

CHAPTER 1 INTRODUCTION

1.1 Background of The Project

In healthcare services, efficiency is a critical aspect that needs close attention. The process of patient registration in hospitals is the initial stage in the provision of medical services, involving completing forms and creating patient records. This process is often time-consuming, especially for emergency patients who may need to be in better health. This highlights the need for technological solutions that can address these challenges. The project titled "Development of Iris Identification Software System for Hospitals' Emergency Unit" aims to develop software that can expedite the patient identification process in hospital emergency units.

In registering a patient at a hospital, a person must fill out various forms, provide personal information, and wait to receive a medical record number. Next, medical staff must find the appropriate patient file before delivering proper care. However, as stated in the Indonesian Ministry of Health regulations, this process often takes time and can hamper efforts to provide fast and efficient medical services, especially in emergencies. Emergency patients must be treated at least 5 (five) minutes after arriving at the Emergency Unit (Fadhilah et al., 2015).

In an emergency, every second counts, and delays in patient identification or retrieval of medical records can seriously impact patient outcomes. In 2013, at *RSUD Dr. Slamet Garut*, Indonesia, the emergency medical record form showed 100% incompleteness, with the highest percentage of incompleteness found in patient identification, including status, name, and contact address (Fadhilah et al., 2015). Therefore, it is imperative to develop patient identification innovations to address this efficiency issue.

A patient identification system utilizing iris recognition technology is a promising solution to this challenge. Iris recognition is a biometric technology that leverages the unique patterns of the eye's iris to identify individuals (Negin et al., 2000). This system offers a high level of accuracy and can rapidly identify individuals without the need for intensive physical interaction.

Iris recognition is widely recognized as one of the most accurate biometric identification techniques available today. It is user-friendly since the iris may be collected from a reasonable distance (Thomas et al., 2016). The iris carries discrete phase information covering roughly 249 degrees of freedom, making iris identification extremely precise and dependable (Ng et al., 2008). The human iris, an annular area between the pupil (which looks black in photographs) and the white sclera, has a remarkable structure with numerous interlocking minute features such as freckles, coronas, and stripes. These visual traits, often known as the texture of the iris, are unique to each individual (Li Ma et al., 2003).

The iris-scan procedure starts with an image taken using a specialist camera. This camera, which is usually no more than three feet away from the subject, employs an infrared imager to light the eye and take a high-quality shot. In the manual approach, the user must fine-tune the camera to bring the iris into focus and be within six to twelve inches of the camera. This manual technique requires sufficient user training to be successful (Sujatha et al., 2018). The entire procedure takes one to two seconds and yields comprehensive pictures of the iris, which are mapped, recorded, and saved for future matching or verification. The iris is developed before birth, except in the event of an injury to the eyeball, remains unchanged throughout an individual's lifetime (Rawate et al., 2019).

1.2 Problem Statement

In hospitals, a significant gap between the demand and availability of healthcare resources, along with inefficient resource utilization, frequently causes delays in patient flow. These delays are particularly critical during the patient registration phase, as it is the initial interaction in the hospital-patient relationship. Such delays can adversely affect the quality of care and patient satisfaction. Therefore, it is crucial for hospital administrations to develop and implement more efficient processes to minimize these delays and optimize resource use. This research will focus on monitoring and improving the registration process by identifying and addressing the lack of synchronization among activities contributing to these delays. (Pedagandham & Tak, 2019).

1.3 Objectives the Project

- Develop a system that makes the registration process easier for hospital emergency unit patients.
- Develop a system that can manage patients easily.
- Develop a fast system for the registration process.

1.4 Scope of The Project

1.4.1 User Scope

- Users can start the registration process by providing personal information.
- Iris recognition is required for identity verification.
- The user's iris will be scanned easily to continue the next treatment.

1.4.2 System Scope

- The system automatically detects the patient's identity by scanning his iris.
- The system will detect patients who have not registered.
- The system will allow patients to register using iris recognition technology.

1.5 Project Assumptions

Integration with Medical Systems: The assumption is that iris identification technology will be integrated with the existing medical information systems in the Emergency Department to ensure quick access to patient information.

1.6 Significance of A Study

- Improving Emergency Medical Care: This iris recognition system will reduce delays in the registration process for emergency patients, enabling quicker access to urgent medical care. It increases the chances of patients receiving timely treatment.
- Data Management: The system simplifies patient data management and provides easier access to critical health information. It improves patient care coordination and medical decision-making.

- **Potential for Future Integration:** This system opens up opportunities for integration with other medical technologies and further developments in iris recognition.

1.7 Summary

The research proposal titled "Development of Iris Identification Software System for Hospitals' Emergency Unit" addresses the critical issue of delays in patient flow within hospitals due to inefficiencies in the registration process, particularly in emergency units. Recognizing the impact of these delays on the quality of the hospital-patient relationship, the study aims to develop and implement an Iris Identification Software System. The objectives encompass designing the system, enhancing registration efficiency through iris identification, minimizing delays, and automating the registration process. The scope outlines user and system functionalities, including initial registration, iris data recording, data storage, identity verification, and comprehensive patient data management. The project assumes seamless integration with existing medical systems. The significance of the study lies in improving emergency medical care, simplifying patient data management, and offering potential for future technology integration.