

Medmate A Smart Healthcare Application

¹Anu S, Mohammed Althaf K N ², Hashif P A ², Mohammed Hisham O H ², Athul Krishna P ²

¹Department of Computer Science and Engineering, SCMS School of Engineering & Technology

²Department of Computer Application, MES Asmabi College

DOI: <https://doi.org/10.51583/IJLTEMAS.2025.140600012>

Received: 18 June 2025; Accepted: 23 June 2025; Published: 04 July 2025

Abstract: MedMate Consult with AI is an innovative Android application designed to revolutionize the way users access healthcare services by providing a comprehensive platform for online medical consultancy. The app allows users to consult with qualified doctors through video calls, ensuring convenient and remote access to healthcare professionals. One of the standouts features of MedMate is its symptom-based doctor recommendation system, which analyzes user-provided symptoms and suggests the appropriate medical specialty for consultation, ensuring users connect with the right doctor for their needs. Additionally, the app offers a secure prescription management system, enabling users to save and access their medical prescriptions digitally, promoting better health record management. To maintain the highest standards of healthcare, MedMate incorporates an admin approval system for doctor registrations, where administrators meticulously verify and analyze the documents submitted by doctors before granting them access to the platform. This ensures that only verified and qualified medical professionals are available for consultations, enhancing user trust and safety. MedMate aims to bridge the gap between patients and doctors by providing a seamless, user-friendly, and secure platform for online medical consultations, prescription management, and symptom-based doctor recommendations, ultimately improving accessibility to quality healthcare.

Keywords— Health care, Android application, artificial intelligence, online medical consultation,

I. Introduction

In today's fast-paced world, access to quality healthcare has become more critical than ever. The Android healthcare application is a unique mobile solution that provides customers with seamless healthcare access via a comprehensive digital platform [1]. The app includes integrated features such as blood test and health checkup booking, doctor appointment scheduling, and centralized medical history management, which consolidates all reports and test results. It also offers on-demand emergency services like ambulance booking with real-time location monitoring, which functions exclusively with the user's permission to protect privacy and security. The portal also provides instant medical support to meet urgent healthcare demands efficiently. With its user-friendly interface and broad capabilities, the program seeks to change healthcare accessible and improve the overall patient experience.

With the increasing demand for convenient and efficient medical services, technology has emerged as a powerful tool to bridge the gap between patients and healthcare providers. The existing system for online medical consultation generally involves a central server acting as a mediator between the patient and the doctor. In most cases, users can access the system via a web or mobile platform (such as an Android app). The architecture typically follows a client-server model, where the mobile app (client) communicates with the server to perform tasks such as registering, booking consultations, storing medical records, and accessing video calls. The server contains several layers, including:

Frontend (Mobile App): Allows users to input symptoms, book consultations, access prescriptions, and make video calls.

Backend (Server): Processes the user data, stores medical records, handles doctor approvals, and manages video consultations.

Database: Stores user and doctor information, consultations, prescriptions, and other medical records.

Admin Panel: A web interface for admin users to review and approve doctor's credentials before allowing them to join the platform. There are several drawbacks for the existing system. They are listed below.

Manual Doctor Verification: The process of manually verifying doctor credentials can be slow and prone to human error, leading to delays in approval.

Lack of Symptom-Based Doctor Recommendation: Existing systems may not effectively match user symptoms with the right medical specialty, leading to inefficiencies in the consultation process.

Data Privacy Concerns: Inadequate protection of sensitive health data can pose risks for user privacy and security breaches.

Limited Access to Specialties: Users may struggle to find the right specialist, especially if the platform lacks a comprehensive list of medical specialties.

Poor Video Call Quality: Existing systems may face issues with video call quality, especially in areas with poor internet connectivity, leading to a suboptimal consultation experience.

User Experience Challenges: Some systems may have complex user interfaces, making it difficult for patients to navigate the platform or access necessary features quickly.

