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# AI Health Care Report Explainer

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***Abstract:*** ***This project presents an AI-based system for automated analysis of medical reports. Users can upload reports in PDF or image format, and Optical Character Recognition (OCR) is used to extract text data. The extracted information is analyzed using AI to generate a concise summary, identify key medical parameters, and compare them with standard values. The system classifies health status into risk levels such as normal, moderate, or high, and provides basic health suggestions along with doctor recommendations. All reports and results are stored in a database and can be managed through an admin dashboard. This solution reduces manual effort, improves accuracy, and provides quick and accessible medical insights for both patients and healthcare professionals.***

***Keywords:*** ***Artificial Intelligence, Medical Report Analysis, Optical Character Recognition (OCR), Healthcare Analytics, Machine Learning, Data Extraction, Clinical Decision Support, Health Risk Assessment, Automated Diagnosis, Medical Data Processing, Patient Monitoring, Digital Healthcare, Report Summarization, Data Visualization, Intelligent Systems, Health Prediction, Electronic Health Records (EHR), Natural Language Processing (NLP), Web-Based Application, Healthcare Automation.***

## I. INTRODUCTION

The advancement of digital technologies in healthcare has significantly increased the availability of medical data. However, interpreting medical reports remains a complex task for patients without medical expertise. Manual analysis of reports is time-consuming and may lead to errors or misinterpretation. Therefore, there is a growing need for intelligent systems that can simplify and automate the understanding of medical information.

This project introduces an AI-Based Medical Report Analysis System designed to assist in the efficient interpretation of medical reports. The system enables users to upload reports in PDF or image format, from which textual data is extracted using Optical Character Recognition (OCR). The extracted data is then analyzed using Artificial Intelligence techniques to identify key medical parameters and compare them with standard reference values.

The system generates a structured output that includes a summary of the report, classification of health conditions into risk levels (normal, moderate, high), and basic health recommendations. Additionally, all processed data is stored in a database and managed through an admin dashboard for easy access and monitoring.

By automating report analysis, the system reduces manual effort, improves accuracy, and enhances accessibility to healthcare insights, making it beneficial for both patients and healthcare professionals.

## II. LITERATURE SURVEY

Enhancing Medical AI with Retrieval Augmented [1] RAG enhances medical AI systems by combining large models with external medical sources by Omid Kohandel Gargari, Gholamreza Habibi et al.

GAP: RAG-based medical AI systems lack standardized evaluation frameworks

HEALTHIFY: An AI-Driven MERN Solution for Personalized and Predictive Healthcare – 2025 [2] by Dr. Amit Singhal, Abhay Pratap Verma et al. This AI algorithms with wearable data, and generate real-time predictions, risk , and personal recommendations.

GAP: Does not focus on simplifying medical test reports into patient-friendly explanations

Revolutionizing HealthCare: Leveraging AI and NLP to Empower Patients Smart -2024 [3] Sukhman Gill, Gundeep Singh, Jaswant Singh Taur et al. It helps patients better understand their health data and make informed decisions.

GAP: Does not provide automated severity classification or real-time specialist doctor recommendations

A MERN Stack Based Healthcare Management System with Multi-Role Integration-2023 [4] Professor Amit Kumar, Yadav Ayush Kumar et al. It supports patient management, appointments, prescriptions, and lab reports, with potential future AI enhancements.

GAP: Lack of providing the patient friendly reports

Explainable AI for Healthcare 5.0: Oppurtunities and Challenges-2022. [5] Vincenzo piuri, Fabio Scotti, Cinzia Perotti et al.

Explains how explainable models improve clinical decision-making, patient trust, and regulatory compliance in medical applications

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GAP: Lack of practical, patient-focused explainable AI system

Explainable AI in Healthcare-2022[6] Ghibo Zhang, Hussam Al Hamadi er al .It provides a comprehensive survey of Explainable AI techniques applied to healthcare

GAP: lack of real-time systems integrated into practical health applications

## III. PROPOSED SYSTEMS

The proposed system is an AI-Based Healthcare Report Explainer designed to simplify the understanding of medical reports for patients. The system is developed as a web-based application using the MERN stack, providing an easy-to-use interface for uploading medical reports such as blood, urine, and ECG reports in PDF or image format.

