EMPOWERING PATIENTS WITH DIGITAL SECOND OPINIONS: A MULTI-DOCTOR REVIEW PLATFORM PROPOSAL

Saba Baloch

Department of Electronics Engineering, Mehran University of Engineering and Technology, Jamshoro

sohaibshakeel974@gmail.com

Abstract
*The rapid rise of digital technologies and mobile health apps is reshaping global medical care. This paper introduces **"Second Opinion on Hand,"** a secure mobile platform offering patients verified second opinions from multiple doctors. Users can upload health records, select chat or video consultations, and receive expert assessments. Prioritizing data privacy, the app utilizes advanced encryption methods like AES-256, TLS, and RBAC. The study details the design, expected benefits, and explores challenges and future prospects in telemedicine.*

INTRODUCTION

Access to reliable and timely healthcare remains a global concern, particularly in remote or underserved regions. Many individuals receive initial diagnoses that may be inaccurate or incomplete, leading to delays in treatment or inappropriate care. A second medical opinion can provide reassurance, alternative diagnoses, or confirmation of the original treatment plan. However, patients often face significant barriers such as cost, availability of specialists, travel requirements, and lack of awareness. The proposed mobile application, 'Second Opinion on Hand,' seeks to overcome these obstacles by offering a platform for patients to share electronic health records and receive consultations from certified doctors across various specialties. Telemedicine reduces barriers to specialist access and increases patient satisfaction. This application leverages mobile technology to provide cost-effective and secure communication between patients and doctors, enhancing medical transparency and accountability [1].

1. Literature Review:

Research supports the increasing value and demand for second medical opinions. According to a research more than one-third of patients receiving second opinions undergo changes in diagnosis or treatment, highlighting the importance of reassessment [2]. Studies also reveal the rapid adoption of telemedicine platforms in response to growing digital literacy and healthcare needs [3]. Mobile health apps are becoming indispensable tools for delivering remote consultations, particularly in times of crisis such as the COVID-19 pandemic. While these platforms offer convenience, the security of patient data is a critical concern. The need for strong encryption, secure transmission protocols, and access control is emphasized to ensure data privacy in telehealth services [4]. Encryption standards such as AES-256 (a highly secure encryption method used to protect data, it encrypts files so only authorized users can read them) and communication protocols like TLS (A protocol that encrypts data while it's being sent over

the internet, it protects information from being intercepted or tampered with during transmission) provide protection during data storage and transfer. Role-Based Access Control (RBAC) (A system that limits access to data based on a user's role, not everyone in the system can access everything) ensures that only authorized personnel can access sensitive information [5]. In addition, studies demonstrate user preferences for platforms that offer transparency, interaction with multiple experts, and personalized feedback [6] [7]. These findings validate the need for a structured and user-focused application like 'Second Opinion on Hand'.

2. Proposed Framework:

The development of the proposed application follows a modular and secure architecture. It includes a user interface for patient registration and document upload, a backend system for storage and encryption, and a consultation module for real-time interaction. The system also integrates a doctor verification engine and feedback collection mechanism. The following diagram illustrates the process flow:
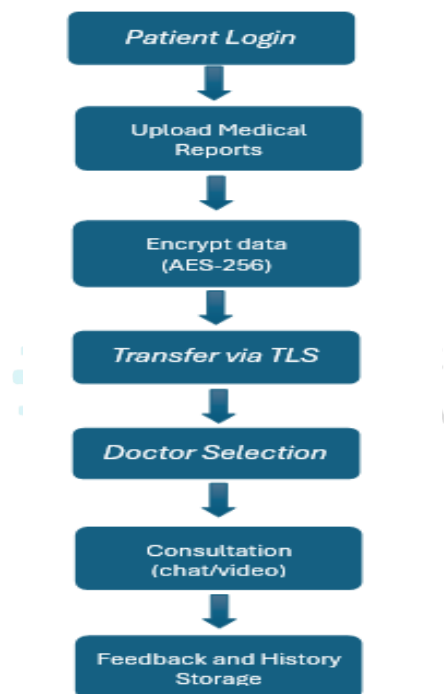

Figure 1: The proposed medical opinion application

The patient logs in and uploads their electronic medical report. The system applies AES-256 encryption to store the report securely and uses TLS for encrypted data transfer. The app matches the patient with certified doctors based on their condition. Doctors access the report using role-based authentication and provide consultation via chat or video. After the session, the patient receives feedback and can rate the experience. A history of consultations is stored securely for future reference.

3. Expected Outcomes and Discussion:

This application is expected to improve the quality and accessibility of healthcare services by enabling patients to consult multiple specialists without leaving their homes. It aims to reduce diagnostic errors, increase patient satisfaction, and provide timely feedback. By integrating secure protocols, it also ensures that patient data remains confidential and protected. Despite the potential benefits, several challenges must be addressed. These include technological literacy among users, maintaining the authenticity of doctors, and ensuring reliable internet

access. Furthermore, legal and ethical issues surrounding medical liability and cross-border consultations must be considered. Future enhancements could include AI-assisted triage systems, wearable device integration, and partnerships with local healthcare providers for hybrid service delivery. If we implement it there can be 4 stages shown in the figure below.
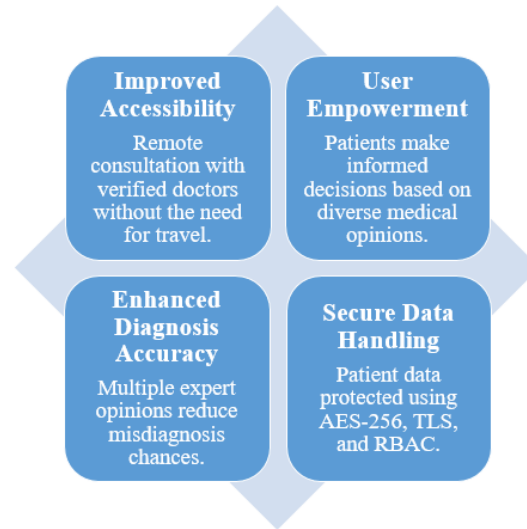

Figure 2: The 4 outcomes of the proposed application

4. Conclusion:

'Second Opinion on Hand' provides a forward-thinking solution to current gaps in healthcare delivery. By harnessing mobile technology and focusing on patient-centered features, it promotes greater transparency and accountability in medical consultations. The use of encryption and access control protocols ensures secure handling of sensitive information. With proper implementation and support, this application has the potential to revolutionize how second medical opinions are sought and delivered.

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