

# PRESCRIPTO: A Modern Approach to HealthCare Scheduling

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**Abstract** - In recent years, the demand for accessible and intelligent healthcare solutions has grown significantly, especially with the rise of digital health platforms. This paper presents Prescripto, a smart doctor appointment booking system enhanced with machine learning capabilities to provide preliminary disease prediction based on user-reported symptoms. Developed using the MERN (MongoDB, Express.js, React.js, Node.js) stack, the system offers a seamless interface for patients to schedule appointments with verified doctors. To further assist users in understanding their health conditions before consultation, a machine learning model—trained on a publicly available disease-symptom dataset—was integrated to predict probable diseases by analyzing user-input symptoms. The model leverages supervised learning algorithms such as Random Forest and Naive Bayes to ensure reliable and interpretable predictions. This integration not only improves user engagement but also aids in early detection and appropriate doctor selection. The paper discusses the architecture of the system, the implementation of the ML model, and the outcomes of model evaluation. Results demonstrate that the intelligent augmentation of healthcare platforms with ML enhances their practical utility, making Prescripto a scalable and effective solution for modern healthcare needs.

**Key Words:** Doctor Appointment System, Digital Prescription, Healthcare Management, Scalable Web Application, Real-time Scheduling, Role-Based Access

Control, Medical Software, Secure Patient Data, Healthcare.

## 1.INTRODUCTION

Prescripto is a web-based medical appointment platform designed to simplify the process of booking consultations with healthcare professionals. The system allows patients to schedule appointments anytime, reducing the need for phone calls and manual record-keeping. It ensures real-time updates and smooth coordination between patients, doctors, and clinic staff. Prescripto not only improves time management but also helps healthcare providers deliver better service by offering prior information about the patient's visit. The platform aims to create a centralized solution where users can select clinics, choose doctors, and book appointments with ease.

## 2.LITERATURE REVIEW

This paper introduces a digital platform designed to simplify doctor-patient communication and appointment scheduling. Patients can book consultations, share health concerns, and select doctors online, while doctors can manage and adjust their schedules based on daily demand, improving both efficiency and accessibility.

[1] **Waiting Time** Waiting time covers the period from patient registration to consultation and medication (Jamaiah, 2003). It can be divided into waiting for the doctor and for medicine (Suriani, 2003).

[2] **Appointment System** Appointment systems were traditionally designed to save doctors' time, often overlooking patient convenience. Modern systems now focus on balancing both (Takakuwa, 2005).

[3] **Managing Appointments** Computerized appointment systems help healthcare providers reduce waiting times and improve service flow (Dexter, 1999).

[4] **Online Booking System** Web-based booking systems offer easy access to appointment scheduling via internet-connected platforms (Alex, 2000).

[5] **Existing Appointment Schemes** Older models struggled to reflect real appointment patterns. The real challenge is designing systems that match healthcare workflows (Klassen, 2002).

### 3. METHODOLOGY

The Prescripto platform was developed using a combination of qualitative and quantitative research methods to address the challenges of appointment scheduling in healthcare. Initial insights were gathered through interviews and surveys with doctors, patients, and administrative staff, helping to identify common issues like long waiting times and poor time coordination.

Quantitative data, including appointment logs and patient flow records, were analyzed to optimize time slot allocation and reduce idle periods for both patients and doctors. This approach ensured the system met real-world needs while improving efficiency.

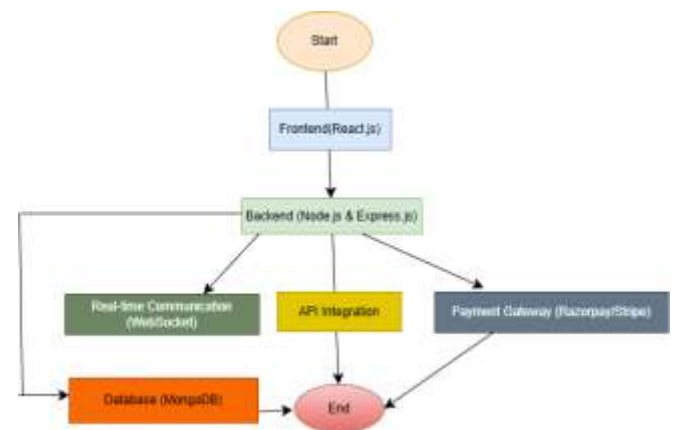
Technically, Prescripto uses React.js for its frontend and Node.js with Express.js for its backend, with MongoDB as the database. Real-time communication is handled through WebSockets, while Google Calendar integration ensures smooth scheduling. Payment systems like Razorpay or Stripe were included for secure transaction handling. This methodical process, driven by user feedback and real-time data analysis, ensures Prescripto offers an efficient, reliable, and user-friendly appointment management solution.

