

A
PROJECT REPORT
ON
“Local Technicians Search”

SUBMITTED TO
SHIVAJI UNIVERSITY, KOLHAPUR

IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE AWARD OF DEGREE
BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND
ENGINEERING

SUBMITTED BY

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UNDER THE GUIDANCE OF
Mr. S. P. Pise



**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA
SCIENCE ENGINEERING**
**DKTE SOCIETY'S TEXTILE AND ENGINEERING
INSTITUTE, ICHALKARANJI**
(AN EMPOWERED AUTONOMOUS INSTITUTE)

2024-2025

D.K.T.E. SOCIETY'S
TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI
(AN EMPOWERED AUTONOMOUS INSTITUTE)

**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA
SCIENCE ENGINEERING**



CERTIFICATE

This is to certify that, project work entitled

“Online Local Technicians Platform”

is a bonafide record of project work carried out in this college by

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is in the partial fulfillment of award of degree Bachelor of Technology in Artificial Intelligence and Data Science Engineering prescribed by Shivaji University, Kolhapur for the academic year 2024-2025.

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EXAMINER: _____

DECLARATION

We hereby declare that, the project work report entitled “<<project title>>” which is being submitted to D.K.T.E. Society’s Textile and Engineering Institute Ichalkaranji, affiliated to Shivaji University, Kolhapur is in partial fulfillment of degree B.Tech.(AI & DS). It is a bonafide report of the work carried out by us. The material contained in this report has not been submitted to any university or institution for the award of any degree. Further, we declare that we have not violated any of the provisions under Copyright and Piracy / Cyber / IPR Act amended from time to time.

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Thank you,

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ABSTRACT

Local Technicians Search is a full-stack web application designed to simplify the process of finding and booking trusted service professionals such as electricians, plumbers, carpenters, AC/refrigerator mechanics, and more. The platform is built using the **MERN stack** (MongoDB, Express.js, React.js, Node.js), ensuring a modern, responsive user interface with a secure and scalable backend.

The core objective of the project is to assist users, especially those in hometowns and remote areas, in easily locating verified technicians based on location and service category. Users can register/login, search for nearby service providers, view technician profiles, book appointments, and make secure online payments. Technicians, on the other hand, can manage their availability, respond to bookings, and update their profiles.

Key features include **JWT-based authentication**, **role-based access**, **calendar-based booking**, **secure payment integration**, and **email notifications via Nodemailer**. The platform is fully responsive, providing an optimized experience across all devices.

By combining practical utility with user-centric design, **Local Technicians Search** bridges the gap between customers and skilled workers, offering a convenient, efficient, and reliable solution for everyday home service needs.

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1. Introduction

In many small towns and semi-urban areas, finding skilled local technicians such as electricians, plumbers ,carpenters ,Refrigerator or AC mechanics can be a challenge. This project aims to provide a digital solution using the MERN stack (MongoDB, Express.js, React.js, Node.js) that connects users with verified local service providers. It is especially beneficial for **hometowns, edge areas**, and people who are not tech-savvy but want a **quick and reliable service** booking experience.

a. Problem Definition

Most people rely on word-of-mouth referrals or local advertisements, which are not always reliable or readily available. Moreover, there is no centralized platform that offers technician availability, booking options, or customer reviews—especially one tailored to edge-region users with limited digital access.

Technicians, on the other hand, struggle with visibility and customer outreach. They often lose potential customers due to lack of an online presence or a structured system to manage bookings and schedules.

The key issues identified are:

- Difficulty in finding trusted local service professionals promptly.
- Lack of online platforms targeting rural or semi-urban populations.
- No real-time availability or booking confirmation system.
- Technicians cannot showcase skills, manage bookings, or receive online payments.
- Users have no way to view ratings or service history before booking.

b. Aim and Objective of the Project

The primary aim of this project is to develop a centralized, user-friendly, and secure web-based platform that helps people in hometowns and edge regions find and book local technicians efficiently. The platform will facilitate seamless interaction between users and service providers using modern web technologies.

