SOFTWARE REQUIREMENTS SPECIFICATION

HireLink

Local Service Provider Discovery Platform

Version 1.0

Graduate Academic Project

Document Control Information

Document Title	Software Requirements Specification - HireLink
Project Type	Graduate Academic Project
Technology Stack	React, Spring Boot (Java), MySQL
Target Region	India

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1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document provides a comprehensive description of the HireLink platform, a graduate academic project designed to connect users with local service providers in India. The platform focuses on blue-collar services such as plumbing, electrical work, masonry, carpentry, and other essential household and commercial services. This document serves as a foundation for the design, development, and testing phases of the project.

1.2 Scope

HireLink is a cross-platform application that enables:

- Service providers to register, create profiles, and list their services with pricing, availability, and service areas
- Users to search, discover, and book local service providers based on location, ratings, and service requirements
- Real-time communication between users and service providers
- Rating and review system for quality assurance
- Secure payment integration for seamless transactions
- AI-powered features for enhanced user experience

1.3 Definitions, Acronyms, and Abbreviations

Term	Definition
SRS	Software Requirements Specification
API	Application Programming Interface
UI/UX	User Interface / User Experience
JWT	JSON Web Token for authentication
OTP	One-Time Password
ML/AI	Machine Learning / Artificial Intelligence
NLP	Natural Language Processing

1.4 References

1. IEEE 830-1998 - IEEE Recommended Practice for Software Requirements Specifications
2. React.js Official Documentation - https://react.dev/
3. Spring Boot Reference Documentation - https://spring.io/projects/spring-boot
4. MySQL 8.0 Reference Manual
5. Government of India - Digital India Initiative Guidelines

2. Overall Description

2.1 Product Perspective

HireLink addresses a significant gap in the Indian market where local service providers often struggle to find customers beyond word-of-mouth referrals, while users face challenges in finding reliable, verified service providers. The platform bridges this gap by providing a digital marketplace specifically designed for blue-collar services, with features tailored to the Indian context including support for regional languages, integration with Indian payment systems (UPI, Paytm, etc.), and consideration of local work culture and practices.

2.2 Product Functions

The primary functions of HireLink include:

1. **User Management:** Registration, authentication, profile management for both users and service providers
2. **Service Listing:** Service providers can list multiple services with descriptions, pricing, and availability
3. **Search and Discovery:** Location-based search with filters for service type, rating, price range, and availability
4. **Booking Management:** Request, accept, reschedule, and cancel service bookings
5. **Communication:** In-app messaging and call features between users and providers
6. **Rating and Reviews:** Post-service feedback system with ratings and written reviews
7. **Payment Processing:** Secure payment gateway integration with multiple payment options
8. **Admin Dashboard:** Platform management, analytics, and moderation tools

2.3 User Classes and Characteristics

2.3.1 End Users (Service Seekers)

- Homeowners, tenants, and businesses seeking local services
- Age group: 18-65 years
- Technical proficiency: Basic smartphone usage
- Primary needs: Finding reliable, affordable service providers quickly

2.3.2 Service Providers

- Plumbers, electricians, masons, carpenters, painters, AC technicians, etc.
- May have limited technical literacy
- Primary needs: Expanding customer base, managing bookings efficiently
- May require regional language support

2.3.3 Administrators

- Platform managers and support staff
- Technical proficiency: High
- Responsibilities: User management, dispute resolution, content moderation

2.4 Operating Environment

- **Client Side:** Web browsers (Chrome, Firefox, Safari, Edge), Android and iOS devices
- **Server Side:** Linux-based cloud servers (AWS/Azure/GCP)
- **Database:** MySQL 8.0 or higher
- **Runtime:** Java 17+ for Spring Boot, Node.js for build tools

2.5 Design and Implementation Constraints

1. Must support low-bandwidth connections common in rural India
2. Must comply with Indian IT Act 2000 and data protection regulations
3. Payment integration must follow RBI guidelines for digital payments
4. Must support multiple Indian languages (Hindi, Tamil, Telugu, etc.)
5. Academic project constraints: Limited development timeline and resources

3. Specific Requirements

3.1 Functional Requirements

3.1.1 User Registration and Authentication

Req ID	Requirement Description
FR-001	System shall allow users to register using mobile number with OTP verification
FR-002	System shall support email-based registration as an alternative
FR-003	System shall implement JWT-based authentication with refresh tokens
FR-004	System shall support Google and Facebook social login options
FR-005	System shall require service providers to complete KYC verification (Aadhaar/PAN)

3.1.2 Service Provider Profile Management

Req ID	Requirement Description
FR-006	Service providers shall be able to create detailed profiles with photo, bio, and work experience
FR-007	System shall allow providers to list multiple services with individual pricing
FR-008	Providers shall define service areas using pincode or radius-based selection
FR-009	System shall allow providers to set availability schedules and working hours
FR-010	Providers shall be able to upload portfolio images of past work

3.1.3 Search and Discovery

Req ID	Requirement Description
FR-011	System shall provide location-based search using GPS or manual pincode entry
FR-012	Users shall be able to filter results by service category, rating, price range, and availability
FR-013	System shall display search results with provider cards showing key information
FR-014	System shall support text-based search with autocomplete suggestions

3.1.4 Booking Management

Req ID	Requirement Description
FR-015	Users shall be able to send booking requests with service details and preferred time
FR-016	Service providers shall receive notifications and can accept/reject/reschedule requests
FR-017	System shall track booking status: Pending, Confirmed, In Progress, Completed, Cancelled
FR-018	Both parties shall be able to cancel bookings with appropriate policies

