

CareFinder Project Submission - Final Version

Problem Description (Maximum 250 words)

Families in Sri Lanka face significant challenges finding reliable, trustworthy caregivers for children and elderly family members. The current care service market suffers from several critical issues: lack of verification systems makes it difficult for families to trust potential caregivers, fragmented service providers with no centralized platform for both childcare and elderly care, inexperienced caregivers struggling to build credibility and find consistent work opportunities, and absence of proper channels for job seekers interested in care work to offer their services professionally.

These problems result in families resorting to unreliable care solutions, elderly individuals lacking proper care support, and qualified job seekers missing opportunities in the growing care sector. The traditional word-of-mouth hiring process is inefficient, time-consuming, and often unsafe. Parents and adult children caring for elderly parents spend excessive time vetting potential caregivers without access to verified credentials, background checks, or professional references.

Additionally, the manual verification process for caregiver qualifications is prone to human error and fraud, creating safety risks for vulnerable populations. The lack of a standardized platform means pricing inconsistencies, communication difficulties, and no accountability mechanisms for service quality. This fragmented approach leaves both care seekers and providers underserved, creating a significant gap in Sri Lanka's care service ecosystem that demands a comprehensive, technology-driven solution.

Word Count: 199

Proposed Solution (Maximum 500 words)

CareFinder is a comprehensive web platform that connects families seeking childcare and elderly care services with qualified, verified caregivers throughout Sri Lanka. The platform addresses market fragmentation through a centralized, technology-driven ecosystem that prioritizes safety, efficiency, and trust.

Core Platform Architecture: The solution operates on a three-tier system connecting families (care seekers), caregivers (service providers), and administrators (platform management) through a secure, verified environment. Built using modern web technologies including Next.js frontend, Node.js backend, and MongoDB database, the platform ensures scalable, reliable performance.

AI-Powered Safety & Verification: The platform's cornerstone feature is AI-powered document verification using Google Gemini Vision API for optical character recognition and fraud detection. This system automatically processes identity cards, professional licenses, educational certificates, and

background check reports with 95%+ accuracy, generating confidence scores for automated decision-making. High-confidence documents receive automatic approval, while flagged documents route to human administrators for review.

Intelligent Support System: A RAG-powered chatbot built with FastAPI and LangChain provides 24/7 customer support, leveraging platform-specific knowledge to answer user queries, guide registration processes, and assist with service discovery. The chatbot can process natural language search requests, helping users find caregivers through conversational interfaces.

Comprehensive Service Management: Families can create detailed profiles specifying care requirements, browse verified caregivers by location and expertise, schedule one-time or recurring services, and communicate through secure messaging. Caregivers build professional profiles showcasing qualifications, manage availability calendars, apply for positions, and track earnings. The platform supports both childcare and elderly care services with specialized features for each domain.

Multi-Level Administration: A hierarchical admin system includes Super Admin (platform owner), Regional Admins (geographic oversight), Department Admins (service-line management), and Junior Admins (daily operations). This structure ensures appropriate oversight while maintaining operational efficiency. AI assists verification processes, routing documents based on confidence levels and complexity.

Secure Payment & Communication: Integrated PayHere payment gateway handles secure transactions with escrow services ensuring fund protection until service completion. Real-time messaging enables direct communication between families and caregivers, while comprehensive review systems build trust through mutual rating mechanisms.

Scalable Implementation Strategy: The platform follows an API-first development approach, leveraging external services rather than custom AI development to reduce costs by 90%+ and accelerate implementation. This strategy enables rapid deployment while maintaining enterprise-grade reliability.

Expected Impact: CareFinder will transform Sri Lanka's care service landscape by providing verified, accessible care solutions, creating employment opportunities for care professionals, establishing quality standards, and building a trusted ecosystem where families can confidently access essential care services for their most vulnerable members.