Once a report is uploaded, Optical Character Recognition (OCR) is used to extract textual data from the document. The extracted information is then processed using Artificial Intelligence and Natural Language Processing (NLP) techniques to identify key medical parameters. These parameters are compared with standard medical reference ranges to determine the patient's health status.

The system generates output in a structured format, displaying details in a table with columns such as Parameter, Normal Value, Patient Value, Status, and Risk Level. It also provides a simple summary of the report, detects disease severity, and offers basic health suggestions. Additionally, the system recommends nearby specialist doctors based on the analysis results.

All user data, reports, and analysis results are securely stored in a database and managed through an admin dashboard, which allows monitoring and efficient data handling. This proposed system reduces manual effort, improves accuracy, and enables users to quickly understand their medical reports and take necessary actions.

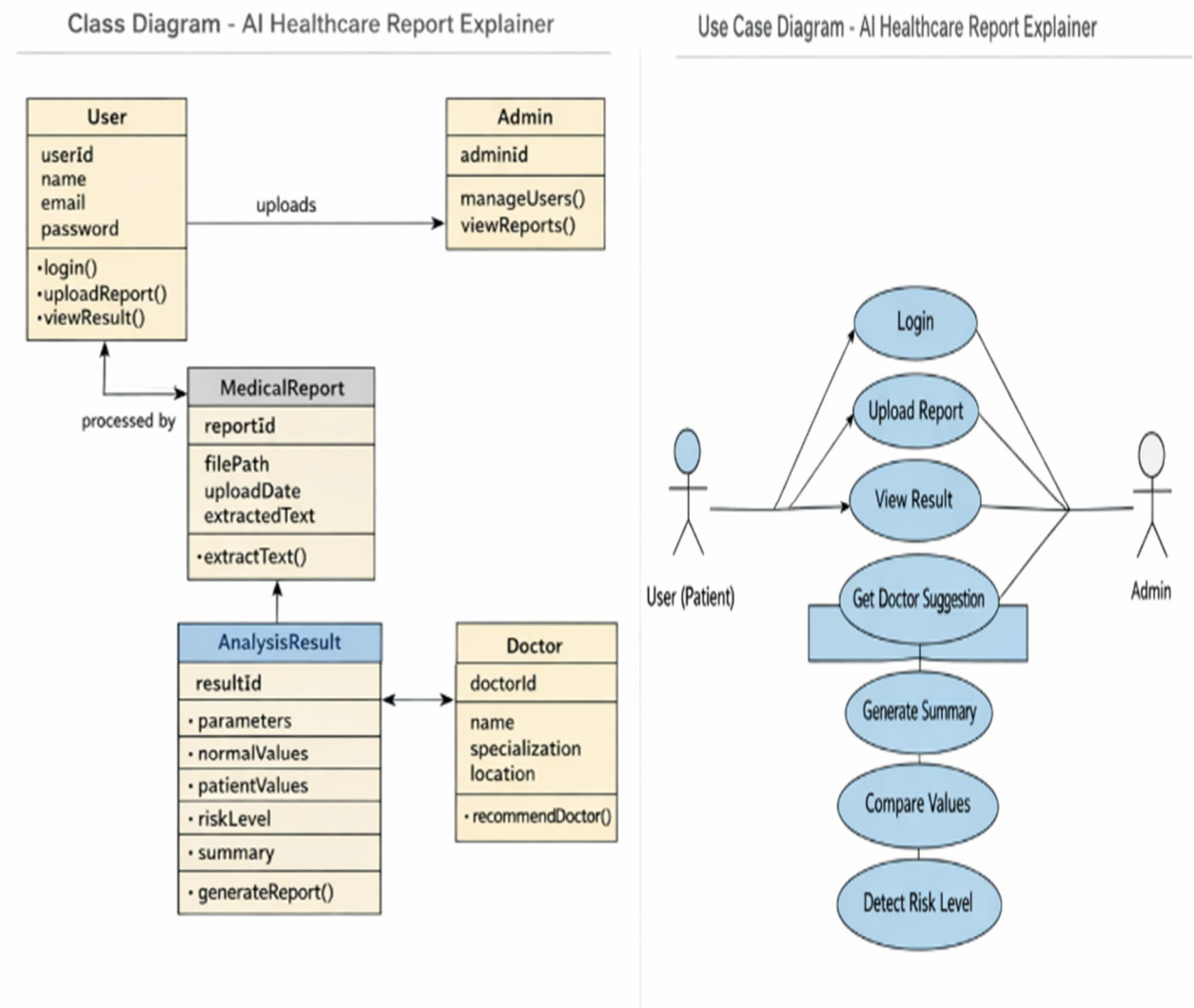



Figure 1: Class & Use Case Diagram

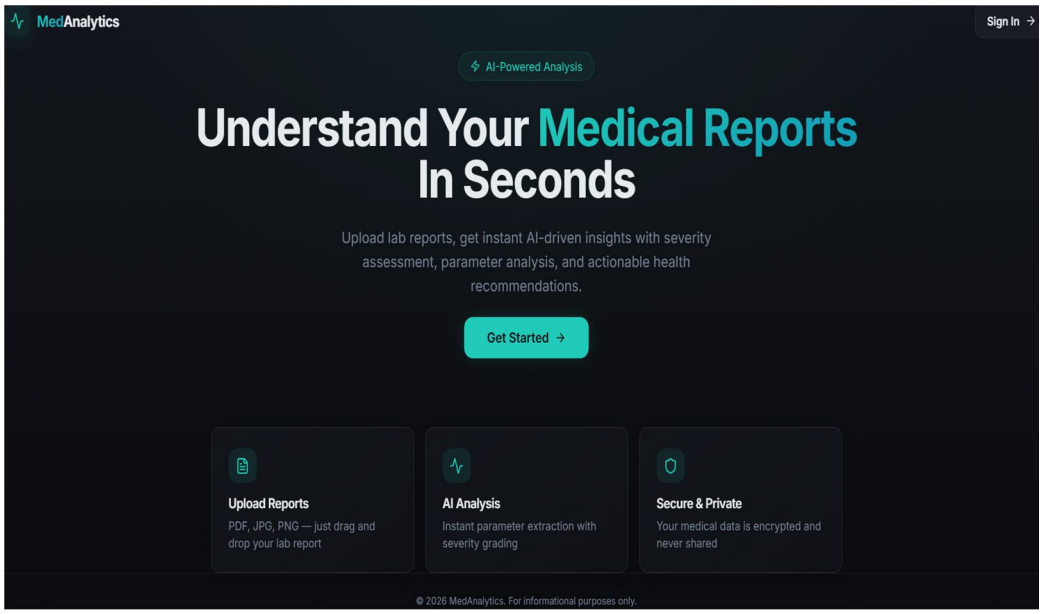



Figure 2: Home page

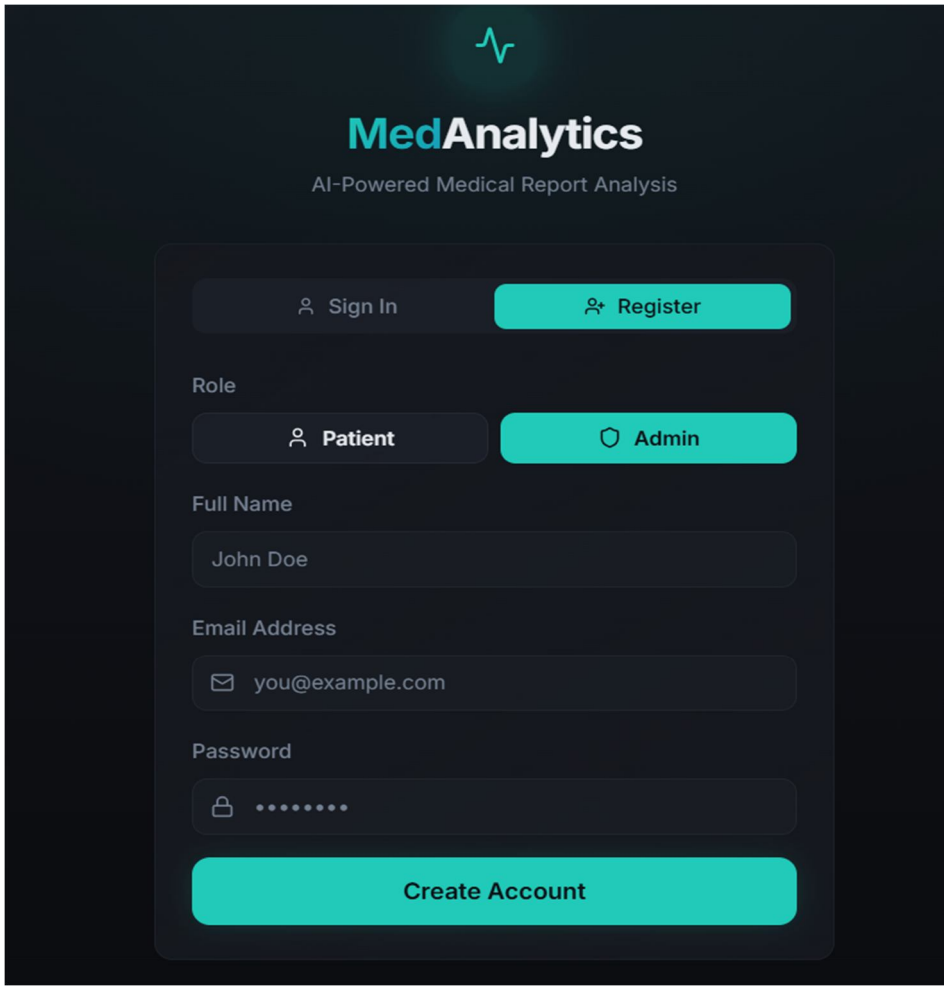



Figure 3: Login Page

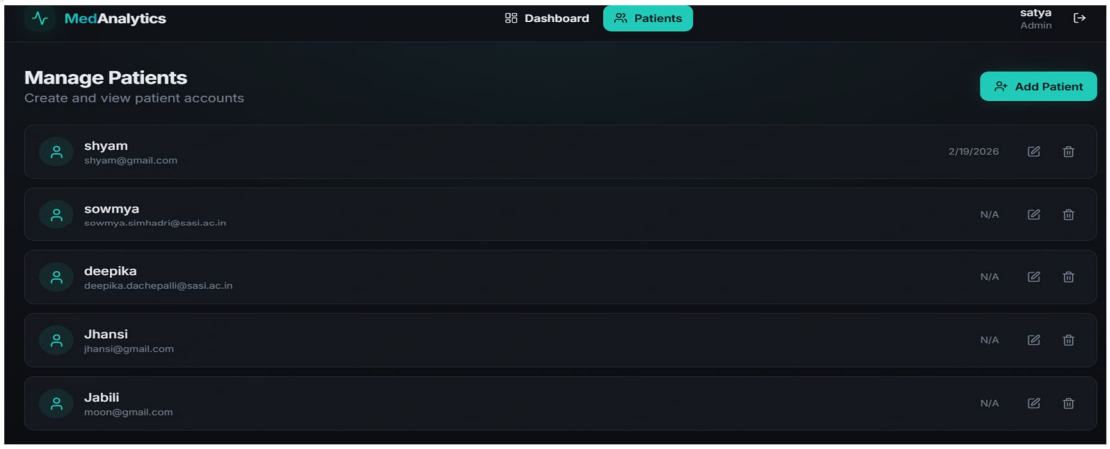



Figure 4: Admin Dashboard

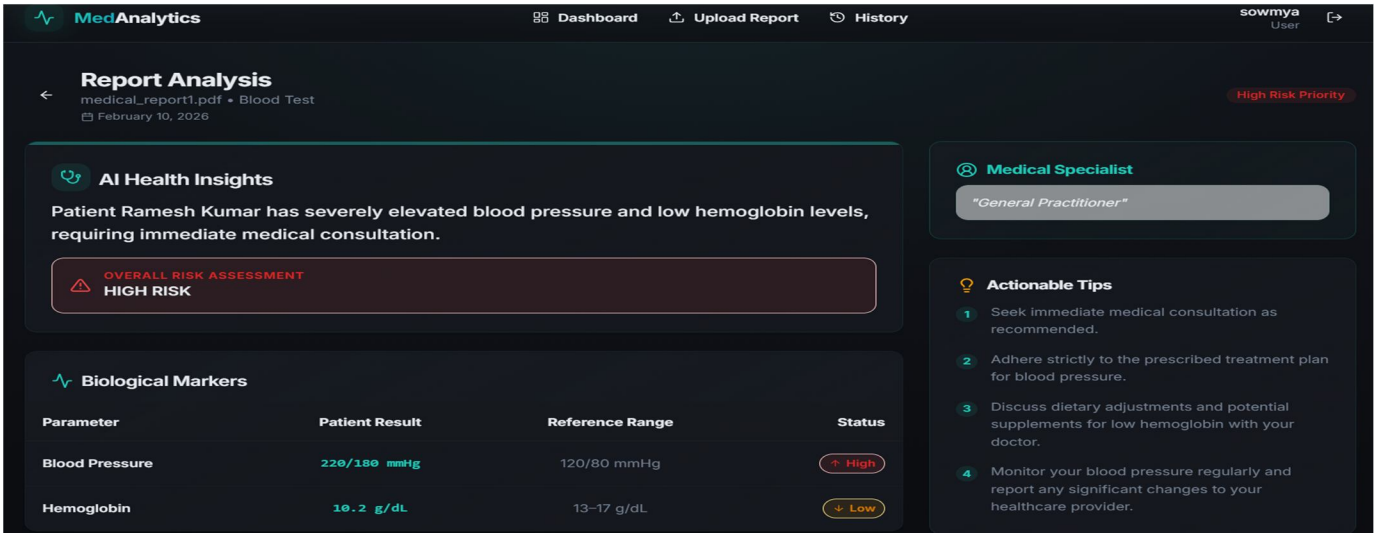



