

AI-BASED PATIENT FLOW & QUEUE OPTIMIZATION

Represented By :

TEAM NEVER



THE CHALLENGES HOSPITALS FACE TODAY

- Long waiting times for treatment
- Overcrowded hospitals and inefficient scheduling
- Last-minute cancellations leading to resource wastage
- Manual appointment systems causing delays
- patients have problem tracking thier progress



MARKET OPPORTUNITY – WHY THIS MATTERS?



- 90% of hospitals in India still use the manual "Parchi" (paper slip) method for patient registration and appointment scheduling.
- Patients spend 30-50% more time waiting for their turn.
- High no-show rates (15-25%) due to lack of automated reminders.
- Resource wastage – Doctors have inefficient schedules, and beds remain underutilized.
- Overcrowding and frustration – Patients keep following up, leading to congestion.

MISSION

- To revolutionize hospital management by leveraging AI-driven patient flow optimization.
- To minimize waiting times, enhance scheduling efficiency, and improve the overall patient experience.
- To support healthcare professionals by automating tasks that do not necessarily require human intervention
- To create a scalable and accessible AI solution for hospitals and clinics
- To expedite care for critical patients

VISION

- To establish AI-powered hospital management as the industry standard for efficiency and patient satisfaction.
- To eliminate long waiting times and manual scheduling errors through smart automation.
- To bridge the gap between healthcare demand and resource availability using predictive AI models.



OUR SOLUTION



- **Patient Data Collection** – Captures details like age, illness severity, and duration to assess urgency.
- **ML-Based Priority Calculation** – Generates a priority score using key factors, refined by machine learning for fair prioritization.
- **Dynamic Time Slot Allocation** – Assigns appointments based on doctor availability and patient priority, ensuring urgent cases are scheduled first.
- **Real-Time Adjustments** – Automatically reschedules lower-priority patients to accommodate emergency cases.
- **Smart Recommendations** – Suggests the next best available slot if no immediate appointment is available.
- **Hospital Efficiency Improvement** – Reduces overcrowding, minimizes wait times, and ensures smooth patient flow.

DOCTOR PROFILE

- Visible to Patients : Profile photo, name, experience, degree, rating and reports.
- Visible to Doctors : Name, experience, qualification, age, photo, certificates, time slots, verification badge, patient lists, previous patient records and rating.
- Patient has the choice to choose the doctor of his/her liking and have the option to change in case of non availability.
- Anonymous feedback for the doctors to reflect on at the end of given time period to protect patient's identity.
- AI generated report of the Doctor's performance at the end of each quarter for fair evaluation.

(For Patient's View)



Dr. John Doe

12+ Years | MD, Cardiology

★★★★★ 4.9/5 (2k reviews)

TIME SLOTS :

Available Slots :

	Thrus, Mar 13 (10:00 AM - 11:00 AM)
	Book Now
	Sat, Mar 15 (1:00 PM - 2:00 PM)
	Book Now
	Tues, Mar 18 (3:00 PM - 4:00 PM)
	Book Now

Booked : Wed, Mar 19 (11:00 AM - 1:00 PM)

CALENDAR VIEW :

March 2025

Su	Mo	Tu	We	Th	Tr	Sa
23	24	25	26	27	28	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

(For Doctor's Admin View)

QUALIFICATIONS :

MD, Cardiology | PhD, Neurology | Board Certified



AGE : 42 years

CERTIFICATES :



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CALENDAR :

Su	Mo	Tu	We	Th	Tr	Sa
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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

March 2025

Mon 10:00 am (Available)

Tues 2:00 pm (Available)

Wed 4:00 pm (Available & Booked)

[Add Slot](#)

PREVIOUS RECORDS :

Search by date/name...