- **Develop a MERN stack-based platform** for searching and booking local technicians.
- **Enable secure login and registration** for users and technicians using JWT.
- **Allow technicians to register and manage services** like plumbing, electrician, carpentry, AC repair, etc.
- **Provide online booking** with date and time selection.
- **Integrate payment options** for easy and secure transactions.
- **Offer role-based dashboards** for both users and technicians.
- **Send booking and registration confirmations** via email.
- **Design a user-friendly and responsive interface** for all devices.

c. Scope and Limitation of the Project

Scope:

- The platform is designed to help users in **hometowns and semi-urban areas** find verified **local technicians** such as electricians, plumbers, carpenters, AC repairmen, and refrigerator mechanics.

- Users can **register, search, and book technicians online**, selecting the desired date and time for the service.
- Technicians can **register their services**, update availability, and manage bookings via a dedicated dashboard.
- **Admins can monitor all user activities**, technician listings, and bookings through an admin panel.
- Secure **login and authentication** is handled using JWT, ensuring data privacy.
- The system is accessible on both **desktop and mobile browsers**, offering a **responsive UI** built using React.js and Tailwind CSS.
- Supports **payment mode integration** for pre-booking or service confirmation through payment gateways (future-ready).

Limitations:

- The application currently supports **only a web interface**; there is no native mobile app.
- **Technician verification is manual** and might require future automation.
- **Payment gateway integration** (Stripe/Razorpay) may be limited by region or currency support.
- The platform's performance may depend on **internet connectivity** and **server response time**.
- **Multilingual support** is not yet implemented, limiting accessibility for non-English speakers.

2. Background study and literature overview

With the rise in digital platforms, the home services sector is gradually undergoing a technological shift. The growing need for quick access to trusted local technicians has highlighted the importance of connecting users with service providers through online means. A well-designed technician booking system should not only focus on user convenience but also offer a streamlined experience for technicians, addressing key challenges such as service visibility, availability management, and client communication.

A.Literature Overview

The **Literature Overview** section provides an analysis of existing research, technologies, and solutions related to your **Local Technicians Search** platform, particularly those involving the MERN stack and online service platforms. This section will help you establish the context of your project and provide insight into the state of the art, as well as the opportunities and challenges in the field.

- **Accessibility for Elderly Users:** Platforms must have user-friendly designs, clear navigation, and accessibility features like larger text and voice commands for elderly users.
- **Challenges in Technician Platforms:** Issues like technician availability, trust, and local service delivery are common challenges in service platforms.
- **Booking and Scheduling:** Real-time booking systems with technician

availability integration ensure efficient service scheduling and customer satisfaction.

- **Geolocation for Local Technicians:** Platforms focus on location-based search to connect users with nearby technicians for quicker and cost-effective service delivery.

b. Investigation of Current Projects and Related Work

Several existing platforms were analyzed to identify gaps and opportunities for improvement:

- **UrbanClap & HouseJoy:** While these platforms provide efficient service booking and technician discovery, they often lack local customization options and have complex user interfaces that may be overwhelming for elderly or non-tech-savvy users.
- **Handy & TaskRabbit:** These platforms excel in offering multiple services but often lack real-time tracking and proper technician verification processes, making it challenging for users to ensure reliability.
- **Thumbtack & Bark.com:** They are effective in connecting users to local professionals, but their filtering and matching algorithms can be more intuitive to improve the user experience, especially for time-sensitive repairs.
- **Existing MERN Stack Platforms:** Many existing service-based projects using the MERN stack lack proper integration of backend features, secure authentication (like JWT), and payment gateway systems, often focusing only on frontend functionality

Based on these observations, **Local Technicians Search** was designed to:

- **Fully integrate both backend and frontend** using the MERN stack.
- **Implement JWT-based authentication** for secure user login and role-based access control.
- **Include multiple payment methods** like UPI, debit/credit cards, and wallets.
- **Provide technician search filters** based on location, availability, and user reviews to improve technician selection.