MedMate is an innovative Android application designed to revolutionize the way users interact with healthcare professionals, offering a seamless and user-friendly platform for online medical consultations, symptom analysis, prescription management, and virtual doctor visits. MedMate empowers users to take control of their health by providing a comprehensive suite of features tailored to meet their medical needs. One of the standout features of the app is its intelligent symptom analysis tool, which helps users identify the appropriate medical specialty to consult based on their symptoms. This ensures that users receive the right care from the right specialist, saving time and reducing unnecessary visits to healthcare facilities. The app also simplifies the process of managing medical records by allowing users to securely save and access their prescriptions. This feature ensures that users can easily track their treatment plans and share them with healthcare providers whenever needed.

Additionally, MedMate facilitates real-time video consultations with doctors, enabling users to receive medical advice from the comfort of their homes. To maintain the highest standards of care, MedMate incorporates a robust admin approval system for doctor registrations. Doctors are required to submit their credentials and documents for verification, and only after a thorough review by the admin are they approved to join the platform. This ensures that users have access to qualified and trustworthy healthcare professionals. MedMate is more than just an app; it is a holistic healthcare solution designed to make medical consultations more accessible, efficient, and reliable. By leveraging cutting edge technology, MedMate aims to enhance the overall healthcare experience for users while providing doctors with a platform to extend their services to a wider audience. Whether you're seeking immediate medical advice or managing long-term health conditions, MedMate is your trusted companion on your journey to better health.

Related Work

Ahmed et al [2] described the design and execution of an online platform that offers comprehensive medical information via a website and a mobile app. The system collects and distributes hospital and service-related data, making it easier for patients to obtain healthcare information. It provides an efficient and cost-effective way to distribute medical services online. The platform intend to provide a simple, cost-effective healthcare service system. Overall, it improves the accessibility of healthcare information to users.

The medical field currently faces significant challenges, including financial and psychological burdens for patients waiting in crowded hospitals. To address this, Anjulee et al [3] developed Easy Book App, a web-based mobile platform that enables patients to book, reschedule, or cancel appointments online at their convenience. The application reduced the waiting times by sending alerts to patients two slots before their appointment and provides real-time updates on queue status. Healthcare professionals can access patient information and monitor waiting lists, improving operational efficiency. Overall, this platform enhances communication between patients and medical staff, streamlining appointment management and improving service delivery.

There are also many app development exits for the appointment for doctors. Mey et al [4] proposed mobile application that offered a comprehensive solution that significantly improves access to healthcare services. By integrating an efficient appointment booking system, it simplifies the scheduling process for patients. The house call feature provides personalized care by bringing medical services directly to patients' homes, reducing the challenges associated with travel. Additionally, the inclusion of telemedicine and virtual consultations expands accessibility, allowing patients to connect with healthcare professionals remotely. This combination of features enhances convenience and flexibility for users while supporting timely and effective medical care. Ultimately, the application has the potential to transform healthcare delivery, improving patient satisfaction and overall health outcomes.

Gupta et al[5] provided a Doctor Appointment Website that was intended to improve the scheduling and management of medical appointments. Patients can search for doctors by specialty, location, and availability, make appointments in real time, and view their medical history, medications, and reports. The software includes automated notifications, dynamic scheduling, and telemedicine capabilities for remote consultations and e-prescriptions. It decreases administrative burden, boosts patient happiness, and increases communication between patients and healthcare professionals. This method also discussed the issues including data security, regulatory compliance, and integration with existing systems. It also discussed potential future developments, such as improved user experience, scalability, and advanced analytics integration.

II. Methodology

The methodology used in this work is android application along with artificial intelligence [6]. This type of applications can be developed in Flutter also [7] but in this paper the software development environment is Android SDK. The software development method used is waterfall method. Waterfall Model is a traditional software development methodology characterized by a linear, sequential approach. It consists of several distinct phases, each building upon the outputs of the previous one. The process starts with gathering and documenting requirements, followed by design, implementation, testing, deployment, and finally, maintenance [8].

