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Care-Mal: A veterinary Emergency Assistance Platform

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ABSTRACT: In rural areas, farmers often face difficulties accessing veterinary help when their livestock fall sick or are injured especially during emergencies. Car-Mal is a mobile- based solution designed to solve this problem by connecting farmers with nearby veterinarians using location-based services. The platform uses Google Maps API to identify and notify vets in a defined radius, and allows emergency alerts to be sent instantly. To avoid multiple responses or confusion, Car- Mal uses a first-response mechanism where only the first vet to accept an alert gets assigned. Along with this, the system supports drug and food intake reminders for animals, and integrates Gemini AI to process images of wounds or infections. This AI-based feature offers basic first-aid suggestions to farmers, adding another layer of immediate support. By combining real-time services, AI, and simple mobile access, Car- Mal brings critical veterinary care to farmers' fingertips especially in remote and underserved locations.

KEYWORDS: Veterinary Telemedicine, Real-Time Alerts, Geolocation Services, AI-Based Wound Analysis, First-Response Locking, Mobile Health App, Livestock Management, Remote Consultation, Reminder Notifications, Farmer-Vet Communication.

I. INTRODUCTION

In India, livestock such as cattle, buffaloes, goats, and oxen are far more than just domesticated animals—they are the backbone of rural life. For millions of families, these animals play a central role in everyday survival. They assist in farming, provide transport, contribute to milk production, and act as a reliable source of income. In many communities, owning healthy livestock is also tied to social status and stability. As a result, ensuring the well-being of these animals is not just a matter of animal care—it's essential for the economic security and emotional health of the farmers who depend on them.

However, despite the vital role livestock plays, access to timely veterinary care in rural India remains a significant challenge. Many villages lack nearby clinics or trained practitioners, and farmers often rely on a very small network of known vets, who may not be reachable during emergencies. Transporting large animals to distant clinics is difficult due to poor infrastructure and lack of vehicles. These delays can turn simple issues into serious conditions, sometimes resulting in permanent damage or death. In urgent situations—such as injuries from farming tools, infections, poisonings, or birthing complications—immediate action is crucial. Unfortunately, the current system still relies heavily on slow, unreliable methods like manual calls or word-of-mouth. It was to address these very issues that Care-Mal (Care for Animals in Rural – Map Alert Location) was created: a mobile platform designed to connect farmers with nearby veterinarians quickly and effectively, ensuring animals get the care they need when it matters most.

II. LITERATURE SURVEY

[1] Service-Oriented Architecture for Animal Monitoring System – Arvind Kumar Mishra, Renuka Nagpal, Kirti Seth, Rajni Sehgal (2024) SOA Integration for Animal Welfare The study proposes an SOA-based Animal Monitoring System (AMS) that assists in animal care, monitoring, and rescue operations. By integrating services like GPS, satellite, and drones, the system aims to aid animals during critical situations, such as conflicts or natural disasters. [2] Compassionate

Veterinary Care Platform – A. Aldo Tennis, M. D Karunya, M. Preethiga, A. Vinoth Kumar (2024) Introduces a digital appointment booking system designed to enhance convenience and efficiency in pet clinics. This platform allows pet owners to easily schedule appointments, select desired time slots, view available veterinarians, and specify the nature of the visit be it an emergency, vaccination, or routine check-up. For clinic staff, the system streamlines appointment management, reducing wait times and improving overall operational efficiency. [3] VETGO A Mobile Application Designed for Pet Veterinary Services – Eric Blancaflor, Jairus Mriano (2024) Pet owners can input their location and pet details into the app, which then notifies nearby veterinarians of service requests. This real-time matching system allows vets to accept appointments based on their availability, facilitating prompt and efficient care. The application enables users to store detailed information about their pets, including medical histories and vaccination records. This centralized data repository ensures that veterinarians have immediate access to pertinent health information during consultations. [4] WEB-Based Veterinary Clinic with e-Mail and SMS Notification – Samuel S Chua, Jolina A Alis, Mary Joelyn Oria (2024) The research paper titled WEB-Based Veterinary Clinic with e-Mail and SMS Notification highlights the development of an online system aimed at modernizing veterinary clinic operations by integrating email and SMS-based notifications. This web-based platform allows veterinary staff to efficiently manage appointments, maintain digital health records, and send automated reminders for vaccinations, treatments, or follow-ups. The system improves communication between clinics and pet owners, leading to better engagement and timely care. [5] Artificial Intelligence in Veterinary Diagnostic Imaging – Mathew (2022,). Artificial intelligence (AI) is increasingly transforming veterinary diagnostic imaging by enhancing the accuracy and efficiency of radiographic interpretations. Recent studies have demonstrated AIs capability to match or even surpass human radiologists in specific diagnostic tasks. For instance, an AI-based software achieved a 923% accuracy rate in diagnosing canine cardiogenic pulmonary enema from thoracic radiographs, closely aligning with expert radiologist assessments. [6] Vet the Pet Design of an Intelligent Health Prediction System -- Hina Gull (2024) The system integrates machine learning algorithms to analyse pet health data, facilitating early disease detection and personalized care recommendations. Key features include real-time health monitoring through wearable devices, automated vaccination scheduling with timely reminders, and a chatbot equipped with natural language processing for user interaction. The platforms modular design ensures scalability and adaptability, catering to various pet species and healthcare needs. By leveraging AI technologies, the study demonstrates improved diagnostic accuracy and proactive health management, contributing to the advancement of veterinary care services. [7] IoT-based Livestock Health Monitoring and GPS Location Tracking System using Radio Frequency Transmission - Intan Sorfina Zainal Abidin, Zhong Wei Foo This system employs wireless sensors to continuously monitor vital health parameters of livestock, such as body temperature and heart rate, ensuring real time health assessments.