Figure 5: Result report

## IV. WORKFLOW STEPS

*1)* The user creates an account or logs into the system securely.
*2)* The user uploads a medical report (PDF/Image) such as blood, urine, or ECG report.
*3)* The uploaded report is stored in the server/database for processing.
*4)* Optical Character Recognition (OCR) extracts text data from the uploaded report.
*5)* Extracted text is cleaned and structured to identify relevant medical parameters.
*6)* AI/NLP model analyzes the extracted data to detect key health parameters.
*7)* Patient values are compared with predefined normal medical reference ranges.
*8)* The system determines whether values are Normal, Moderate Risk, or High Risk.
*9)* A simplified summary of the medical report is generated for easy understanding.
*10)* Results are displayed in a neat structured table which gives the clear information to understand easily *(Parameter | Normal Value | Patient Value | Status | Risk Level)*
*11)* Based on severity, the system suggests suitable specialist doctors.
*12)* All reports and analysis results are stored in the database for future access.
*13)* Admin manages users, monitors reports, and oversees system performance.
*14)* Users can log in anytime to view past reports and analysis results .Users (donors, NGOs, volunteers) register and log in to the system.

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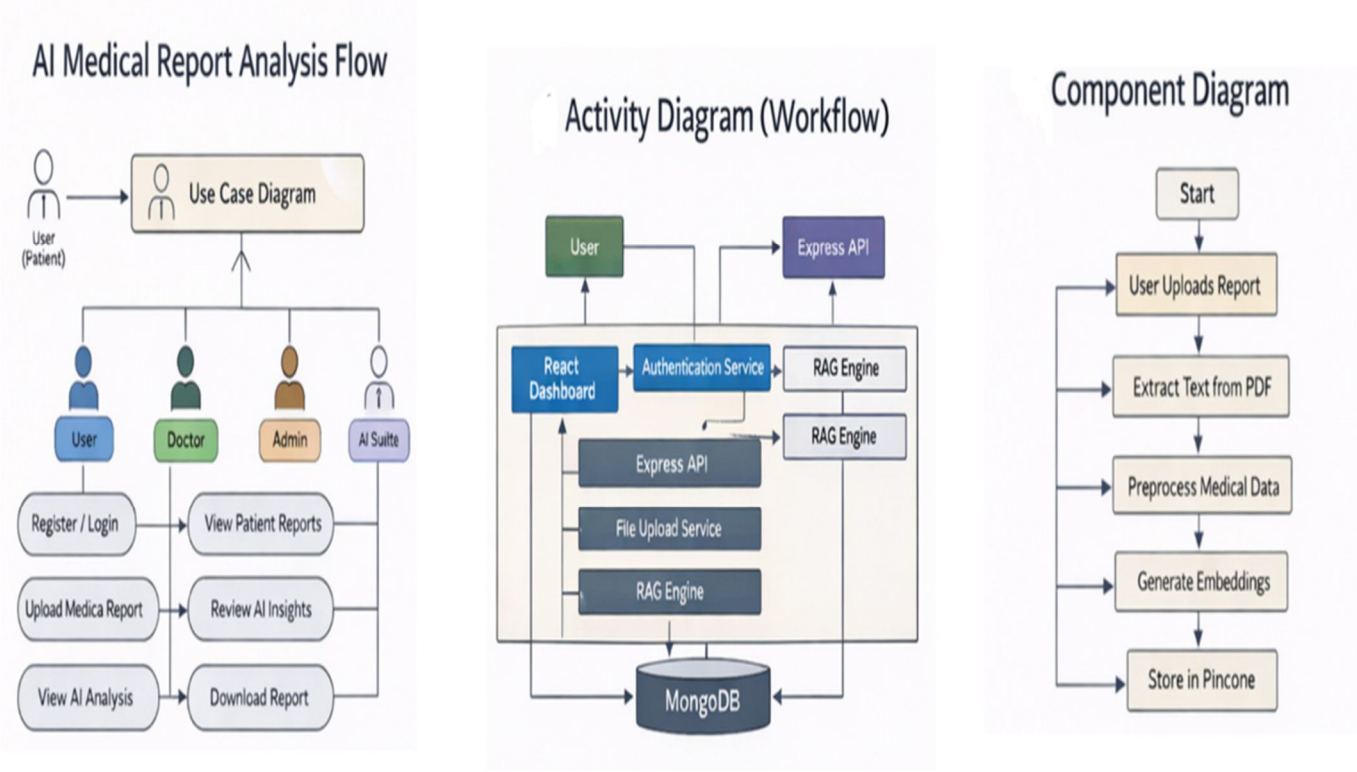