There are mainly three modules are designed for this android application development. They are listed below.

User Module: - This module mainly deals with user's registration and login process and profile management. The main parts of

this module are

User Registration and Login

Allows users to create an account using email, phone number, or social media and it includes secure authentication

User Profile Management

Enables users to update personal details, medical history, and preferences.

Doctor Module: - This module deals with the doctor's details. They include

Doctor Registration and Verification

Allows doctors to register by submitting credentials

Admins verify and approve doctor profiles.

Doctor Profile Management

Enables doctors to update their profiles.

Appointment Management

Allows doctors to view, accept, or reject appointment requests and sends reminders for upcoming consultations.

Admin Module: - This module deals with both user and doctor modules

Doctor Verification

Admins review and approve/reject doctor registrations based on submitted documents.

User and Doctor Management

Admins can view, edit, or delete user and doctor profiles.

System Monitoring

Monitors system performance, ser activities, and doctor consultations.

The modules and the connection between them are described in the following figure

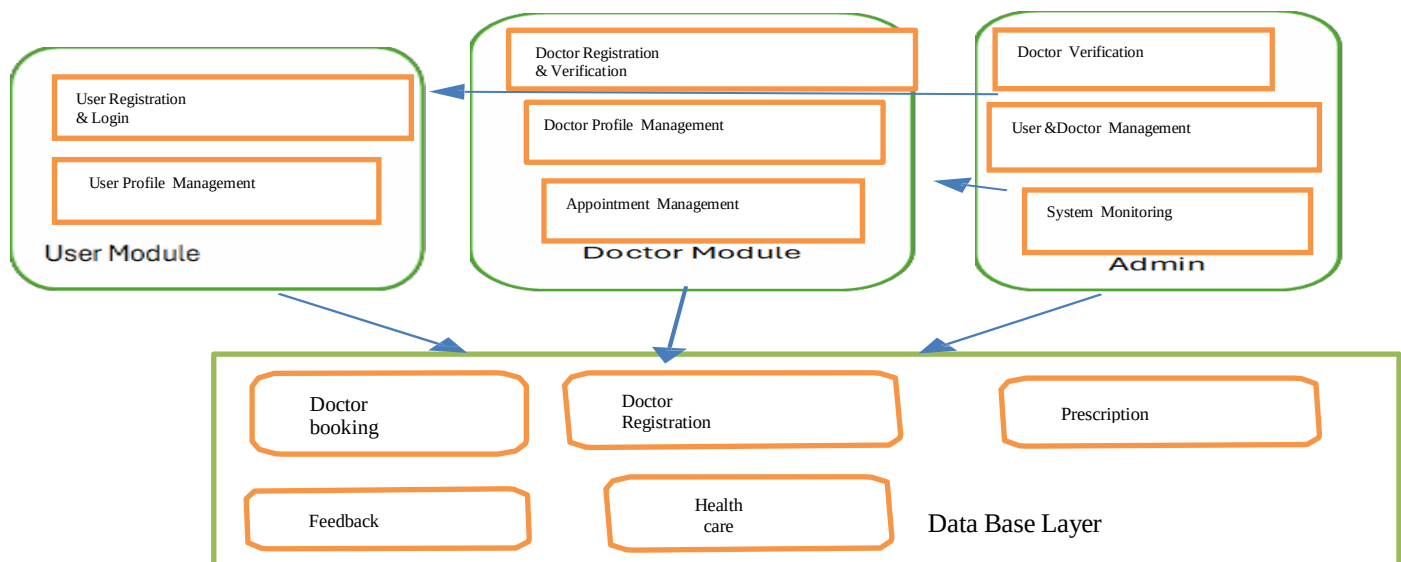


Fig 1: The module architecture of Medmate

Advantages of the Medmate app are described as below. AI-Powered Medical Consultation – The system provides AI-driven medical advice based on user symptoms and queries.