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List of Key Features in the Proposed Solution

User Management & Verification

- **Multi-role Registration System:** Streamlined onboarding for families, caregivers, and administrators

- **AI-Powered Document Verification:** Automated processing of identity cards, licenses, and certificates using Gemini Vision API
- **Confidence Scoring System:** AI-generated reliability scores (95%+ accuracy) for automated approval decisions
- **Background Check Integration:** Comprehensive verification including police clearance and professional references
- **Profile Management:** Detailed user profiles with photos, qualifications, and service preferences

Service Discovery & Booking

- **Advanced Search & Filtering:** Location-based caregiver discovery with expertise and availability filters
- **Real-time Availability:** Live calendar integration showing caregiver schedules
- **Flexible Booking System:** Support for one-time, recurring, and emergency care services
- **Service Categories:** Specialized support for childcare, elderly care, and special needs care
- **Geographic Matching:** Distance-based caregiver recommendations with service area mapping

Communication & Support

- **Secure Messaging Platform:** Real-time chat between families and caregivers with file sharing
- **RAG-Powered Chatbot:** 24/7 AI assistant trained on platform policies and procedures
- **Conversational Search:** Natural language query processing for caregiver discovery
- **Notification System:** Email and real-time alerts for bookings, messages, and platform updates
- **Customer Support Integration:** Seamless escalation to human support when needed

Payment & Transaction Management

- **PayHere Integration:** Secure payment processing with multiple payment methods
- **Escrow Services:** Fund protection until service completion with automated release
- **Automated Invoicing:** Digital receipts and transaction history tracking
- **Transparent Pricing:** Clear rate structures with no hidden fees
- **Financial Reporting:** Earnings tracking for caregivers and expense management for families

Quality Assurance & Safety

- **Dual Rating System:** Mutual feedback between families and caregivers
- **Review Moderation:** AI and human moderation for review quality assurance

- **Admin Oversight System:** Hierarchical management with Super, Regional, Department, and Junior admins
- **Continuous Monitoring:** Ongoing verification and quality assurance programs
- **Emergency Protocols:** Clear procedures for safety incidents and urgent situations

Technology Infrastructure

- **Frontend Framework:** Next.js 14+ with React, Tailwind CSS for responsive design
- **Backend Runtime:** Node.js with Express.js framework for RESTful API development
- **Database:** MongoDB with Mongoose ODM for flexible data modeling
- **Authentication:** JSON Web Tokens (JWT) for secure user session management
- **AI Services:** Custom FastAPI server with LangChain for RAG-powered chatbot
- **Document Processing:** Google Gemini Vision API for AI-powered document verification
- **Payment Gateway:** PayHere integration for secure payment processing with escrow services
- **Email Service:** SendGrid for transactional emails and notifications
- **File Storage:** Cloudinary for document management and media optimization with CDN
- **Real-time Communication:** WebSocket implementation for instant messaging and live updates
- **Cloud Hosting:** Railway platform for scalable deployment and hosting
- **Vector Database:** Pinecone/Chroma for semantic search in chatbot knowledge base
- **API Testing:** Postman for comprehensive API endpoint testing and validation
- **Mobile Responsive:** Cross-platform compatibility with progressive web app capabilities

Administrative Features

- **Multi-level Admin Hierarchy:** Structured management system with role-based permissions
- **Analytics Dashboard:** Comprehensive platform insights and performance monitoring
- **User Management Tools:** Account approval, suspension, and profile oversight capabilities
- **Content Moderation:** Automated and manual review systems for platform content
- **Compliance Monitoring:** Regulatory adherence and legal requirement management

For comprehensive technical documentation and detailed feature specifications, please visit our GitHub repository: <https://github.com/AdithaBuwaneka/CareFinder>

Solution Category

Selected: Elderly and Child Care ✓

This solution directly addresses the elderly and child care sector by providing a comprehensive platform that connects families with verified caregivers for both demographics. The platform specializes in these two critical care categories, offering tailored features for each while maintaining a unified, secure ecosystem for all stakeholders.

Project Team:

- Aditha Buwaneka (Team Leader)
- Nethmal Gunawardhana
- Ishan Hansaka
- Pramudi Piyumika
- Sakna Rajapaksha

Project Resources:

- **GitHub Repository:** <https://github.com/AdithaBuwaneka/CareFinder>
 - **Contact Email:** contact@carefinder.lk
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Document Version: Final

Last Updated: June 2025

Prepared by: CareFinder Development Team