Patient #001 | 2025-03-10 | Diagnosis: Hypertension

Patient #002 | 2025-03-11 | Surgery: Heart

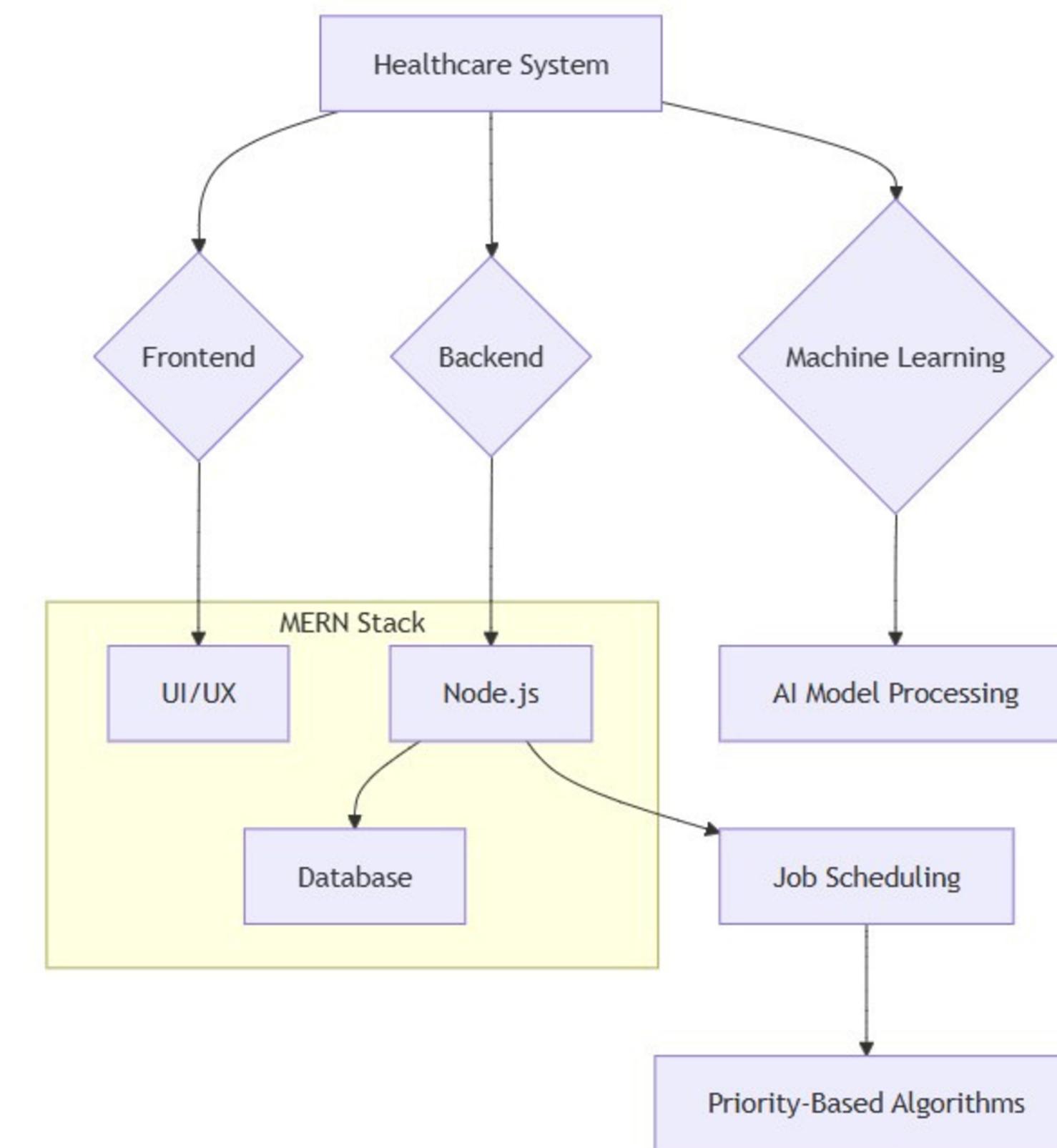
DOCTOR AND PATIENT MATCHING



- **Greedy and DP based scheduling :** Time slot scheduling using Dynamic programming and Greedy based approach
- **Shared Data Access :** Both doctors and patients can view health progress, patient records, and scheduled time slots.
- **Data Modification :** Doctors can update medical details, while certain parameters are auto-updated by the system's algorithm.
- **Appointment Workflow :** The system suggests an optimal doctor and time slot. The patient can either accept or reject the recommendation.
- **Follow-Up Mechanism :** Automated scheduling of follow-up visits to enhance treatment continuity.
- **Daily Reminders :** System-generated notifications for appointments, medications, and health updates to improve adherence.

SOFTWARE ANALYSIS

- **Frontend** : User interface development for seamless interaction
- **Backend** : Server-side logic to handle requests and data processing.
- **Machine Learning Algorithms** : Used for patient prioritization and scheduling.
- **Databases (MongoDB)** : NoSQL database for efficient data storage and retrieval.
- **Job Scheduling Algorithms** : Optimize appointment allocations dynamically.
- **Priority-Based Algorithms** : Ensure critical patients get immediate attention.
- **MERN Stack Development** : Utilizes MongoDB, Express.js, React.js, and Node.js for full-stack implementation.



BENEFITS OF OUR SYSTEM



FOR PATIENTS

- 50% reduction in waiting time due to AI-driven scheduling.
- Faster access to doctors, ensuring critical cases are prioritized.

FOR HOSPITALS

- 30-40% improvement in operational efficiency by optimizing doctor schedules and resource allocation.
- Lower patient no-show rates due to automated reminders and rescheduling.
- Better resource utilization, reducing idle time for doctors and hospital beds.

COMPETITIVE ADVANTAGE

WHY WE STAND OUT

- AI-driven real-time queue optimization, instant updation on cancellations and updatation on schedules
- Predictive analytics for bed occupancy and doctor availability, improving resource planning.
- Scalable across different hospital sizes, from small clinics to multi-specialty hospitals. one size fits all approach
- Seamless integration with existing hospital workflows, minimizing adoption barriers.



BUSINESS MODEL



- Subscription-based model for hospitals and clinics, offering a monthly or yearly SaaS (Software-as-a-Service) model with flexible pricing based on hospital size and patient volume.
- Affordable pay-per-use model for smaller clinics and diagnostic centers, making AI-driven scheduling accessible to Tier 2 & Tier 3 cities.
- Enterprise licensing for large hospital chains (Apollo, Fortis, Manipal, etc.) to integrate AI-driven patient flow management across multiple locations.
- API integration with existing Hospital Management Systems (HMS) used in both private and government hospitals, allowing seamless adoption without replacing current software.

THANK YOU!

TEAM NEVER