User-Friendly Android App – Developed using Android Studio, ensuring a seamless user experience.

Secure Data Handling – Implements PHP for backend processing and secure storage of medical data.

Symptom Analysis & Recommendations – Uses AI to analyze symptoms and suggest possible conditions or next steps [11].

Appointment Scheduling – Allows users to book consultations with doctors if necessary.

Medication & Health Tips – Provides basic medication guidance and lifestyle recommendations.

Multi-Platform Accessibility – Supports integration with web-based systems for future expansion.

Scalability & Efficiency – Designed to handle multiple user queries simultaneously with optimized performance.

III. Results

The application was executed in Android SDK and the android coding was done in Python. The following figures describes the developing environment of Medmate

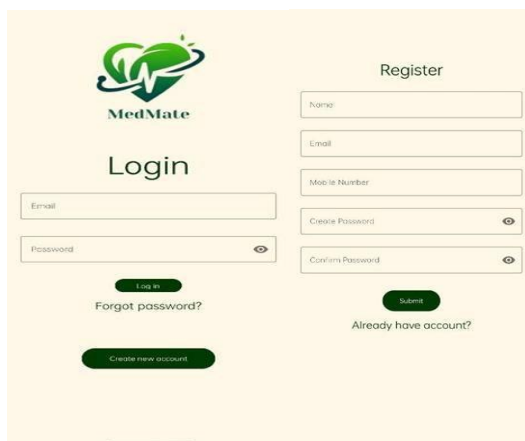


Fig 2: Login Page

Fig3: Registration Page



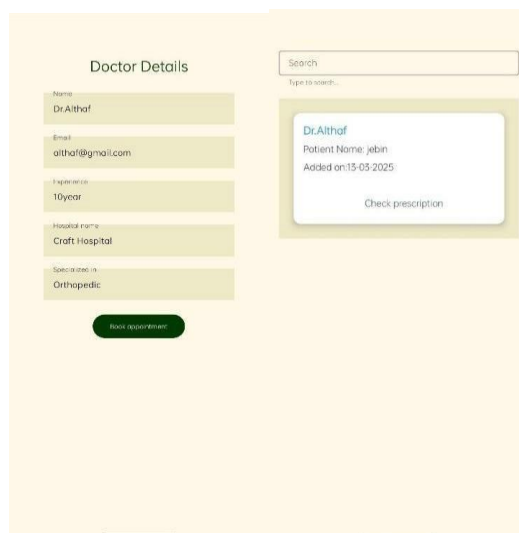
Fig 4: Home Page of User

Figures 2,3 and 4 describes the user profile, login and registration pages. Figure 5 depicts the AI assistant in Medmate which predicts our disease based on the symptoms that we had given and it suggests the doctor



Fig 5: AI Assistant

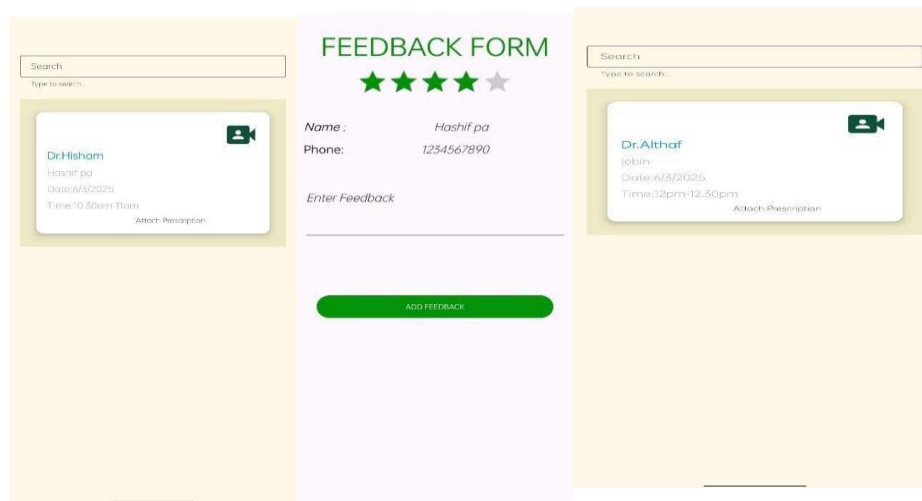
The following figures shows the doctor booking and doctors responses