Additionally, it incorporates GPS modules to track the precise location of animals, facilitating efficient herd management and theft prevention. The use of radio frequency transmission enables reliable data communication between the sensors and the central monitoring unit, even in remote areas with limited connectivity. [8] Advancements in Pet Care Technology A Comprehensive Survey - Md. Tauseef, Esha Rathod, S. M Nandish, M. G Kushal (2024) The study highlights the integration of smart collars equipped with GPS tracking and health sensors, enabling real-time monitoring of pets locations and vital signs. Pet cameras with features like two- way audio, motion detection, and night vision have enhanced remote interaction between owners and their pets. Additionally, the paper discusses the rise of pet health applications that centralize medical records, vaccination schedules, and dietary recommendations, facilitating proactive health management. Automated feeders and water dispensers ensure consistent nutrition, while telemedicine platforms offer remote veterinary consultations, increasing accessibility to professional care.

III. METHODOLOGY

Care-Mal is designed to be a simple, all-in-one mobile app that helps rural farmers take better care of their animals—especially during emergencies. The app brings together location tracking, real-time alerts, AI-powered wound analysis, and daily care reminders. Getting started is easy: farmers and vets just need to sign up, with vets sharing their qualifications and availability. When there's an emergency, the app quickly locates the farmer using Google Maps and sends out alerts to all nearby vets within a 20 km range. The first vet to respond is assigned the case, avoiding any confusion and ensuring fast help.

Even when it's not an emergency, Care-Mal is still useful. Farmers can upload photos of their animals' wounds or unusual symptoms, and the built-in Gemini AI helps figure out what might be wrong—like an infection or swelling—and suggests simple first-aid steps. The app also reminds farmers about feeding times, medicine, or vaccinations,

helping them stick to a healthy routine for their livestock. Plus, every interaction and treatment is saved, so vets can keep track of the animal's progress. It's all about making animal care easier, faster, and more reliable for those who need it most.

IV. EXPERIMENTAL RESULTS

The images show how CareMal Meet, a simple video calling feature in the Care-Mal app, helps rural farmers connect with vets without needing to leave their homes. It's designed to be easy to use- even for those who aren't tech-savvy. Farmers just enter a room code to join a virtual session where they can talk to a vet through video, voice, or chat. These screenshots walk us through the full experience- from joining the room to chatting live with the doctor- making it clear how smooth and farmer-friendly the whole process is.

