PawCare — AI Veterinary Telemedicine Platform

Final Project Report

1. Introduction

PawCare is an AI-assisted telemedicine platform built with Next.js that connects pet owners with verified veterinarians for virtual appointments, real-time consultations, and comprehensive pet healthcare management.

2. Problem Statement

Pet owners frequently face significant challenges when seeking quality veterinary care:

- **Limited Accessibility** — Many pet owners live in areas with few veterinary clinics or specialists, making it difficult to access proper care for their animals.

- **Inconvenient Clinic Hours** — Traditional veterinary clinics operate during standard business hours, which often conflict with pet owners' work schedules.

- **Emergency Visit Costs** — When pets fall ill outside regular hours, owners are forced to use expensive emergency veterinary services, even for non-critical issues.

- **Travel Stress** — Transporting anxious or unwell pets to clinics causes additional stress for both the animal and the owner.

- **Long Wait Times** — Popular veterinary clinics often have booking backlogs stretching days or weeks, delaying critical care.

- **Information Gap** — Pet owners lack reliable sources for immediate guidance when their pets show concerning symptoms.

3. Solution: How PawCare Helps Users

PawCare addresses these challenges through a comprehensive digital platform:

3.1 Instant AI-Powered Guidance

The integrated **PetChat AI Assistant** provides immediate symptom analysis and first-aid recommendations. When a pet owner notices their dog vomiting or their cat refusing food, they can describe the symptoms and receive:

- Preliminary assessment of severity
- Recommended immediate actions
- Guidance on whether professional consultation is needed
- Information about potential causes and treatments

3.2 24/7 Access to Verified Veterinarians

Pet owners can browse and book appointments with licensed veterinarians at any time:

- View detailed doctor profiles with specializations
- Check real-time availability slots
- Book consultations that fit their schedule

- Access care outside traditional clinic hours

3.3 Specialist Matching

The platform organizes veterinarians by specialty, helping owners find the right expert:

- **General Practice** — Routine checkups and common ailments
- **Dermatology** — Skin conditions, allergies, coat issues
- **Cardiology** — Heart-related conditions
- **Orthopedics** — Bone and joint problems
- **Exotic Animals** — Care for non-traditional pets
- **Emergency Medicine** — Urgent care situations

3.4 Stress-Free Video Consultations

HD video calls powered by Vonage Video API enable:

- Face-to-face consultations from home
- Visual examination of symptoms
- Real-time guidance for pet owners
- Reduced anxiety for pets who fear car rides or clinics

3.5 Cost-Effective Care

The credit-based billing system offers:

- Transparent pricing with no hidden fees
- Lower costs compared to emergency clinic visits
- Preventive consultations that catch issues early
- Flexible credit packages for different needs

3.6 Organized Medical Records

All consultation data is stored securely:

- Doctor notes from each appointment
- Prescription history
- Symptom tracking over time
- Easy access for follow-up visits

4. Why Users Trust PawCare

Trust Factor	Implementation
Verified Professionals	All veterinarians undergo admin verification before appearing on the platform
Secure Consultations	End-to-end encrypted video calls with Vonage's enterprise-grade infrastructure
AI Transparency	Clear disclaimers that AI provides guidance only; professional consultation recommended
Data Privacy	User data protected with industry-standard security practices
Reliable Scheduling	Real-time availability prevents double-bookings and scheduling conflicts

5. Key Features

For Pet Owners (Patients)

- Browse verified veterinarians by specialty
- View doctor profiles, ratings, and availability
- Book appointments with flexible time slots
- Join HD video consultations
- Chat with AI for immediate symptom guidance
- Purchase and manage consultation credits
- View appointment history and doctor notes

For Veterinarians (Doctors)

- Set custom availability schedules
- Manage incoming appointments
- Conduct video consultations with patients
- Add consultation notes and prescriptions
- Track earnings and request payouts
- Build professional profile with specializations

For Platform Administrators

- Review and verify doctor applications
- Approve payout requests
- Monitor platform activity
- Manage user accounts