The interface is divided into two main sections. On the left, under 'Doctor Details', there are input fields for Name (Dr. Althaf), Email (althaf@gmail.com), Experience (10 year), Hospital name (Craft Hospital), and Specialized in (Orthopedic). A green 'Book appointment' button is at the bottom. On the right, there is a search bar and a 'Consulted Records' card for Dr. Althaf, showing Patient Name: jebin and Added on: 15-03-2025, with a 'Check prescription' button.

Fig 6: Booking a doctor Fig7: Consulted Records

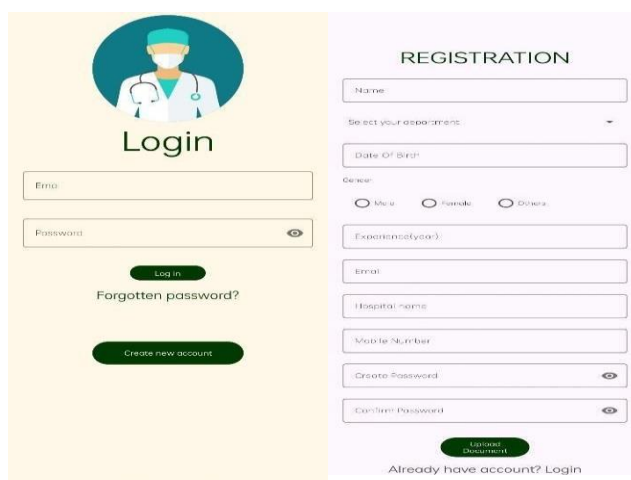
After consultation we can pay the fee through this app and also possible to give reviews



The left interface is a 'FEEDBACK FORM' with a star rating (4 stars) and fields for Name (Hashif pa), Phone (1234567890), and a green 'ADD FEEDBACK' button. The right interface shows a 'Payment Receipt' for Dr. Althaf, jebin, dated 6/3/2025, with a time of 12pm-12.30pm and an 'Attach Prescription' button.

Fig 8: Payment Receipt Fig 9: Feedback

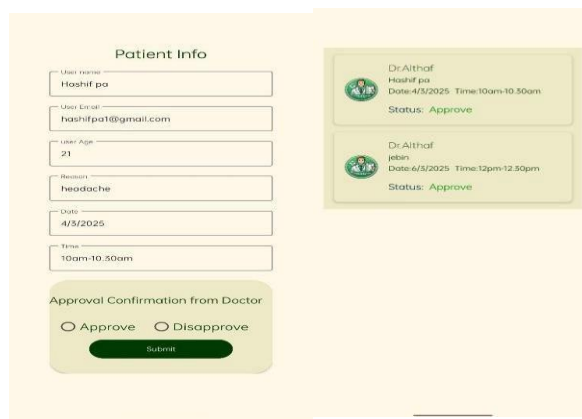
Doctor module is also designed in the same way. The doctors can able to register, create their profile and login using the doctor module



The left interface is the 'Login' screen for doctors, featuring a doctor icon, fields for Email and Password, and buttons for 'Log in', 'Forgotten password?', and 'Create new account'. The right interface is the 'REGISTRATION' screen, with fields for Name, Select your department, Date Of Birth, Gender (Male, Female, Others), Experience (year), Email, Hospital name, Mobile Number, Create Password, and Confirm Password, along with an 'Upload Document' button and a link to 'Already have account? Login'.

Fig 10: Doctor login Fig 11: Doctor Registration

Every doctor has the authority to accept or reject their own scheduling. The patient booking will appear in the appropriate window if a doctor approves it.



