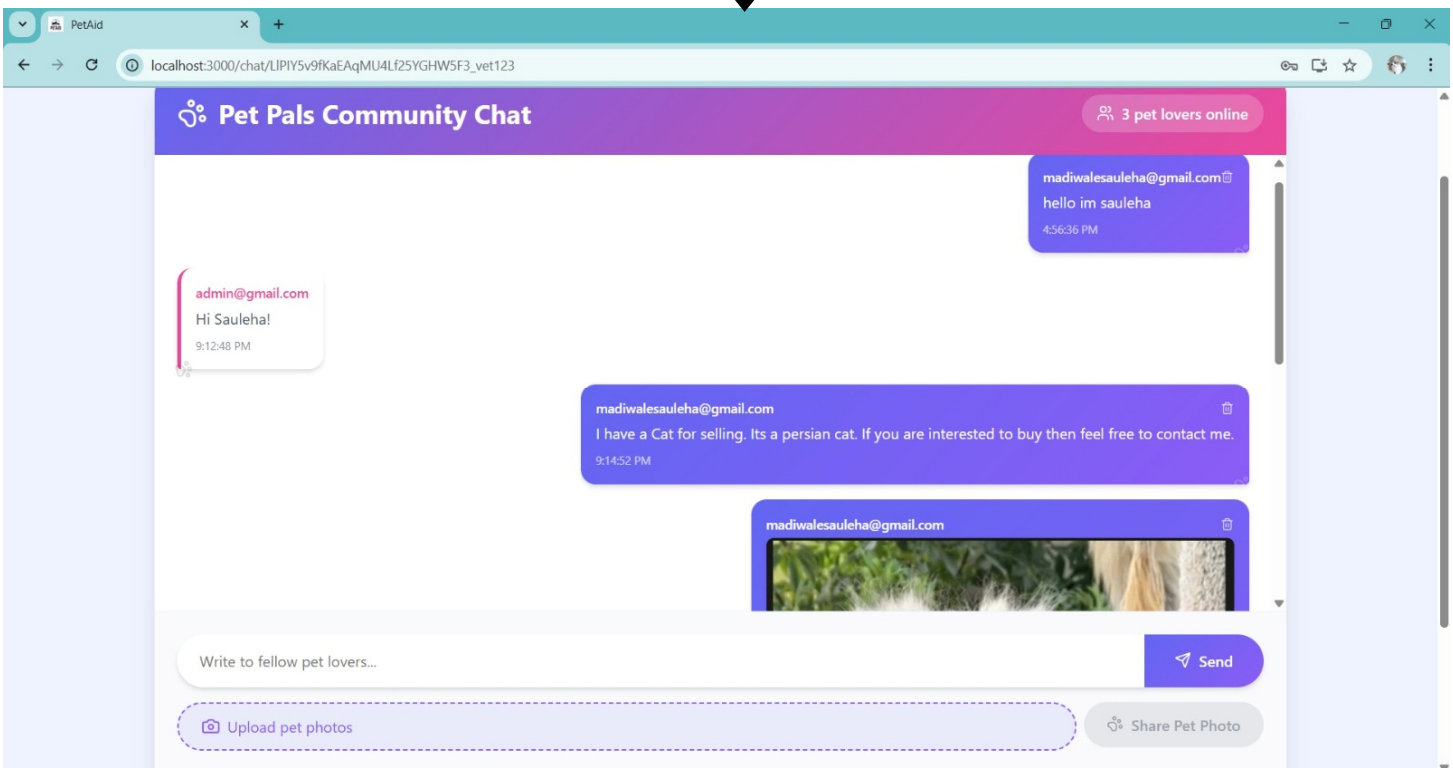

PetAid
localhost:3000/ai-check
PetAid
Lessons
AI Check
Shop
Vet Consultation
Pet Recommendation
Pet Mood Detector
Chat
Logout
AI Health Assistant
my cat is not eating since yesterday
Get Diagnosis
Diagnosis and Care Guidelines:
Okay, here's a concise diagnosis and care guideline for a cat not eating for one day:
Possible Diagnosis: Inappetence. This could stem from various issues, ranging from mild stress, a dental problem, a change in food, or more serious underlying medical conditions (e.g., infection, kidney disease, pancreatitis). It is important to note that cats can develop Hepatic Lipidosis if they do not eat for an extended time, which is a potentially fatal condition.