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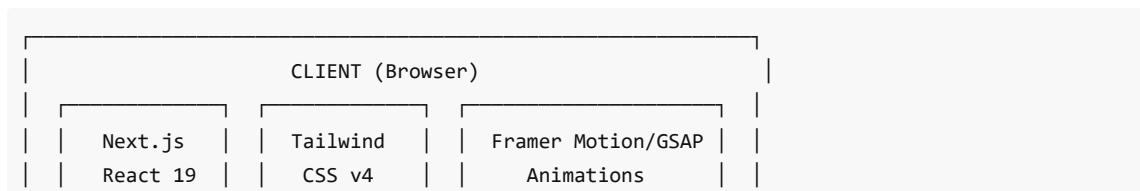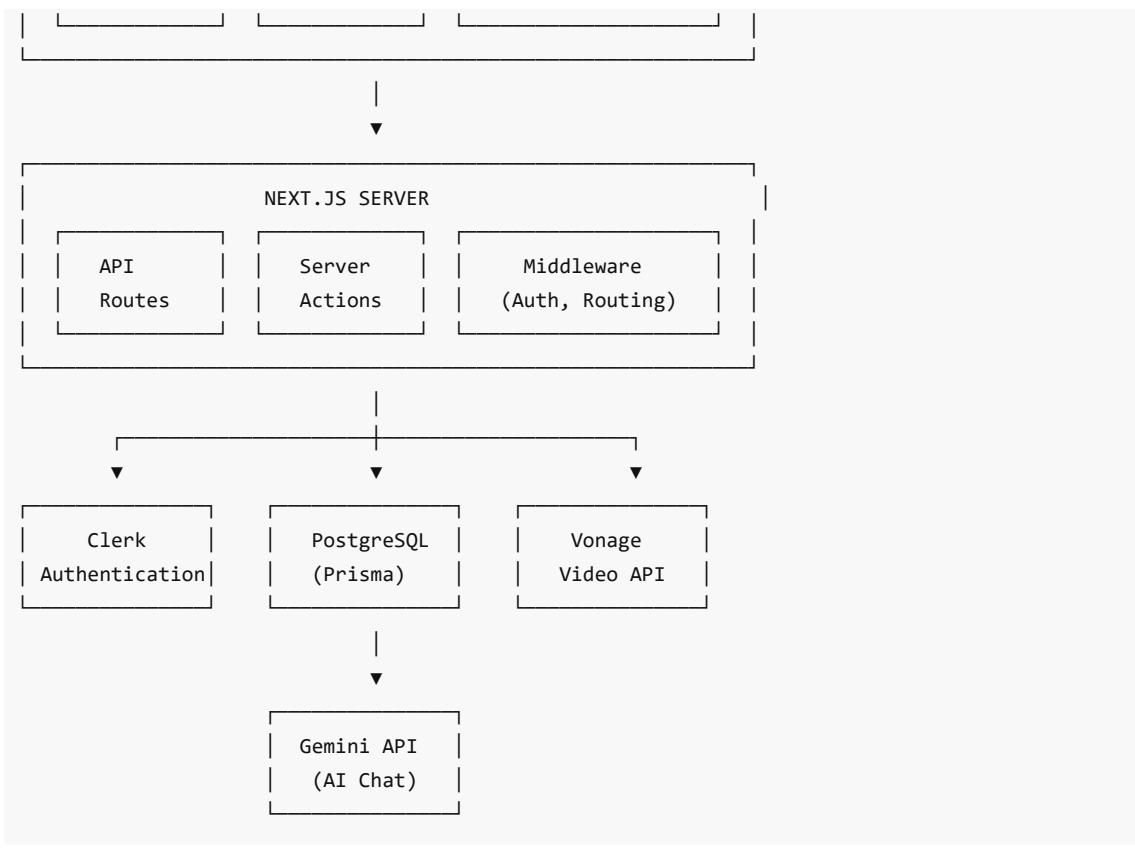
6. Technology Stack

Category	Technology
Framework	Next.js 15 (App Router, React 19, Turbopack)
Styling	Tailwind CSS v4, shadcn/ui, Framer Motion, GSAP
Authentication	Clerk (multi-tenant, secure auth)
Database	PostgreSQL via Prisma ORM
Video Calls	Vonage Video API (OpenTok)
AI Chat	Google Gemini API
Payments	Credit-based system with admin-managed payouts

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7. System Architecture

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│                 CLIENT (Browser)                   │
│  ┌─────────────┐  ┌─────────────┐  ┌──────────────────────┐  │
│  │   Next.js   │  │   Tailwind  │  │  Framer Motion/GSAP  │  │
│  │   React 19  │  │    CSS v4   │  │      Animations      │  │
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|                     NEXT.JS SERVER                        |
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|   |              |   |              |   |              |   |
|   |     API      |   |    Server    |   |  Middleware  |   |
|   |    Routes    |   |    Actions   |   | (Auth, Routing)|  |
|   |              |   |              |   |              |   |
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|              |      |              |      |              |
|    Clerk     |      |  PostgreSQL  |      |    Vonage    |
| Authentication|     |   (Prisma)   |      |  Video API   |
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                      |              |
                      |  Gemini API  |
                      |  (AI Chat)   |
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8. User Flow

Patient Journey

1. **Sign Up/Login** → Clerk authentication
2. **Onboarding** → Complete patient profile
3. **Browse Doctors** → Filter by specialty, view profiles
4. **Book Appointment** → Select time slot, pay with credits
5. **Join Consultation** → HD video call with veterinarian
6. **Receive Guidance** → Doctor notes, prescriptions
7. **AI Chat** → Follow-up questions via PetChat

Doctor Journey

1. **Sign Up** → Submit credentials for verification
2. **Admin Approval** → Wait for verification
3. **Set Availability** → Configure working hours
4. **Receive Bookings** → Patients book available slots
5. **Conduct Consultations** → Video calls with pet owners
6. **Add Notes** → Document findings and recommendations
7. **Earn & Withdraw** → Track earnings, request payouts

9. Database Schema (Key Models)

- **User** — Stores patients, doctors, and admins with role-based access
- **Availability** — Doctor's available time slots
- **Appointment** — Bookings linking patients to doctors with video session data

- **Transaction** — Credit purchases and payment history
- **Payout** — Doctor withdrawal requests and processing status

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10. Conclusion

PawCare successfully addresses the accessibility gap in veterinary care by combining:

- **AI technology** for instant guidance
- **Telemedicine** for convenient consultations
- **Modern web development** for a seamless user experience

The platform empowers pet owners to access quality veterinary care anytime, anywhere, while providing veterinarians with a flexible way to expand their practice and reach more patients.

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11. Future Enhancements

- Mobile application (React Native)
- Prescription delivery integration
- Pet health tracking and reminders
- Multi-language support
- Integration with pet insurance providers

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