Patient Info

User Name: Hashif pa

User Email: hashifpa1@gmail.com

User Age: 21

Reason: headache

Date: 4/5/2025

Time: 10am-10.50am

Approval Confirmation from Doctor

☐ Approve ☐ Disapprove

Submit

Fig 13: Booking Approval

Fig 14: Approved booking

Fig 15: Patient details

The final module is the admin module. This module manages the user and doctor modules. It contains a list of doctors who have registered with Medmate, as well as the number of bookings made by each doctor. The admin module also manages user logins.

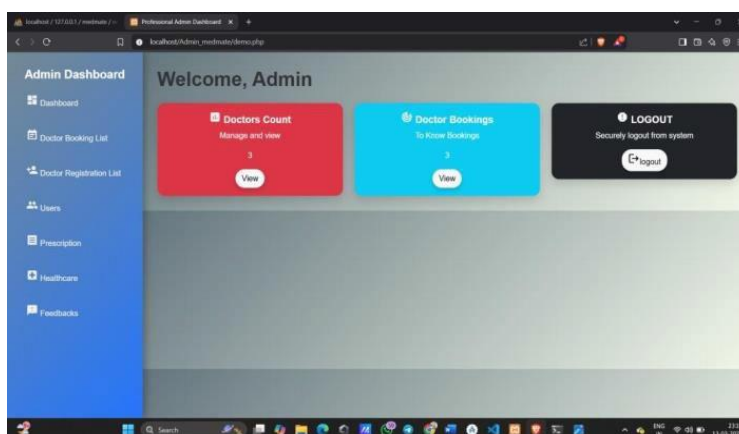


Fig 16: Admin module

IV. Conclusion

MedMate consult with AI is an innovative Android application designed to revolutionize the way users access healthcare services by providing a comprehensive platform for online medical consultations[10]. The project addresses the limitations of existing systems by introducing advanced features such as AI/MLbased symptom analysis, seamless video calling, prescription management and efficient doctor verification. By leveraging modern technologies and a user- centric approach, MedMate aims to bridge the gap between patients and doctors, making healthcare more accessible, personalized, and secure.

The key achievements of the project include:

Advanced Symptom Analysis: The integration of AI/ML algorithms ensures accurate doctor recommendations based on user symptoms, improving the quality of consultations.

Efficient Doctor Verification: The admin-controlled registration process ensures that only qualified and verified doctors are onboarded, enhancing user trust and safety.

Prescription Management: The digital prescription storage system allows users to store, organize, and access their medical records effortlessly, promoting better health management.

Seamless Video Calling: The integration of reliable third- party APIs ensures smooth and uninterrupted communication between users and doctors.

Admin Oversight: The dedicated admin panel enables efficient monitoring and management of the platform, ensuring high standards of service quality.

Scalability: The use of cloud-based infrastructure ensures that the platform can handle a growing user base without performance issues.

The methodology followed during the development of MedMate included requirement analysis, system design, iterative development, and deployment[8]. This structured approach ensured that the project was completed efficiently and met all its objectives. The modular design of the application further enhanced its scalability and maintainability [12]. MedMate has the potential to significantly improve the healthcare experience for both patients and doctors. By providing a reliable, efficient, and userfriendly platform, MedMate empowers users to take control of their health while enabling doctors to deliver quality care remotely[9]. The project also opens up opportunities for future enhancements, such as integrating wearable devices for real-time health monitoring, expanding to multiple platforms (iOS, web), and incorporating advanced AI models for more accurate symptom analysis[13]. In conclusion, MedMate is not just an application but a step towards a more connected and accessible healthcare ecosystem. It addresses the growing need for remote medical consultations and sets a new standard for online healthcare platforms. By combining technology, innovation, and user-centric design, MedMate has the potential to make a lasting impact on the healthcare industry, improving the lives of millions of users worldwide.

