

Care Connect – A Symptom-Based Hospital Navigation and Guidance System

Sabariish Balamurugan*, R. Kalaichelvan**

*(Department Of Information Technology, Dr. N.G.P Arts and Science College, Coimbatore, Tamil Nadu, India
Email: Sabariish464@gmail.com)

** (Department Of Information Technology, Dr. N.G.P Arts and Science College, Coimbatore, Tamil Nadu, India
Email: Kalaichelvan.r@drngpasc.ac.in)

Abstract:

Large hospital environments often cause significant confusion for patients trying to locate the correct department, doctor, or ward. Manual guidance by staff consumes significant resources and increases patient waiting times. This paper presents Care Connect, a symptom-based hospital navigation and guidance system that assists patients in finding the appropriate medical department, doctor, and location within a hospital. The system accepts patient symptoms as input and maps them to relevant medical departments using a rule-based approach. Once the department is identified, the system recommends a suitable doctor and generates step-by-step directions to the correct block, ward, and floor. The application is implemented using Python Flask with a simple web interface for patient interaction. A predefined dataset of symptoms, departments, doctors, and hospital locations supports the system. The proposed solution improves patient experience by reducing confusion, minimizing wait times, and decreasing dependency on manual guidance..

Keywords: Hospital Navigation, Symptom-Based Routing, Patient Guidance, Flask, Healthcare Automation, Rule-Based System

I. INTRODUCTION

Large hospitals with multiple blocks, floors, and departments present a significant navigation challenge for patients, especially those visiting for the first time. The process of locating the correct department, doctor, or ward is often confusing, time-consuming, and stressful. In many hospitals, patients rely on staff members or physical signage for directions, which increases operational overhead and reduces service efficiency.

With the growing complexity of modern healthcare facilities, there is a strong need for an intelligent system that can guide patients based on their symptoms. Such a system would not only improve the patient experience but also reduce the burden on hospital staff by automating the routing and guidance process.

This paper presents Care Connect, a web-based symptom-to-department mapping and

hospital navigation system. The system accepts patient symptoms as input, identifies the appropriate department and doctor using a rule-based algorithm, and provides clear step-by-step directions to the correct block, ward, and floor. By automating this process, Care Connect aims to reduce patient confusion, minimize waiting times, and improve overall hospital operational efficiency.

II. LITERATURE SURVEY

Several studies and systems have been proposed to address patient navigation challenges in large healthcare environments. Traditional hospital information systems focus primarily on administrative management such as appointment scheduling, billing, and electronic health records. While effective for administrative tasks, these systems typically lack intelligent symptom-based

routing capabilities for patients entering a hospital for the first time.

Research in clinical decision support systems has explored rule-based and machine learning approaches for symptom-to-disease mapping. These systems demonstrate that structured symptom datasets can be used effectively to route patients to appropriate departments. However, most implementations focus on medical diagnosis rather than physical navigation within hospital premises.

Studies on indoor navigation systems for large buildings have proposed GPS-independent approaches using Wi-Fi triangulation and beacon technology. These systems offer accurate indoor positioning but require expensive hardware deployment. Web-based alternatives using predefined location datasets provide a simpler and more cost-effective solution. The proposed Care Connect system addresses these gaps by combining symptom-based routing with structured hospital location data through an accessible web interface.

III. PROBLEM STATEMENT

Navigation challenges in large hospitals with multiple blocks and floors make it difficult for patients to locate the correct ward or doctor's office without assistance. Manual routing by staff consumes significant resources and increases patient waiting time. Patients experiencing confusion and delays face reduced satisfaction and diminished trust in hospital services.

There is a clear need for a smart system that can accept patient symptoms, map them to the correct department and doctor, and provide clear navigation instructions to the appropriate location without requiring manual staff intervention.

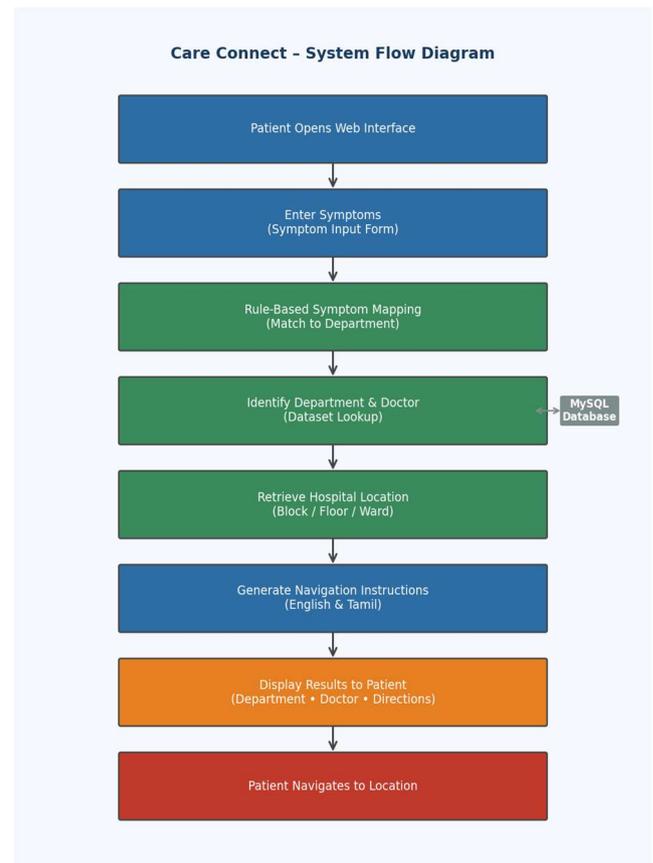


Fig. 1: Care Connect – System Flow Diagram

IV. PROPOSED SYSTEM – CARE CONNECT

Care Connect is a symptom-based hospital navigation system designed to streamline the process of guiding patients to the correct department and location within a hospital. The system supports patients by automatically identifying the relevant medical department, recommended doctor, and hospital location based on their symptoms.