Figure 6: Project Workflow

## V. RESULTS & DISCUSSIONS

*1)* The developed AI Healthcare Report Explainer system successfully performs automated analysis of medical reports and provides meaningful insights to users. The system allows users to upload reports in PDF or image format, and the OCR module accurately extracts textual data from these reports. The extracted data is processed using AI techniques to identify important medical parameters and generate structured outputs.

*2)* The results are presented in a clear and organized table format, including details such as Parameter, Normal Value, Patient Value, Status, and Risk Level. The system effectively classifies health conditions into categories like normal, moderate risk, and high risk. Additionally, it generates a concise summary of the report, provides basic health suggestions, and recommends relevant specialist doctors based on the detected severity.

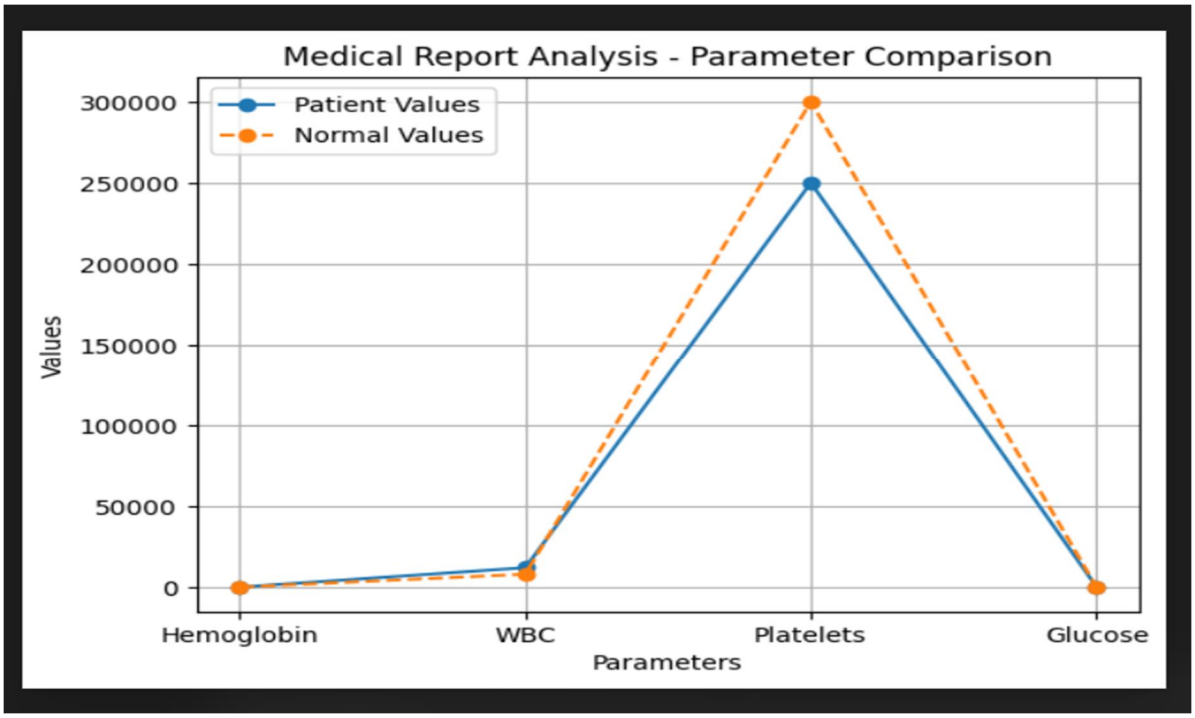
*3)* From the discussion perspective, the system significantly reduces manual effort and helps patients easily understand complex medical reports without requiring deep medical knowledge. It improves accuracy and speed in report analysis, enabling early detection of abnormal values and timely medical consultation. The admin dashboard further enhances system usability by allowing efficient monitoring and management of user data and reports.

