**PROJECT APPROVAL**

**AUTOMATED HOSPITAL BED ASSIGNMENT SYSTEM**

**Real-Time Research Project Abstract Approval submitted in partial fulfillment of the requirements for the award of the degree**

**BACHELOR OF TECHNOLOGY**

**In**

**INFORMATION TECHNOLOGY**

**By**

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**Problem Statement:**

In emergency situations, patients often struggle to find hospitals with available beds and specialized doctors. Manually searching for hospitals, making phone calls, and waiting for confirmation delays critical treatment. Additionally, hospitals face difficulties in maintaining real-time updates on bed occupancy and specialist availability. To address this, an automated hospital bed assignment system is proposed that provides real-time hospital availability information, facilitates ambulance booking, and assigns hospitals based on bed and specialist availability.

**Objective:**

* To develop a web-based system that allows users to input their health issues and determine whether it is an emergency.
* To automate the process of checking bed availability using IoT-based force sensing resistors.
* To match patients with hospitals that have the necessary specialized doctors.
* To provide an emergency booking option for ambulances.
* To enable hospitals to manage their bed occupancy and doctor availability efficiently.
* To enhance the speed and accuracy of hospital assignments during emergencies.

**Existing System:**

Patients manually search for hospitals by making calls or visiting multiple locations.

No real-time update on bed availability.

Hospital databases are not automated, leading to delays in assigning patients to available facilities.

No direct ambulance booking or integration with hospital assignments.

**Disadvantages:**

* Critical delays in finding hospitals with available beds.
* No centralized system to check specialist availability.
* Hospitals struggle to keep track of real-time bed occupancy.
* Increased risk of mismanagement in emergency situations.

**Proposed System:**

The proposed system will be a web-based application with two modules:

**1. User Module:**

* Users enter their health symptoms via text or audio, and the system determines if it is an emergency based on a predefined database of disease symptoms.
* If an emergency is detected, the system provides the option to book an ambulance.
* The system checks the database for nearby hospitals with available beds and the required specialists (e.g., cardiologists, neurologists, gynecologists).
* Users are shown hospital details and can directly proceed to the recommended hospital.
* Bed availability is automatically updated using IoT-based force sensing resistors that detect when a patient occupies a bed.

**2. Hospital Module:**

* Hospitals can log in and manage their bed occupancy and doctor availability.
* The system maintains a record of patients assigned to the hospital, along with their details and assigned doctors.
* Automatic bed count updates based on IoT sensor readings.
* A dashboard displays real-time hospital data, including the number of available beds and doctors on duty.

**Advantages:**

* **Real-time Bed Tracking:** IoT-based force sensors detect occupied and available beds automatically.
* **Quick Hospital Assignment:** Users instantly receive hospital recommendations based on bed and specialist availability.
* **Emergency Handling:** Users can book ambulances directly through the system.
* **Hospital Efficiency:** Hospitals can efficiently manage bed assignments and patient details.
* **Reduced Manual Effort:** Eliminates the need for manual hospital searches and inquiries.

**Modules:**

**1. User Module:**

* Symptom input and emergency classification
* Hospital assignment based on bed and specialist availability
* Ambulance booking option
* User dashboard with hospital details

**2. Hospital Module:**

* Hospital login and dashboard access
* Bed occupancy management via IoT sensors
* Doctor availability tracking
* Patient record management

**Functional Requirements:**

* User registration and login
* Health issue classification
* Hospital and doctor availability search
* Bed availability tracking using IoT sensors
* Emergency ambulance booking
* Patient details management

**Non-Functional Requirements:**

* **Security:** Secure handling of user and hospital data.
* **Scalability:** The system should handle multiple hospital and user requests simultaneously.
* **Performance:** Real-time updates for bed and doctor availability.
* **Usability:** Intuitive user interface for seamless interaction.

**Computational Requirements:**

**Software Requirements:**

* **Backend:** Flask (Python), Flask-CORS, pymysql
* **Database:** MySQL
* **Frontend:** HTML, CSS, JavaScript
* **APIs:** OpenStreetMap Nominatim API (for geolocation), Google Maps API (for ambulance routing)
* **IoT Integration:** Data collection from force sensing resistors

**Hardware Requirements:**

* **Processor:** Intel i3 or higher
* **RAM:** 4GB or more
* **Storage:** 500GB HDD or SSD
* **IoT Sensors:** Force sensing resistors for bed occupancy tracking

**Conclusion:**

The Automated Hospital Bed Assignment System aims to streamline emergency response by providing real-time hospital availability, ambulance booking, and automated bed tracking. By integrating IoT technology, database management, and web-based solutions, the project enhances hospital efficiency and ensures timely medical assistance to critical patients. This system is an innovative step towards automating healthcare management and optimizing emergency care services.

Patients currently have to manually search for hospitals by making numerous calls or physically visiting multiple locations, which leads to delays in receiving critical care. Additionally, there is no real-time update on bed availability, making it difficult for patients to find hospitals with vacant beds. The lack of automated hospital databases further contributes to inefficiencies, as staff must manually verify and assign patients to available facilities, causing unnecessary delays. Moreover, there is no direct integration between ambulance services and hospital assignments, preventing seamless coordination in emergency situations.

The proposed system is a web-based application with two modules: User and Hospital. In the User Module, patients can enter their symptoms via text or audio, and the system determines if it is an emergency based on a predefined database. If an emergency is detected, users can book an ambulance, and the system checks for nearby hospitals with available beds and required specialists. Hospital details are displayed, allowing users to proceed to the recommended facility, while IoT-based force sensing resistors automatically update bed availability. The Hospital Module enables hospitals to manage bed occupancy and doctor availability, maintaining records of assigned patients and doctors. Automatic bed count updates occur through IoT sensor readings, and a real-time dashboard displays hospital data, including available beds and on-duty doctors.