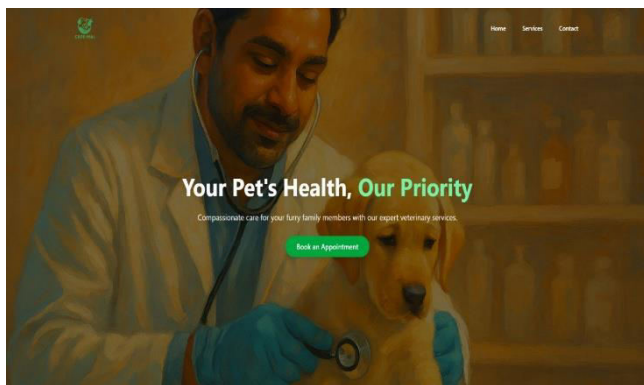


Fig 1: CareMal HomePage

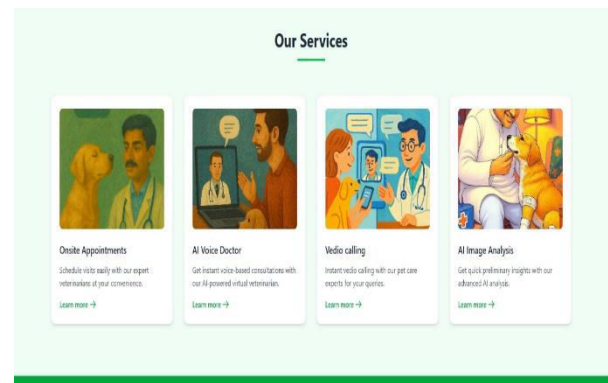


Fig 2: Caremal Services

Fig 1 Shows the homepage of Caremal, a veterinary care service, featuring a doctor compassionately examining a the animals with button for the appointments.

Fig 2 displays the “Our Services” section of CareMal, showcasing different veterinary care options. It highlights Onsite Appointments, AI Voice Doctor, Video Calling and AI Image Analysis, offering both in-person and AI-powered virtual solutions for pet healthcare.

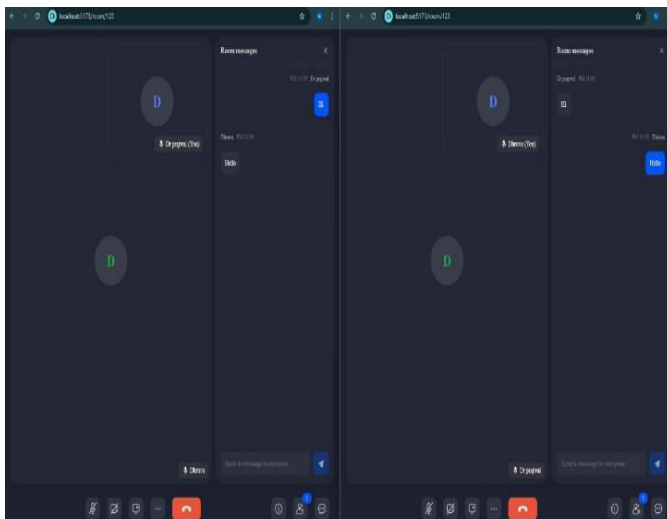


Fig 3: In-call view with active chat and participant list

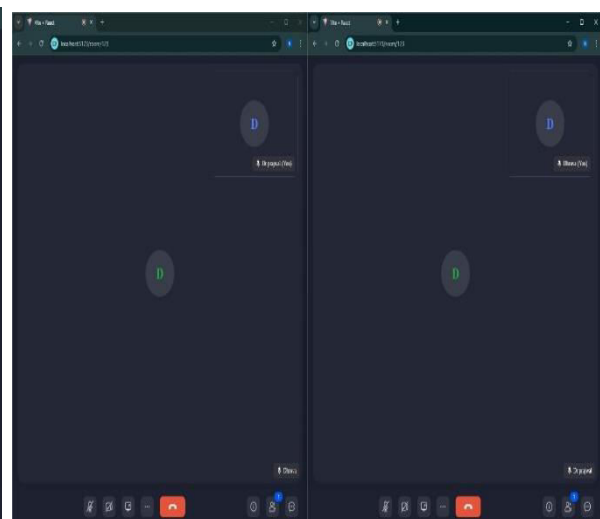


Fig 4: Active meeting room

Fig 3 Once both the farmer and the vet join the room, their names appear on screen, and they can start chatting using the built-in message box on the side.

Fig 4 The call screen shows that both are connected and ready to talk through video or audio, making the remote consultation smooth and straightforward.

Overall, CareMal Meet makes it easy for farmers to connect with vets in real time, no matter where they are. With simple steps and a clear interface, it ensures quick, stress-free consultations that can make a real difference in emergency situations.

V. CONCLUSION

Car-Mal tackles a major issue rural farmers face—the difficulty of getting timely veterinary help when it matters most. By combining GPS tracking, instant emergency alerts, AI-based wound analysis, and helpful daily reminders, it gives farmers a powerful yet simple tool to care for their animals. The app doesn't just connect vets and farmers; it helps prevent animal suffering, supports quicker recovery, and promotes better day-to-day care. With easy communication and digital records, follow-up treatments become more effective too.

In short, Car-Mal is more than an app—it's a lifeline for farmers and their animals. With wider use, it has the potential to truly transform animal healthcare in rural areas and protect the livelihoods that depend on it.

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