

Lab2Life: Medical Report Summarization Using Artificial Intelligence

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Abstract- Medical reports are really difficult to patients for understand because of complex language and numerical data. This paper presents Lab2Life AI-based web application that simplifies medical reports into understandable summaries. The system use OCR to extract text from reports and NLP to generate clear explanations. It also provides multilingual support and a doctor verification feature to ensure accuracy. Lab2Life helps users better understand their health information and improves communication between patients and healthcare providers.

Keywords- Medical Reoprt Analysis, OCR, NLP, Fast API, Multiple Language Support, Report Summerization

I. INTRODUCTION

Even with the growth of digital healthcare, many patients still find it difficult to understand their medical reports. These reports often include complex medical terms, abbreviations, and numerical values that are not easy for non-medical users to interpret. Because of this, patients usually depend on doctors to explain even basic details. This dependence can create confusion, increase anxiety, and delay proper understanding of their health condition. In many cases, patients are not fully aware of what their reports actually indicate, which reduces their involvement in making important health decisions.

To address this issue, we developed Lab2Life, an AI-based web application designed to simplify medical reports and make them easy to understand. The system allows users to upload reports in PDF or image format, extracts the text using OCR, and then processes it using NLP to generate clear and simple summaries. It also provides multi-language support so users can read the information in their preferred language. Additionally, a doctor verification feature ensures that the generated summaries are accurate and reliable.

II. PROBLEM STATEMENT

Even today, many patients struggle to understand their medical reports because they contain complex medical terms, abbreviations, and numerical values that are not easy for non-medical users to interpret. Most people do not have a medical background, so they find it difficult to understand what the values mean or whether they indicate a normal or abnormal condition. Because of this, patients often depend completely on doctors to explain even basic details, which can create confusion, increase anxiety, and delay their understanding of their own health condition. In many cases, patients

feel uncertain about their health because they cannot clearly interpret the information given in their reports.

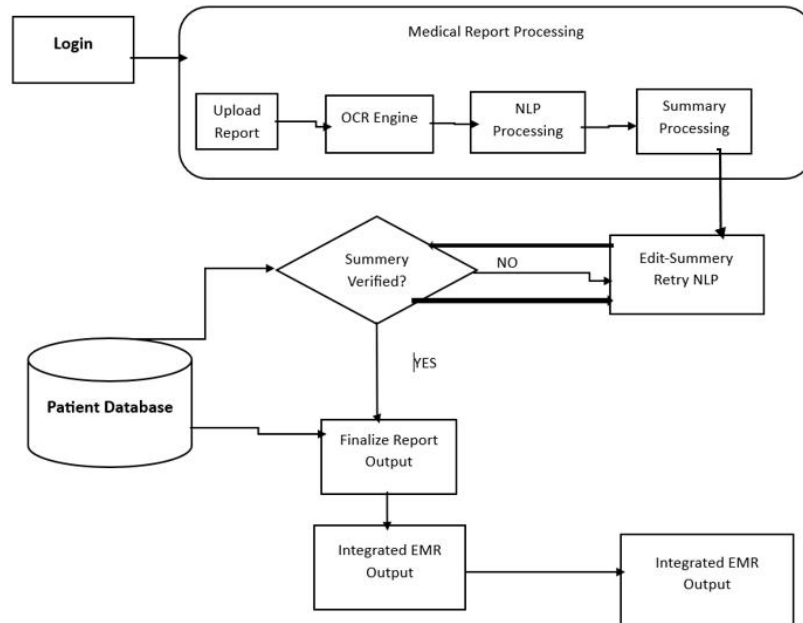


Figure 1: System Flow Diagram

Another major issue is that most existing systems focus only on generating or storing medical reports rather than helping users understand them in a simple way. There is a lack of tools that can provide clear and easy summaries, explain important medical parameters, or support multiple languages for better accessibility. Additionally, AI-based systems that do exist often do not include proper verification, which raises concerns about accuracy and reliability. Due to these limitations, patients are not fully involved in their healthcare decisions and remain dependent on medical professionals. Therefore, there is a strong need for a smart, user-friendly system that can simplify medical reports, provide clear explanations, and make healthcare information accessible and understandable for everyone.

