

SMART INDIA HACKATHON 2024

- **Problem Statement ID – SIH1620**
- **Problem Statement Title - Queuing models in OPDs/ availability of beds/ admission of patients. A hospital based solution is ideal which can be integrated with city wide module .
- Theme - MedTech / BioTech / HealthTech
- PS Category - Software
- Team ID -
- Team Name (Registered on portal) - THE SIxX

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Proposed Solution

Dynamic Queuing System

implements a time-series forecasting model (e.g., Prophet) to predict patient inflow and optimize queuing in OPDs.

Bed Availability Prediction

uses IoT devices and predictive analytics (classification models) to monitor and forecast bed occupancy in real time.

Automated Patient Admission

prioritizes patients based on severity using classification models

Inventory Management

Predicts medicine and consumable demand through demand forecasting models and automates stock replenishment.



THE SIXX

1 Minimizes Patient Wait Times

The solution will greatly benefit hospital staff, administrators, and patients by reducing wait times, optimizing resource allocation, and enhancing patient care. It will enable hospitals to function more efficiently and improve patient satisfaction.

2 Ensures Efficient Bed Utilization

The solution will greatly benefit hospital staff, administrators, and patients by reducing wait times, optimizing resource allocation, and enhancing patient care. It will enable hospitals to function more efficiently and improve patient satisfaction.

3 Improves Admission Process

The solution will greatly benefit hospital staff, administrators, and patients by reducing wait times, optimizing resource allocation, and enhancing patient care. It will enable hospitals to function more efficiently and improve patient satisfaction.

4 Reduces Inventory Shortages

The solution will greatly benefit hospital staff, administrators, and patients by reducing wait times, optimizing resource allocation, and enhancing patient care. It will enable hospitals to function more efficiently and improve patient satisfaction.



TECHNICAL APPROACH

PROGRAMMING LANGUAGES

1. PYTHON
2. HTML
3. CSS
4. JAVASCRIPT

FRAMEWORKS

1. NUMPY/PANDAS
2. TENSORFLOW/KERAS
3. FLASK
4. PROPHET

VISUALIZATION/DEPL OYMENT

1. POWER BI
2. IOT SENSORS
3. CLOUD SERVER (AZURE)

TECHNOLOGICAL STACK /FEASIBILITY AND VIABILITY

Front-End:	HTML 🌐	CSS 🎨	JavaScript ⚙️
Back-End:	Python 🐍	Flask 🌶️	
Database:	MongoDB Atlas 🌿		
Integration:	APIs 🌐	WebSockets 📡	
Data Analytics:	Python Libraries 📊		
Security:	SSL/TLS Encryption 🔒	Authentication and Authorization 🔑	



IMPACT AND BENEFITS



1

Social

Improved patient care and reduced wait times lead to better healthcare outcomes and experiences.

2

Economic

Enhanced efficiency reduces operational costs, minimizes resource waste, and optimizes staff utilization.

3

Environmental

Efficient inventory management cuts down wastage of medical supplies and consumables, promoting sustainable hospital operations.