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Chapter 1: Introduction

1.1 Background

In many healthcare facilities, especially in public hospitals, patients often face long waiting times due to inefficient triage and queuing systems. The traditional method of patient handling typically involves manual registration and symptom assessment, leading to delays, misprioritization, and congestion in waiting areas. These inefficiencies not only compromise the quality of service delivery but also place an immense burden on medical staff, affecting their ability to provide timely and accurate care.

The Smart Triage and Queue Management System is a technological solution designed to address these challenges by automating the process of patient triage and queue allocation. It leverages a decision-making algorithm, user-friendly interfaces, and real-time communication to streamline patient flow and ensure that critical cases are prioritized appropriately.

1.2 Problem Statement

The manual systems currently in use for triaging and managing queues in hospitals are inadequate in handling large volumes of patients efficiently. These systems often result in:

- Prolonged waiting times, especially for critical patients.
- Overcrowded waiting rooms, leading to discomfort and increased risk of infections.
- Inefficient use of hospital resources and personnel.
- Patient dissatisfaction due to delays and poor communication.

1.3 Objectives

The main objective of this project is to develop a Smart Triage and Queue Management System

that:

- Collects and analyzes patient symptom data through a digital interface.
- Automatically categorizes patients based on the urgency of their condition.
- Assigns patients to appropriate queues and departments.
- Communicates real-time updates to both patients and healthcare staff.

1.4 Justification

As healthcare demands continue to grow, especially in urban centers, there is a need for smarter and more scalable solutions to manage patient care effectively. A smart triage and queuing system will not only enhance the hospital workflow but also improve patient experiences and healthcare outcomes. It aligns with the global trend of digitizing healthcare services and making them more responsive and efficient.

1.5 Scope

The proposed system will be developed as a prototype suitable for implementation in small to medium-sized healthcare facilities. It will include:

- A patient symptom input module (via kiosk or mobile app)
- A backend triage algorithm for assessment
- A queue management system integrated with hospital departments
- A notification and display module for directing patient flow