localhost:3000/shop
PetAid
Lessons
AI Check
Shop
Vet Consultation
Pet Recommendation
Pet Mood Detector
Chat
Logout
Pet Shop
Discover essential products and services for your pets. Learn what each item is used for to keep your furry friends happy and healthy!
Search for pet products...
Search on Amazon
Food & Nutrition
High-Protein Dry Dog Food
A balanced diet with 30% protein, designed for adult dogs.
Use: Supports muscle growth and energy for active dogs.
Buy on Amazon
Grain-Free Cat Food
Made with natural ingredients, ideal for cats with allergies.
Use: Improves digestion and reduces allergic reactions.
Buy on Amazon
Puppy Milk Replacer
A formula enriched with DHA for brain development.
Use: Essential for orphaned or nursing puppies under 6 weeks.
Buy on Amazon


localhost:3000/vet-consultation
PetAid
Lessons
AI Check
Shop
Vet Consultation
Pet Recommendation
Pet Mood Detector
Chat
Logout
Veterinary Consultation
Search for vet clinics...
All Cities
Paw Prints Veterinary Clinic
Building No. 24, Vaibhav Cooprative Housing Society, Shop No. 4, Building. 24, Ground Floor, Shastri Nagar Rd Number 1, Shastri Nagar, Goregaon West, Mumbai, Maharashtra 400104
07977326969
Timing: 11 AM - 7 PM
Dr. Nilima Sakpal
Specialty: Surgery | Available: 9 AM - 5 PM
Dr. Sanjay Patil
Specialty: General Medicine | Available: 10 AM - 6 PM
Dr. Priya Sharma
Blue 7 Vets
1st floor, Avirahi Homes, 3, New Link Rd, B Wing, I C Colony, Borivali West, Mumbai, Maharashtra 400103
08356961917
Timing: 24/7
Dr. Rahul Jain
Specialty: Emergency Care | Available: 24/7
Dr. Sneha Patel
Specialty: Dental Care | Available: 9 AM - 5 PM
Dr. Vikram Singh
Specialty: General Medicine | Available: 10 AM - 6 PM
Tata Trust Small Animal Hospital, Mumbai
Gangaram Babu Sakpal Rd, Saat Rasta, Adarsh Nagar, Mahalakshmi, Mumbai, Maharashtra 400011
02231053105
Timing: 24/7
Dr. Aniruddha Bhalerao
Specialty: Surgery | Available: 24/7
Dr. Meera Desai
Specialty: Imaging | Available: 9 AM - 5 PM
Dr. Rohit Menon
Specialty: Emergency Care | Available: 10 AM - 6


localhost:3000/pet-recommendation
PetAid
Lessons
AI Check
Shop
Vet Consultation
Pet Recommendation
Pet Mood Detector
Chat
Logout
Pet Recommendation
Pet Category
Cat
Lifestyle
Active
Climate
Arid (Dry & Hot)
Living Space
House with yard
Pet Experience
Experienced


localhost:3000/pet-mood-detector
PetAid
Lessons
AI Check
Shop
Vet Consultation
Pet Recommendation
Pet Mood Detector
Chat
Logout
Pet Mood Detector
Behavior
Select...
Appetite
Select...
Activity Level
Select...
Detect Mood



VI. CONCLUSION

PetAid provides a holistic solution for modern pet care and adoption guidance. By integrating AI, real-time communication, and contextual data like weather conditions, it personalizes care and improves decision-making. The use of Firebase ensures scalability and responsiveness, while the combination of educational content and community engagement fosters a responsible and informed pet ecosystem.