Patients interact with the system through a simple web interface developed using Python Flask. Upon entering symptoms, the system queries a structured dataset that maps symptoms to departments, departments to doctors, and doctors to specific hospital locations including block, floor, and ward numbers. The system then generates clear navigation instructions in both English and Tamil.

The dataset is built from publicly available medical information and customized for the hospital environment. It is stored in a structured dictionary format that can be extended to a

relational database such as MySQL or PostgreSQL for scalability. The modular architecture allows easy addition of new departments, doctors, and location mappings as hospital infrastructure grows.

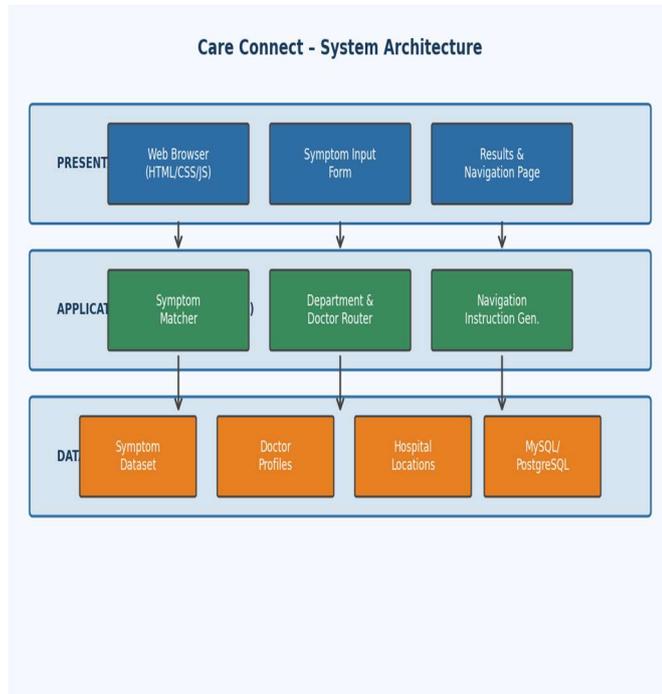


Fig. 2: Care Connect – System Architecture

V. SYSTEM ARCHITECTURE

The architecture of Care Connect consists of a presentation layer, application layer, and data layer. The presentation layer includes a web-based interface built with HTML, CSS, and JavaScript providing an intuitive user experience. The application layer is implemented using Python Flask and handles symptom input processing, rule-based department mapping, doctor recommendation, and navigation instruction generation.

The data layer stores the symptom-department mapping dataset, doctor profiles, and hospital location information. Software requirements include Python 3.9+, Flask framework, and MySQL or PostgreSQL. Hardware requirements include an Intel Core i3 processor or equivalent with 4 GB RAM and standard internet connectivity.

VI. RESULTS AND DISCUSSION

The developed Care Connect system successfully accepts patient symptoms as input and maps them to the appropriate hospital department, doctor, and location in real time. Testing across a variety of common symptom inputs confirmed accurate department identification and correct navigation instruction generation. The bilingual output in English and Tamil was verified for clarity and accuracy across multiple test cases.

The system demonstrated consistent and fast response times for symptom processing and navigation generation. The rule-based mapping approach proved reliable for the defined symptom dataset. The web interface was found to be intuitive and accessible for users with varying levels of technical experience, demonstrating the system's practical usability for deployment in real hospital environments.

VII. CONCLUSION

Care Connect provides an efficient and user-friendly solution for patient navigation in large hospital environments. By integrating symptom-based department routing, doctor recommendation, and step-by-step location guidance into a single web application, the system addresses key challenges in hospital patient management. The proposed approach reduces dependency on manual guidance, improves patient experience, and enhances overall hospital operational efficiency. The bilingual navigation feature improves accessibility for diverse patient populations.

VIII. FUTURE SCOPE

Future enhancements to Care Connect include integration with real-time doctor availability and appointment scheduling systems. The system can be extended with machine learning-based symptom classification to improve accuracy for complex symptom combinations. Mobile application development for iOS and Android platforms would improve accessibility. Integration with hospital information systems and electronic health records would enable more

personalized guidance based on patient medical history.

IX. REFERENCES

- [1] World Health Organization (WHO). Hospital Organization and Patient Flow Management. Available at: <https://www.who.int>
- [2] GeeksforGeeks. Entity Relationship Diagram (ERD) in DBMS. Available at: <https://www.geeksforgeeks.org/entity-relationship-diagram-er-diagram-in-dbms/>
- [3] TutorialsPoint. Data Flow Diagrams. Available at: https://www.tutorialspoint.com/data_flow_diagram/index.htm
- [4] Python.org. Python 3 Documentation. Available at: <https://docs.python.org/3/>
- [5] Pallets Projects. Flask Web Framework Documentation. Available at: <https://flask.palletsprojects.com/>
- [6] Kaggle. Medical Symptom and Disease Dataset. Available at: <https://www.kaggle.com>
- [7] Mendeley Data. Hospital Navigation Reference Dataset. Available at: <https://data.mendeley.com>