3. Requirement analysis

The **Local Technicians Search** project requires key features like secure **user login/registration**, **technician categorization** (electricians, plumbers, etc.), and an **online booking system** with date/time selection. It supports **multiple payment options** (UPI, cards) and includes a **rating/review system** for feedback.

Technicians get their own dashboard, while admins manage users, services, and bookings. The system ensures **JWT-based security**, **email notifications**, and a **user-friendly interface** suitable for all, including elderly users.

a. Requirement Gathering

1. Primary Sources of Requirement Gathering

- **User Interviews:** Feedback from local residents and homeowners helped identify the need for easy technician search and booking.
- **Technician Discussions:** Interactions with electricians, plumbers, and carpenters highlighted their need for a platform to receive bookings and manage availability.
- **Market Analysis:** Study of existing apps like UrbanClap and HouseJoy revealed missing features for smaller towns and older users.

2. Key Findings

- **Ease of Access:** Users want a simple, mobile-friendly interface, especially for elderly or less tech-savvy individuals.
- **Service Variety:** There's demand for different technician categories

(electrician, plumber, AC mechanic, etc.).

- **Real-time Booking:** Users prefer selecting time slots and getting instant confirmations.
 - **Secure Payments:** Multiple, trusted payment options like UPI, cards, and wallets are essential.
 - **Login & Role Management:** Both users and technicians need separate dashboards and access levels.
 - **Reviews & Ratings:** Customers want to review services and read feedback before booking.
-

3. Tools Used

- **Google Forms & Surveys:** For collecting feedback from users and technicians.
- **Competitor Analysis:** Studied features of existing platforms to identify gaps and areas of improvement.

b. Requirement Specification

1. Functional Requirements

- **User Module**
 - Register and login securely
 - Browse and filter technicians by category and location
 - Book technician by selecting date/time
 - Make secure online payments
 - Rate and review technicians
- **Technician Module**
 - Register and login

- Manage profile, services offered, and availability
 - View and respond to bookings
 - Check customer ratings and feedback
 - **Admin Module**
 - Manage users and technicians
 - View bookings and payment details
 - Approve/decline technician registrations
 - Manage service categories and feedback
-

2. Non-Functional Requirements

- **Security:** JWT-based authentication, secure payment gateway integration
 - **Scalability:** System should support growing number of users and technicians
 - **Performance:** Fast load times, responsive UI
 - **Accessibility:** Easy-to-use interface for all age groups
 - **Reliability:** High uptime and accurate booking system
 - **Maintainability:** Clean, modular MERN-based architecture
-

3. User Roles

- **User:** Can search, book, pay, and review technicians
- **Technician:** Can manage availability, accept/reject bookings
- **Admin:** Can control and monitor platform operations