*4)* However, the system has certain limitations. Its performance depends on the accuracy of OCR in extracting text from reports, which may vary based on image quality. Additionally, the effectiveness of AI analysis depends on the model's accuracy and available medical data. Despite these limitations, the system demonstrates strong potential in improving accessibility and efficiency in healthcare report interpretation, with scope for future enhancements such as improved AI models and real-time doctor integration.

*5)* The system also enhances data accessibility and continuity, as all analyzed reports and results are stored in a centralized database. This enables users and administrators to track patient history over time, making it easier to monitor health trends and support better long-term medical decision-making.

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## VI. GRAPH




## VII. FUTURE INSIGHTS

1) Enhance the AI models using advanced machine learning and deep learning techniques for more precise medical analysis and predictions.
2) Real-Time Doctor Integration Integrate the system with hospitals or doctors for real-time consultation and appointment booking.
3) Mobile Application Development Extend the system into Android/iOS applications for better accessibility and user convenience.
4) Multi-Language Support Enhancement Expand support for more regional and international languages to make the system accessible to a wider audience.
5) Integration with Wearable Devices Connect with smartwatches and health monitoring devices to analyze real-time health data.
6) Predictive Health Analytics Implement predictive models to forecast potential diseases based on historical data.
7) Enhanced Data Security Apply advanced security techniques like encryption and blockchain to protect sensitive medical data.
8) Voice-Based Interaction Enable voice input/output features to assist non-technical users.
9) Cloud-Based Scalability Deploy the system on cloud platforms to handle large-scale data and multiple users efficiently.