III. RESULTS

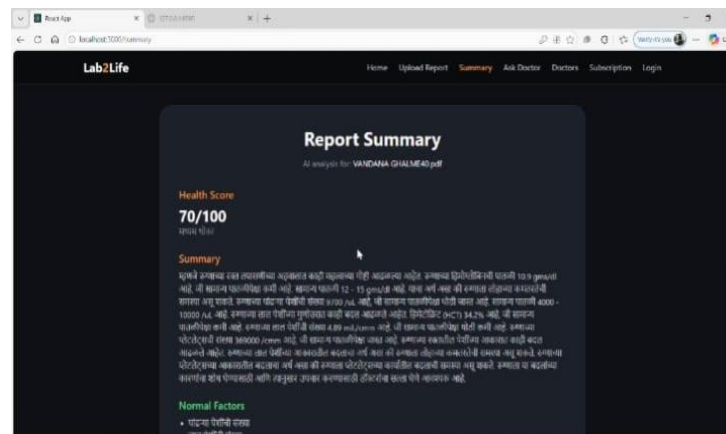


Figure 2: A Report Summary

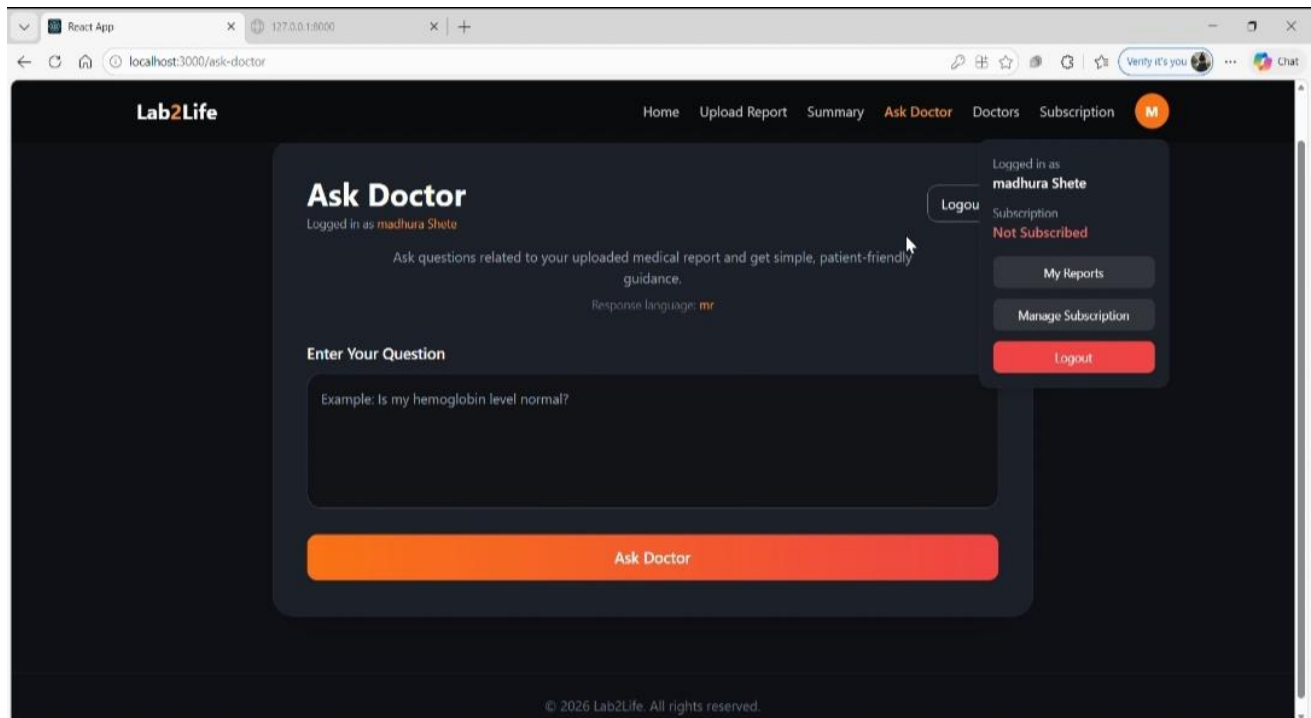


Figure 3: Doctor Verification

IV. CONCLUSION

- Lab2Life improves the traditional way of understanding medical reports by converting complex data into simple and easy-to-read summaries using AI.
- By using OCR and NLP, the application automatically extracts and processes medical information efficiently.
- The addition of a doctor verification feature increases the accuracy and reliability of the generated summaries.
- Overall, Lab2Life provides a user-friendly and effective solution that helps patients better understand their health reports and supports better healthcare communication.

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