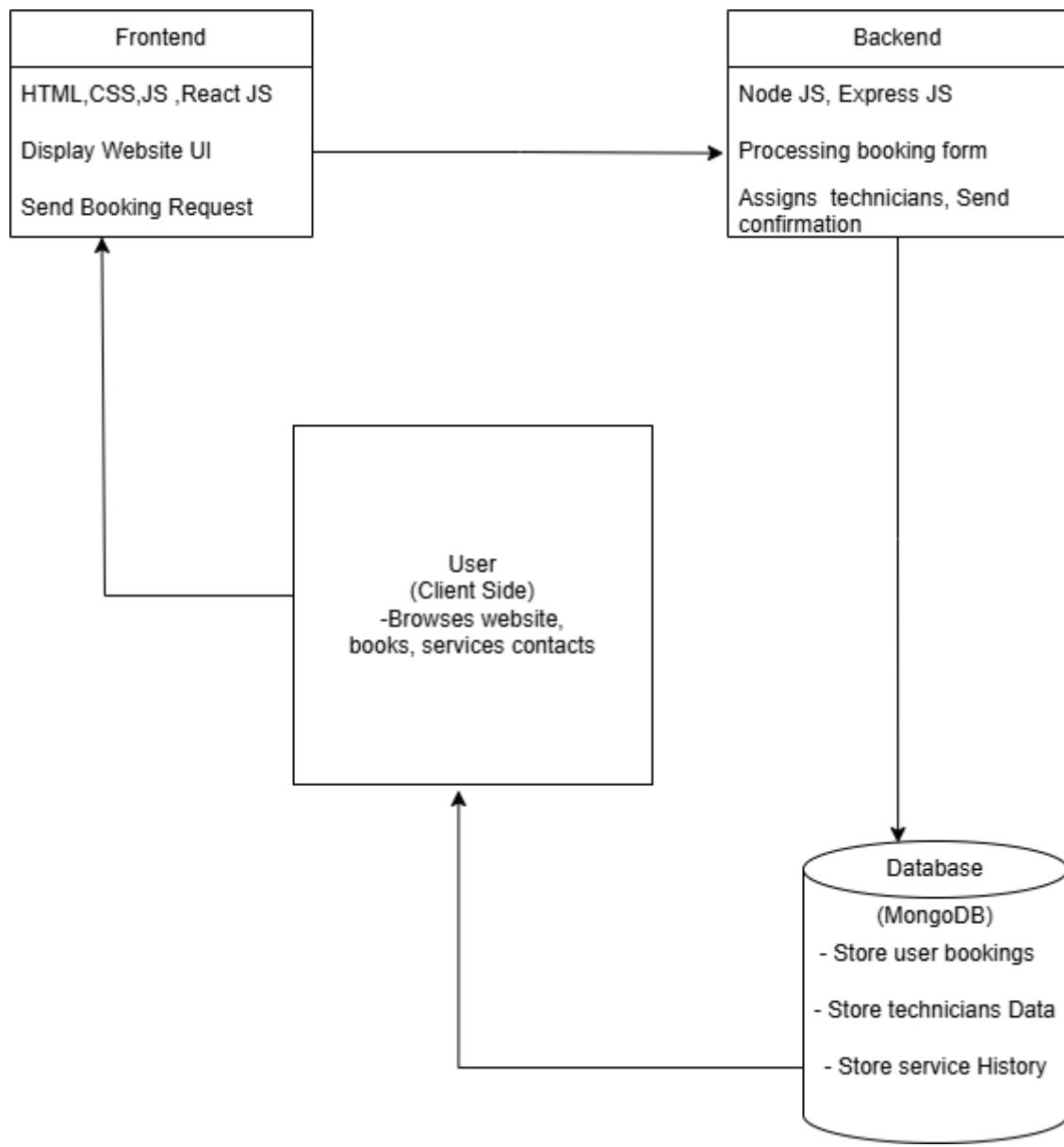
4. System design

System Design

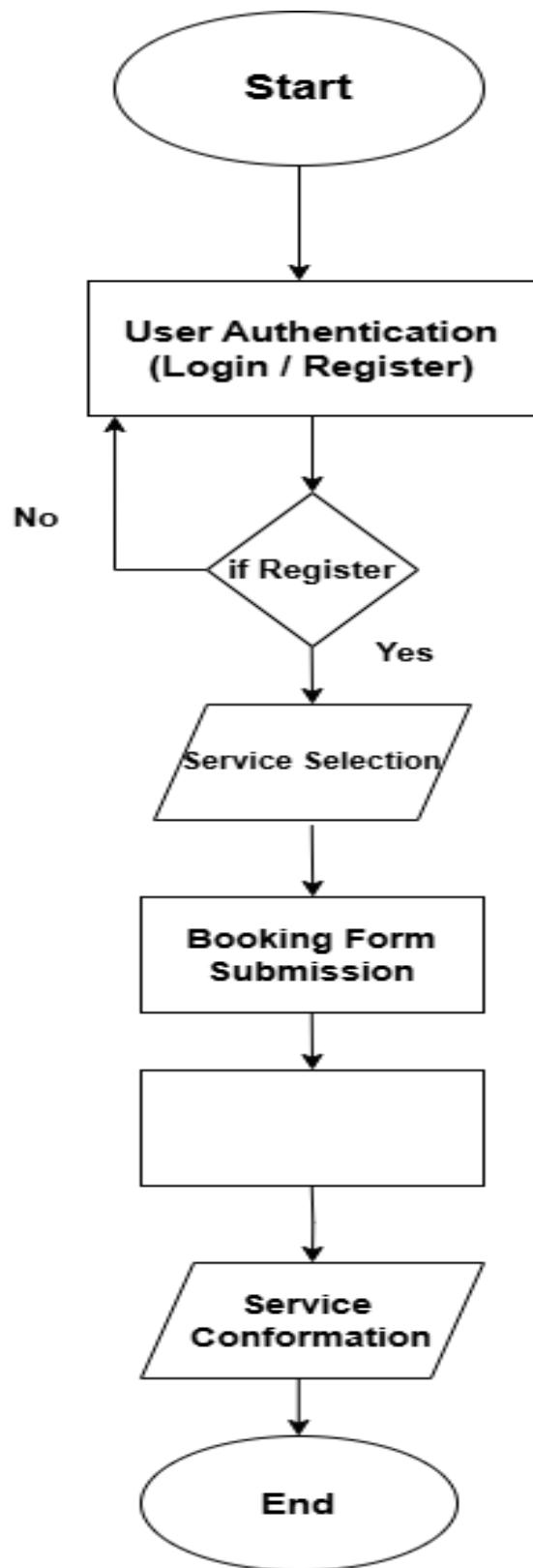
System design is a crucial stage in software development where the architecture, flow, and components of the system are planned before actual implementation. For **Local Technicians Search**, a modular, scalable, and secure design was prioritized to support both **customer and technician roles** efficiently.

a. Architectural Design

- **Presentation Layer (Frontend)**
- Built with **React.js**
- Handles UI, user interaction, API calls
- Styled using **Tailwind CSS or Bootstrap**
- **Application Layer (Backend)**
- Developed using **Node.js + Express.js**
- Manages business logic, routing, and **JWT-based authentication**
- **Data Layer (Database)**
- Uses **MongoDB with Mongoose ORM**
- Stores users, technicians, bookings, payments, and reviews



