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AI-ENHANCED HOSPITAL MANAGEMENT SYSTEM

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ABSTRACT

"AI-Enhanced Hospital Management System" is an intelligent web-based platform designed to optimize hospital operations and improve patient care through artificial intelligence. Built using HTML, CSS, JavaScript, Firebase, and SQL, the system automates critical processes such as patient record management, appointment scheduling, and resource allocation. By integrating AI-driven analytics, it assists in predicting patient flow, managing staff efficiency, and enhancing decision-making for administrators. This project aims to reduce operational inefficiencies, improve healthcare delivery, and create a smarter, data-driven hospital ecosystem that ensures timely and effective patient services.

Keywords: Artificial Intelligence, Patient Management, Predictive Analytics, Efficient Healthcare.

1. INTRODUCTION

The healthcare industry plays a vital role in ensuring the well-being of society, and efficient hospital management is essential for delivering quality medical services. However, traditional hospital systems often face challenges such as delayed patient care, manual record handling, inefficient resource utilization, and lack of real-time decision-making. The "AI-Enhanced Hospital Management System" aims to address these issues by integrating artificial intelligence into hospital operations. This system automates routine administrative and clinical tasks, supports accurate patient record management, and assists medical staff in making data-driven decisions. By leveraging AI and real-time analytics, hospitals can predict patient flow, optimize resource allocation, and enhance the overall quality of healthcare services. Ultimately, the project focuses on building a transparent, intelligent, and efficient hospital management ecosystem that benefits both healthcare providers and patients.

2. METHODOLOGY

The methodology adopted for the "AI-Enhanced Hospital Management System" involves a systematic approach that integrates artificial intelligence with modern web technologies to improve hospital operations. The project utilizes React ,CSS, JavaScript, Mongodb, for front-end and back-end development, ensuring smooth user interaction and secure data handling.

2.1 System Design and Development

The system is designed with a modular architecture comprising patient management, appointment scheduling, staff management, and analytics modules. AI algorithms are incorporated to analyze patient data, forecast hospital demands, and optimize resource allocation. The front-end interface is developed using HTML, CSS, and JavaScript to ensure user-friendly navigation, while Firebase and SQL are used to manage authentication, real-time data storage, and secure database access.

2.2 Implementation and Testing

After system design, the modules are integrated and tested for functionality, accuracy, and performance. AI components are validated using patient and hospital data to ensure effective prediction and automation. Testing includes both unit testing for individual modules and system testing to verify overall performance. The final deployment ensures that hospital staff and administrators can efficiently manage all activities through a centralized, intelligent web platform.

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3. MODELING AND ANALYSIS

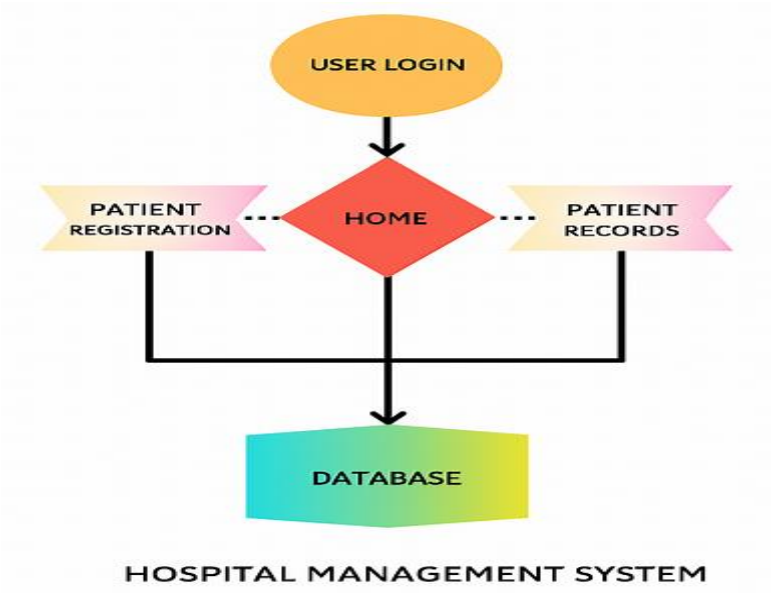

Fig-1: Concept Map

4. RESULTS AND DISCUSSION

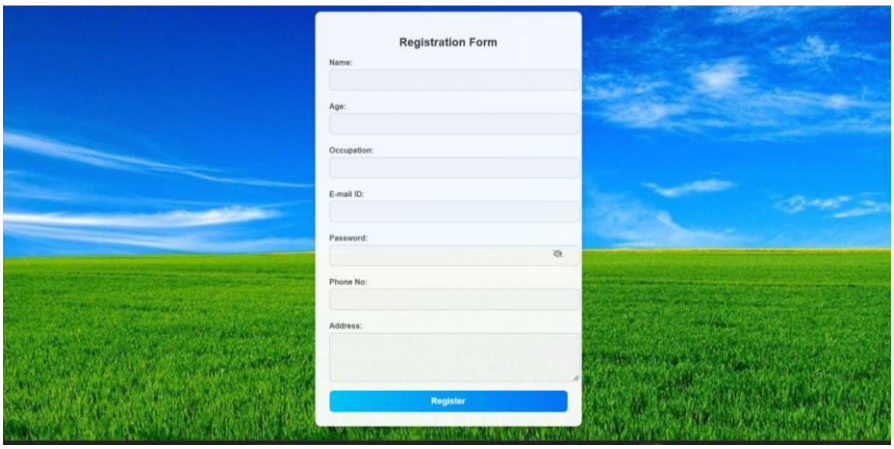

Fig-2: Login page

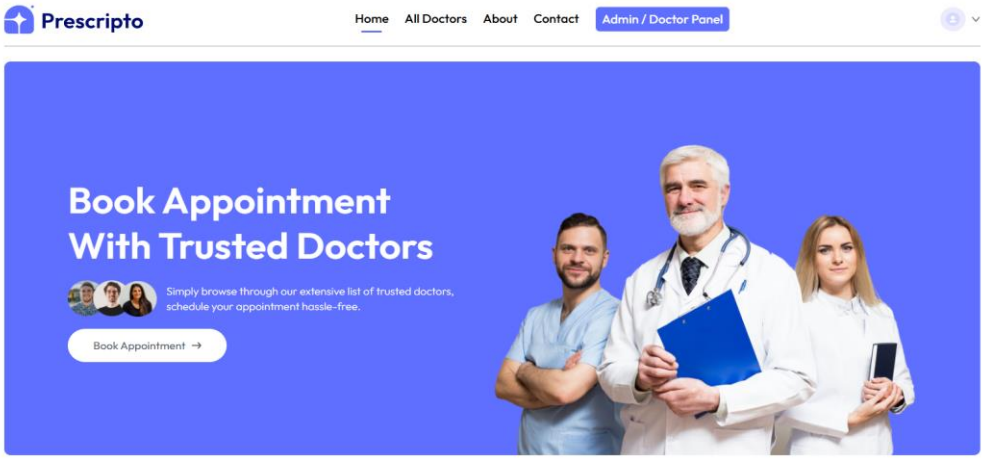

Fig-3: Main page

5. CONCLUSION

The "AI-Enhanced Hospital Management System" improves hospital operations through automation and AI-driven decision-making. It enhances patient care, optimizes resource allocation, and reduces manual workload. Overall, it creates a smarter and more efficient healthcare management process.

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