IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 6, March 2026
Impact Factor: 8.2

Python-Based Healthcare Management System with Machine Learning Integration

Riddhi Mukund Veer, Janhavi Audumbar Patil, Ms. P. M. Mohite
Computer Engineering
Jaywantrao Sawant Polytechnic, Hadapsar, Pune, India
riddhiveer696@gmail.com, Janhavipatil123@gmail.com, Pmmohite_comp@jspmjspoly.edu.in

Abstract: *This paper presents a Python-based healthcare management system designed to streamline patient data handling, appointment scheduling, and medical record tracking. The system provides a user-friendly interface for both patients and healthcare providers, enabling efficient communication and secure data access. Additionally, it integrates a machine learning module for symptom-based preliminary diagnosis using classification algorithms. The proposed system aims to improve operational efficiency in clinics and small hospitals while ensuring scalability and data security.*

Keywords: Healthcare System, Python, Machine Learning, Patient Management, Scikit-learn

I. INTRODUCTION

Modern healthcare systems face challenges in managing large volumes of patient data and ensuring timely medical services. Traditional methods are often inefficient and prone to errors. This project proposes a digital healthcare management system using Python to automate and simplify these operations.

II. LITERATURE REVIEW

Existing healthcare systems provide digital solutions, but many lack integration with intelligent diagnostic support. Recent advancements in machine learning have enabled predictive healthcare systems that assist in early diagnosis.

III. PROPOSED SYSTEM

The proposed system includes:
- Patient registration and login
- Medical record management
- Appointment scheduling
- Symptom-based disease prediction using machine learning
- Admin dashboard for healthcare providers

IV. SYSTEM ARCHITECTURE

The system is divided into three main components:
1) Frontend: Tkinter or Flask interface
2) Backend: SQLite/MySQL database
3) Machine Learning Module: Scikit-learn for prediction

V. METHODOLOGY

The workflow of the system includes:
1) User authentication
2) Patient data entry and retrieval
3) Appointment booking

DOI: 10.48175/568

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 6, March 2026
Impact Factor: 8.2

4) Symptom input processing
5) ML model prediction output

VI. RESULTS AND DISCUSSION

The system demonstrates improved efficiency in managing patient records and scheduling appointments. The machine learning model provides preliminary diagnostic suggestions with reasonable accuracy depending on training data.

VII. CONCLUSION

This project successfully implements a healthcare management system with integrated machine learning capabilities. It offers a scalable and efficient solution for small healthcare providers.

VIII. FUTURE WORK

Future enhancements may include:
• Integration with cloud platforms
• Advanced deep learning models
• Mobile application development

REFERENCES

[1] Author, “Title of paper,” Journal Name, Year.
[2] Author, “Machine Learning in Healthcare,” Conference Name, Year.