b.Flow chart



c. System Modeling

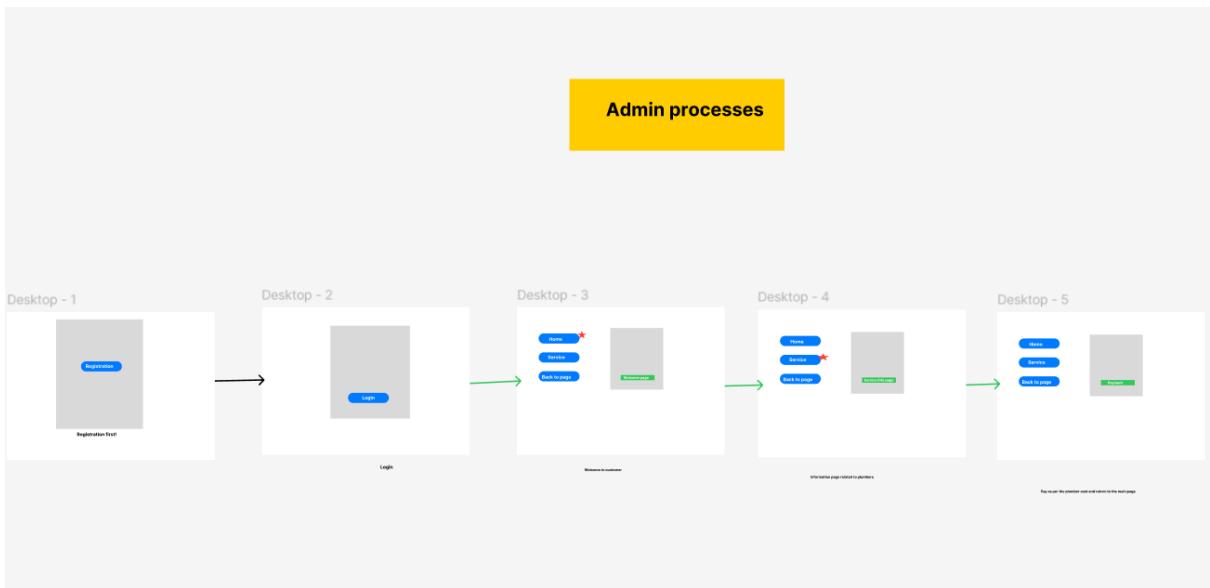
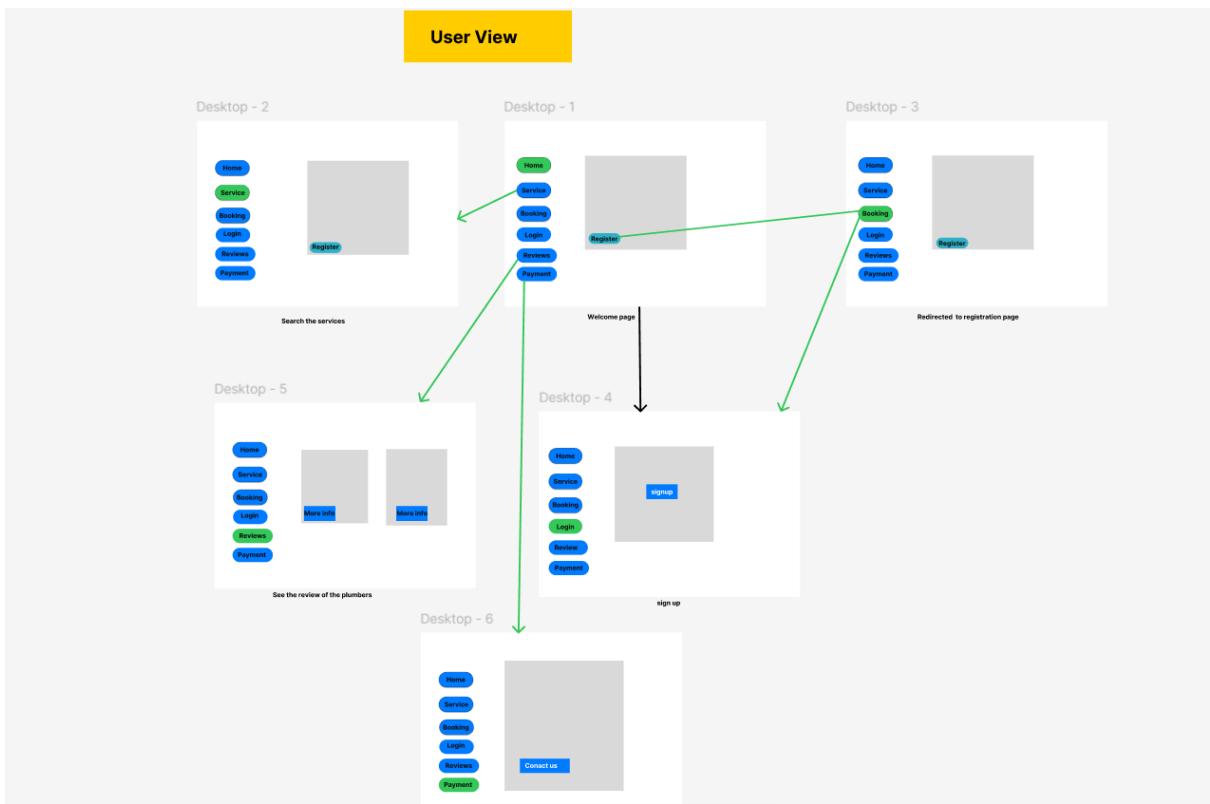
1. Data Flow Diagram (DFD)