References

1. Purnima Saluja; Er. Narinder Yadav; Piyush Dhiman; Varun Devagan; Parth Singh; Er. Sanjay Singla, “Transforming Healthcare Delivery: An Android Application Approach,” <https://ieeexplore.ieee.org/xpl/conhome/10596469/proceeding> DOI: [10.1109/CCICT62777.2024.00106](https://doi.org/10.1109/CCICT62777.2024.00106)
2. Ajan Ahmed; Md. Talat Mahmud; Mohammad Monirujjaman Khan “Info Hospital: Web/Mobile Application based Health Care System,” <https://ieeexplore.ieee.org/xpl/conhome/9752772/proceeding> , DOI: 10.1109/ICCMC53470.2022.9753895
3. Anjulee Pariyar, Dr. Swapna H R , Nitu Kaur, “Enhancing The Healthcare System Through Mobile-Based Doctor’s Appointment Booking Application”, Annals Of Forest Research, Ann. For. Res. 66(1): 3143-3150, 2023 , ISSN: 18448135, 20652445
4. SETTA Mey, “ A mobile application for Doctor appointments and House Calls” , archives.univ-biskra.dz
5. Swayam Gupta; Asish Veshala; Kowsigan M; Ramamoorthy S; Madhavan P ,“ A Near Optimal Patient Scheduling for effective Doctor Appointment System” DOI: 10.1109/ICESIC61777.2024.10846228 <https://ieeexplore.ieee.org/xpl/conhome/10845919/proceeding>
6. Suhasshini Ramalingam, Fakrulradzi Idris1, Norleza Hashim, Eliyana Ruslan, Muhammad Syahrir Johal, Muhamad Firdaus Darus, “ Android-Based Patient Healthcare Tracker with Appointment Booking Capability”, Journal of Advanced Research in Applied Sciences and Engineering Technology 42, Issue 2 (2024) 122-132, ISSN: 2462-1943
7. Jonathan, Aaron Jalleh (2022) Hospital appointment system., 2022 - eprints.utar.edu.my
8. Shariq Hussain, Haris Anwaar, Kashif Sultan, Umar Mahmud, Sherjeel Farooqui, Tehmina Karamat, Ibrahima Kalil Toure, “Mitigating Software Vulnerabilities through Secure Software Development with a Policy-Driven Waterfall Model”, Hindawi Journal of Engineering Volume 2024, Article ID 9962691, 15 pages <https://doi.org/10.1155/2024/9962691>
9. Meryem Bensaid, Wafae Abbaoui & Soumia Ziti , “Software Testing in Classical Approaches: A Bibliometric Study of the Waterfall and V Models”, 01 April 2025 pp 275–288
10. Tarsono, Muhammad Fachrie, “Development of an Android-based Application as a Solution for Maternal Health”, International Journal Software Engineering and Computer Science (IJSECS), E-ISSN: 2776-3242 | P-ISSN: 2776-4869 Issue: Vol. 4 No. 1 (2024): APRIL 2024, Pages: 284-292
11. Tamer Yousif, “Using a User-Centered Design Process to Create a Medical Appointment Booking Application: Education Case Study”, Journal of Integrated Design and Process Science, <https://doi.org/10.1177/10920617251341589>
12. Atiqul Islam Atik; Asifur Rahman; Sk. Azraf Sami; Md Motaleb Hossen Manik, “ An Android Application for Healthcare Management System with ML-driven Solution”, <https://ieeexplore.ieee.org/xpl/conhome/11021691/proceeding> ISSN: 2474-9656, DOI: 10.1109/ICCIT64611.2024.11021962
13. D.Rajesh, , B.Madhuri, | G.Jahnavi, |B.Sowjanya Priya, Ch.SreeVarsha Reddy, “ Medi Health Connect App”, International Journal of Research in Engineering, IT and Social Sciences, ISSN 2250-0588, Impact Factor: 6.565, Volume 14 Issue 06, June 2024, Page 113-123