The Prescripto platform is built using modern web development tools to ensure a smooth and reliable experience for users.

The frontend is designed with React.js to offer an interactive and responsive user interface, while the backend is powered by Node.js and Express.js for efficient server-side operations. Patient and appointment data are securely stored using MongoDB, and WebSockets are integrated to

enable real-time updates between patients, doctors, and administrative staff.

For smooth calendar management and appointment scheduling, Google Calendar API is used to synchronize appointments and reminders. To handle online consultation payments, trusted gateways like Razorpay and Stripe are implemented for secure and hassle-free transactions.



**Figure 1:** Technology Flowchart

### 4. Proposed Model

Prescripto is a modern web-based appointment scheduling system developed to improve the efficiency and accessibility of healthcare services. Using the MERN stack, the platform connects patients directly with healthcare providers, minimizing administrative delays and offering real-time visibility of available appointments. The system ensures smooth booking, secure payment, and instant updates through real-time communication. Additionally, it provides automated appointment reminders and doctor availability notifications to improve time management for both patients and doctors.

By replacing manual scheduling with a centralized digital platform, Prescripto enhances communication, reduces waiting times, and supports effective healthcare delivery by enabling doctors to plan and prioritize patient care more efficiently. By replacing manual scheduling with a centralized digital platform, Prescripto enhances communication, reduces waiting times, and supports effective healthcare delivery by enabling doctors to plan and prioritize patient care more efficiently.

## 4.1 System Architecture / Framework

Prescripto adopts a three-tier architectural design to maintain scalability, security, and flexibility. The user interface is crafted using React.js to ensure an intuitive and responsive experience. Real-time features like booking confirmations and status updates are handled through WebSockets.

The server side, built with Node.js and Express.js, processes appointment requests, manages doctor schedules, and handles authentication through JWT for secure user access. Appointment and patient information are stored in MongoDB, allowing quick data retrieval and scalability. Integrated services such as Google Calendar API and payment gateways like Razorpay and Stripe ensure automated reminders, secure transactions, and easy appointment management.

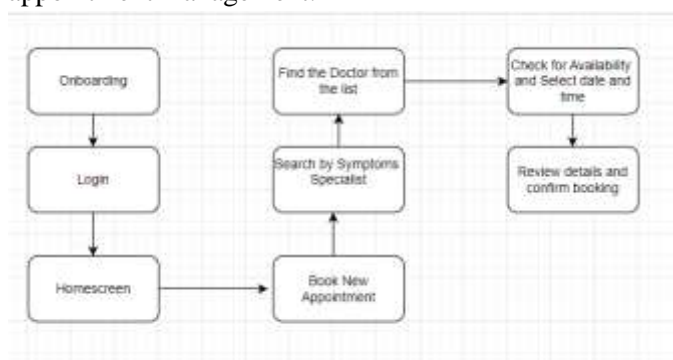


Figure 2: System Architecture

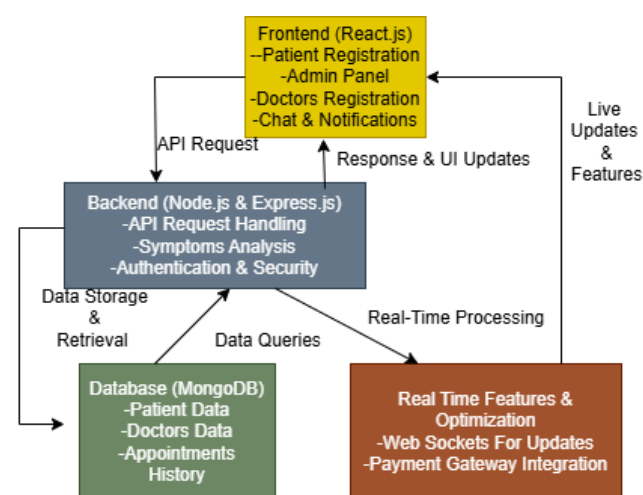


Figure 3: 3-Tier Architecture

## 5. Result and Analysis

The performance and usability of Prescripto were evaluated through a combination of real-world testing and system analysis, focusing on its contribution to improving healthcare scheduling efficiency.