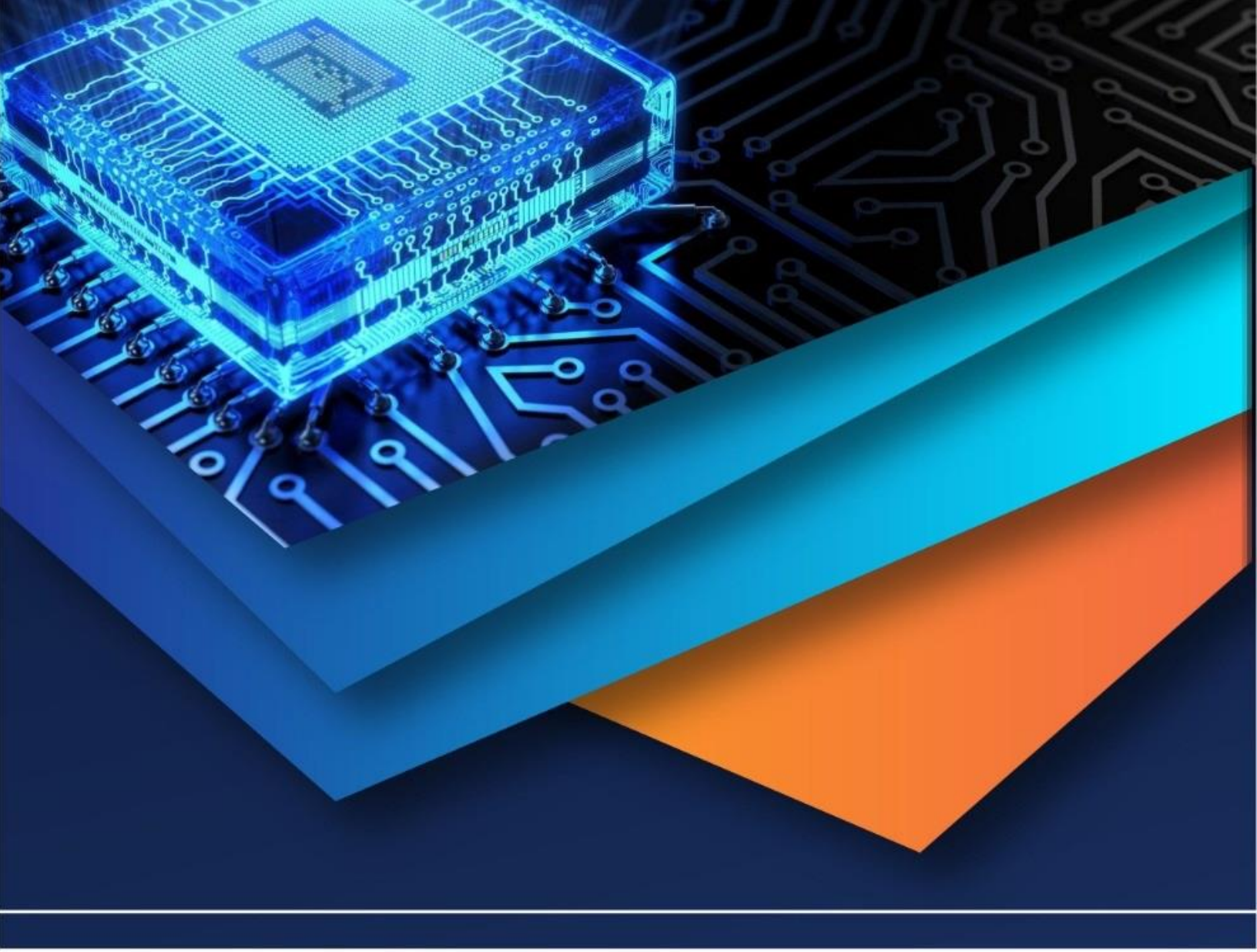
## VIII. CONCLUSION

1) The AI Healthcare Report Explainer successfully addresses the challenge of understanding complex medical reports by providing an automated and intelligent analysis system. It enables users to upload medical reports, extract relevant data using OCR, and analyze it through AI techniques to generate clear and structured results.
2) The system effectively presents key medical parameters, compares them with standard values, and classifies health conditions into different risk levels. It also provides simplified summaries, basic health suggestions, and doctor recommendations, making medical information more accessible to non-expert users.
3) By reducing manual effort and improving accuracy, the system enhances the efficiency of healthcare report interpretation for both patients and administrators. Although the system depends on OCR quality and AI model accuracy, it demonstrates strong potential for future improvements and real-world healthcare applications.

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## REFERENCES

[1] Omid Kohandel Gargari, Gholamreza Habibi et al, Journal of the Academy of Marketing Science (2025) 52:1412–1430, https://doi.org/10.3390/resources13120164 ,2025
[2] Dr. Amit Singhal, Abhay Pratap Verma, International Journal for Multidisciplinary Research (IJFMR) https://scholarworks.waldenu.edu/dissertations ,2025
[3] Sukhman Gill, Gundeep Singh, Jaswant Singh Taur et al. International Journal of Advanced Computer Science and Applications, Vol. 16, No. 7, https://orcid.org/0000-0002-8321-9889 ,2024
[4] Ghibo Zhang, Hussam Al Hamadi er al., IEEE Access (Institute of Electrical and Electronics Engineers – IEEE), e https://creativecommons.org/licenses/by/4.0/ ,2024
[5] Professor Amit Kumar, Yadav Ayush Kumar et al, Follow this and additional works at: European Economic Letters https://scholarworks.waldenu.edu/dissertations 2023
[6] Vincenzo Piuri, Fabio Scotti, Cinzia Perotti et al., European Economic Letters ISSN 2323-5233 Vol 14, Issue 2 https://orcid.org/0000-0002-8321-9889 ,2022
[7] Ramakrishnan, Anand , Sivakumar et al. International Journal for Multidisciplinary Research (IJFMR) ,Conference Series 1764 (2021) 012039 IOP Publishing, 2021
[8] G. Manogaran, R. Varatharajan et al. ,MDPI – Machines Journal , AI for healthcare explanation https://scholarworks.waldenu.edu/dissertations ,2019.
[9] Padam Sinha, Shipra Chaubey et al. International Journal of Intelligent Communication and Computer Science, https://doi.org/11.3890/resources161201049



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