Level0DFD(ContextLevel)

This shows a high-level overview of the **Local Technicians Search System** and its interaction with external entities:

Entities:

- **User (Customer)**
 - Interacts with the system to search for technicians, book appointments, and make payments.
- **Technician**
 - Registers on the platform, manages availability, views and responds to bookings.
- **Admin**
 - Manages service categories, technicians, user accounts, and reviews.
- **Local Technicians Search System**
 - Acts as the central system handling all data flow, business logic, and communication between frontend and backend.



5. Implementation

The **Local Technicians Search** system was implemented using modern development tools and practices, including **React.js** for frontend, **Node.js/Express.js** for backend, **MongoDB** for data storage, and secure **payment gateways**. The **Agile methodology** and **iterative approach** allowed for continuous feedback and improvements throughout the development process.

a. Agile Methodologies

We adopted **Agile methodology** to maintain a flexible, adaptive workflow, enabling us to:

- Break development into short sprints
- Conduct regular code reviews and demos
- Gather early feedback from team members and users
- Prioritize features based on importance and feasibility

Sprint Structure:

- **Sprint Duration:** 1–2 weeks
- **Planning:** Tasks defined via **Kanban board**
- **Development:** Frontend and backend worked in parallel
- **Daily Communication:** Brief standups to discuss progress
- **Sprint Review:** Demo and testing at the end of each sprint
- **Retrospective:** Review of improvements for the next sprint

b. Development Model –

The **Iterative Development Model** was used for **Local Technicians Search**, allowing gradual development through repeated cycles.

Stages:

1. Planning & Requirement Analysis:

- Defined core features: user login, technician search, booking, and payment.

2. Design:

- Created wireframes, UI/UX design, and system architecture.

3. Development:

- Built and tested modules: authentication (JWT), technician management, booking system, payment, and reviews.

4. Testing:

- Tested features after implementation within each sprint.

5. Feedback & Refinement:

- Made adjustments based on feedback and testing.

6. Future Scope

The Local Technicians Search platform has significant potential for growth and future enhancements. Some possible directions for future development include:

1. Mobile App Development:
 - Developing mobile applications for iOS and Android to reach a wider audience.
2. Real-Time Technician Availability:
 - Implementing real-time tracking for technician availability and location, allowing customers to book a technician instantly.
3. Advanced Search Filters:
 - Adding more detailed filters such as technician experience, reviews, and specific service expertise.
4. Integration with IoT Devices:
 - Linking with smart home devices for on-demand technician service requests, especially for appliances like HVAC, refrigerators, etc.
5. AI-Powered Recommendations:
 - Using AI to recommend technicians based on customer preferences, ratings, and past services.
6. Subscription Plans for Regular Maintenance:
 - Introducing subscription models for regular maintenance services (e.g., monthly or yearly).
7. Multi-Language and Multi-Currency Support:
 - Expanding the platform to support different languages and

currencies to cater to global markets.

8. Expanded Payment Options:

- Integrating additional payment methods like digital wallets, cryptocurrency, or buy-now-pay-later services.
-

These enhancements could further improve the user experience, expand the platform's reach, and provide additional value for customers and technicians alike.

7. References (public repository GitHub source code links)



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- Frontend (React.js):
- Backend (Node.js and Express.js):

<https://github.com/Achal261/fixit>

