Hospital Appointment Management System

Project Summary

Project Title

Hospital Appointment Management System

Objective

To solve the problem of overcrowded outpatient waiting areas and lack of real-time workload visibility for hospital administrators.

Core Accomplishment

Developed a full-stack Django application that automates the patient lifecycle—from smart registration and token generation to secure doctor consultation queues. The highlight of the project is the **Operational Analytics Dashboard**, which uses complex database aggregations to provide live "Intensity" tracking for doctors and department-wide congestion summaries.

Technical Complexity:

- Implemented **Role-Based Access Control (RBAC)** ensuring data privacy between different medical practitioners.
- Developed a **Dynamic Wait-Time Algorithm** based on current queue density.
- Integrated a **PDF Reporting Engine** for automated daily administrative auditing.
- Optimized database performance using **Django's select related and annotate** to handle high-concurrency patient traffic.

Tech Stack:

- **Backend:** Python, Django (MTV Architecture)
- **Frontend:** HTML5, CSS3, JavaScript (Bootstrap 5, BI Icons)
- **Database:** PostgreSQL / SQLite / MySQL
- **Reporting:** ReportLab (PDF Engine)
- **Data Handling:** Pandas & NumPy (Core analytics logic)