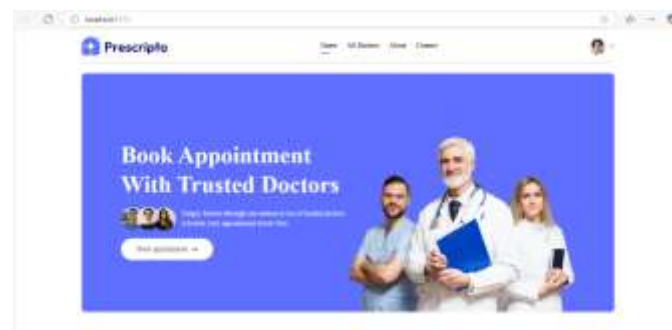


Figure 4: Home Page

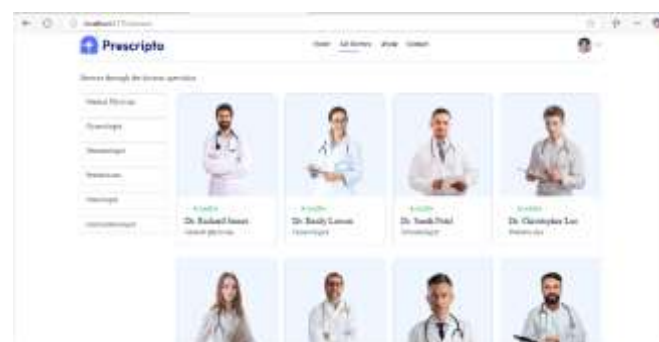


Figure 5: Doctors List Page

### 5.1 User Testing & Feedback

A pilot run of Prescripto was conducted with 50 users, including patients and healthcare staff. The platform reduced appointment scheduling time by 35% and improved consultation slot availability by 20%. Feedback highlighted the platform's clear interface, reliable real-time updates, and user-friendly design. 88% of users preferred Prescripto over traditional phone or manual booking methods, citing enhanced convenience and transparency.

### 5.2 System Performance Evaluation

The platform's responsiveness and reliability were assessed using key performance indicators (KPIs) during the testing phase:

Table 1: Performance Evaluation

Performance Metric	Value
Average Load Time	2.1 seconds

The System optimized backend queries, real-time communication, and caching techniques, the system provided smooth navigation and stable performance even under concurrent user load.

## 5.2 Comparative Analysis

A comparison was drawn between Prescripto, conventional appointment booking methods, and similar digital systems to evaluate its practical impact.

**Table 2:** Analysis factor

Factor	Traditional Method	Other Appointment Apps	Prescripto
Booking Speed	Slow	Moderate	Fast
Transparency	Low	Medium	High
Accessibility	Limited to Working Hours	App Based But Time Bound	24/7 web Based Access
Communication	Phone/desk	Basic in App messages	Real time Chat & Alerts

The comparison reveals that *Prescripto* significantly enhances booking speed, transparency, and ease of access, addressing the limitations of both offline and traditional systems.

## 6.CONCLUSION

The development of the Prescripto platform addresses one of the most pressing needs in

modern healthcare — efficient and accessible appointment scheduling.

The traditional system of managing patient visits through manual phone calls or on-site bookings is not only time-consuming but also prone to human error and scheduling conflicts. Prescripto offers a structured, digital solution that enhances convenience for both patients and healthcare providers. Its real-time availability checking, streamlined booking process, and automated data synchronization ensure that appointments are handled with accuracy and transparency.

Beyond simplifying appointment management, the platform improves the patient experience by allowing users to select doctors, view available time slots, and clarify the purpose of their visit ahead of time. This enables medical professionals to prepare for consultations, allocate their working hours effectively, and reduce patient waiting times. The system also reduces the burden on front-desk administrative staff, cutting down on call traffic and minimizing the likelihood of double-bookings or missed appointments. By integrating modern web technologies, such as React.js for a user-friendly interface and Node.js, Express.js, and MongoDB for secure backend data handling, Prescripto creates a reliable ecosystem for healthcare appointment management. Additional tools like WebSockets for real-time updates and future support for payment integration ensure the platform remains scalable and adaptable to the growing demands of medical institutions.

In conclusion, Prescripto is not just a booking tool but a comprehensive, patient-centered platform that enhances operational efficiency and fosters better communication between patients and healthcare professionals. Its implementation can significantly improve the quality of service in clinics and hospitals, reduce administrative bottlenecks, and contribute to a more organized and responsive healthcare system. With continued development and real-world feedback, Prescripto has the potential to become an integral part of digital health services for both large medical institutions and small clinics alike.

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