3.2 Non-Functional Requirements

3.2.1 Performance Requirements

- Page load time shall not exceed 3 seconds on 4G networks
- Search results shall be returned within 2 seconds
- System shall support 1000 concurrent users initially
- API response time shall be under 500ms for 95% of requests

3.2.2 Security Requirements

- All data transmission shall use HTTPS/TLS 1.3 encryption
- Passwords shall be hashed using bcrypt with minimum 12 rounds
- System shall implement rate limiting to prevent DDoS attacks
- Sensitive data (Aadhaar, PAN) shall be encrypted at rest using AES-256
- System shall maintain audit logs for security-sensitive operations

3.2.3 Usability Requirements

- Interface shall be intuitive enough for users with basic smartphone literacy
- Support for Hindi and at least 3 regional languages
- Mobile-first responsive design
- Accessibility compliance with WCAG 2.1 Level AA

3.2.4 Reliability Requirements

- System uptime shall be 99.5% or higher
- Data backup shall be performed daily with 7-day retention
- Recovery Point Objective (RPO): 24 hours
- Recovery Time Objective (RTO): 4 hours

4. External Interface Requirements

4.1 User Interfaces

The application shall provide the following user interfaces:

1. **Landing Page:** Hero section, service categories, featured providers, testimonials
2. **Search Interface:** Search bar, filters sidebar, results grid/list view
3. **Provider Profile Page:** Profile details, services, portfolio, reviews, booking button
4. **User Dashboard:** Booking history, active bookings, saved providers, settings
5. **Provider Dashboard:** Booking requests, calendar, earnings, profile management
6. **Admin Dashboard:** User management, analytics, reports, content moderation

4.2 Hardware Interfaces

- GPS module for location-based services
- Camera for profile photos and portfolio uploads
- Push notification services (FCM for Android, APNs for iOS)

4.3 Software Interfaces

Interface	Provider	Purpose
Payment Gateway	Razorpay / PayU	Payment processing
Maps API	Google Maps / Mapbox	Location services
SMS Gateway	Twilio / MSG91	OTP and notifications
Cloud Storage	AWS S3 / Firebase	Image/file storage
KYC Verification	Digio / Signzy	Aadhaar/PAN verification

5. AI-Powered Features

5.1 Core AI Features

5.1.1 Smart Service Matching (AI-SM)

An intelligent recommendation system that matches users with the most suitable service providers based on multiple factors:

- Historical booking patterns and user preferences
- Provider ratings, response time, and completion rate
- Price optimization based on service complexity
- Location proximity and availability matching

5.1.2 NLP-Based Issue Description (AI-NLP)

Natural Language Processing capabilities to understand user problems:

- Voice-to-text input for describing service requirements
- Automatic categorization of service type from description
- Regional language support (Hindi, Tamil, Telugu, Bengali, etc.)
- Chatbot for guided issue diagnosis

5.1.3 Dynamic Pricing Engine (AI-DP)

ML-based pricing suggestions considering:

- Local market rates and competition
- Demand-supply dynamics in the area
- Service complexity estimation from description
- Time of day and urgency factors

5.1.4 Fraud Detection System (AI-FD)

Machine learning algorithms to identify and prevent fraudulent activities:

- Fake profile detection using behavioral analysis
- Review authenticity verification
- Unusual booking pattern detection
- Payment fraud prevention

5.2 Advanced AI Features

5.2.1 Image-Based Diagnosis (AI-IMG)

- Computer vision to analyze uploaded photos of issues (leaking pipes, electrical problems)
- Automatic severity assessment and urgency classification
- Estimated cost range based on visual analysis

5.2.2 Predictive Analytics (AI-PA)

- Demand forecasting for service providers to optimize availability
- Seasonal trend analysis for service types
- Provider performance prediction

5.2.3 Smart Scheduling (AI-SS)

- Optimal route planning for providers with multiple bookings
- Time estimation based on traffic and distance
- Automatic rescheduling suggestions for conflicts

6. Data Requirements

6.1 Data Dictionary

Entity	Attribute	Type	Description
User	user_id	BIGINT (PK)	Unique identifier
	name	VARCHAR(100)	Full name
	phone	VARCHAR(15)	Mobile number
	email	VARCHAR(100)	Email address
	user_type	ENUM	USER/PROVIDER/ADMIN

6.2 Entity Relationship Summary

The database comprises the following key entities and relationships:

- User (1) → (M) ServiceProvider Profile
- ServiceProvider (1) → (M) Services
- User (1) → (M) Bookings
- ServiceProvider (1) → (M) Bookings
- Booking (1) → (1) Review
- Booking (1) → (1) Payment

7. Appendices

7.1 Service Categories

Category	Sub-Services	Avg. Price Range (₹)
Plumbing	Pipe repair, tap fitting, drainage	200 - 2000
Electrical	Wiring, switch repair, fan installation	150 - 1500
Carpentry	Furniture repair, door fitting, woodwork	300 - 5000
Mason/Civil	Tiling, plastering, wall repair	500 - 10000
Painting	Interior, exterior, texture painting	15 - 40 per sq.ft
AC/Appliance	AC service, refrigerator, washing machine	300 - 2500

7.2 Revision History

Version	Date	Author	Description
1.0	[Current Date]	[Student Name]	Initial SRS document