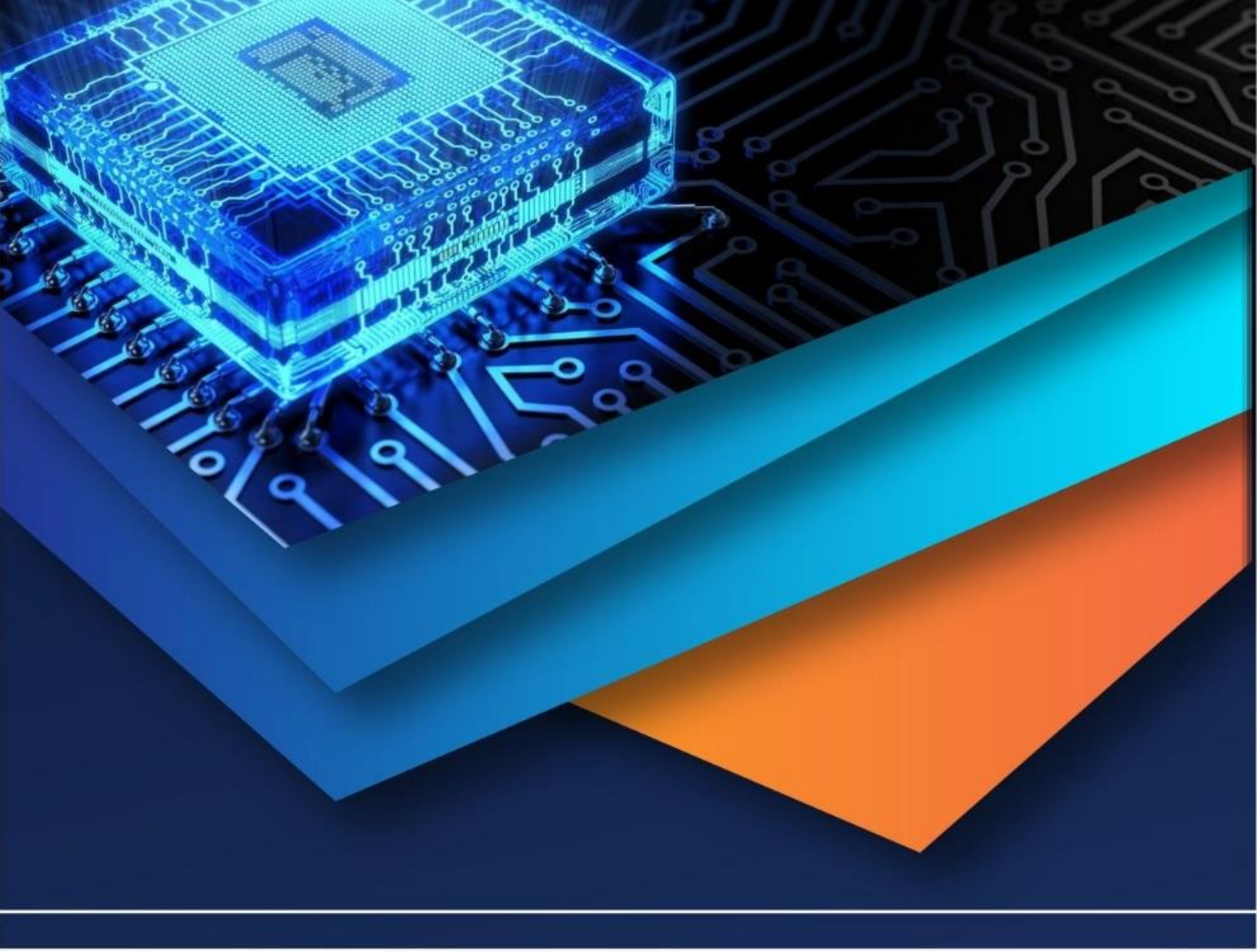
Future improvements may include:

- Voice-based pet diagnosis
- Image-based mood detection
- Vet appointment booking

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