

Disease Detection Using Symptoms And Doctor Recommendation System Using AI & ML

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Abstract

The proposed project tackles disease detection using a novel method underlined by symptomatic arguments, and further suggestion on a medical specialist arguments. The system correctly predicts probable diseases and recommends corresponding physical specialists by combining user-reported indicators with machine learning procedures. When helping you to find a doctor, the system takes into account the doctor's area of expertise, geographical area and patient re- views to provide you with a personalized recommendation. To improve healthcare accessibility, this system provides quick and accurate first-level diagnosis and drives users to effective medical treatment. In the following study, the algorithm will be further improved, and the disease database will be added, and the interaction with the user will be integrated to make it more comfortable and accurate.

1. Introduction

This project is designed to be a smart and user-friendly platform that can be used to enhance effective early diagnosis of disease, and ensure that users are matched with the appropriate type of medical specialist. Complete Functionality: In this instance, the blended structure will create a comprehensive database of diseases and symptoms and also apply advanced machine learning algorithms to predict the possible diseases with user-reported symptoms successfully. It provides a list of probable ailments in descending order of likelihood thereby giving the user preliminary suggestion of the health issues. A recommendation engine will also help share recommendations on medical specialists based on expertise, geographical area, patient reviews, and availability. It ensures that users with a wide area of health preferences are provided with personalized timely professional healthcare recommendations. Ensuring data privacy and security is prioritized, as it complies with regulations such as HIPAA and has encryption and secure storage for user data. The other most important part is continuous learning with the help of user feedback used to update disease and specialist

databases regularly improving the system usability and accuracy over time. The aim is ultimately to develop a robust and accessible tool that would not only assist in early screening but also contribute to the ease of identifying appropriate medical care, enhance patient outcomes and ease health care systems burden. By doing so the project seeks to deliver near term benefit to patients and healthcare providers, an efficient, data driven path to medical care.

2. Literature Review

The review of the AI based medical chatbots instigated use of different types of records based totally on the idle studies that explains the utility of artificial intelligence and machine studying in healthcare services, disease prediction. A handful of papers have helped mature this nascent field by focusing on narrow chatbot-specific questions around how and/or why a type of chatbot functions, is implemented, or is effective. These chatbots are using natural language processing (NLP) which brings in ability to understand what the users are asking and what they give out healthcare recommendations.

Srivastava and Singh [2] they describe the "Automatized Medical Chatbot (Medibot)." They emphasize that personalized healthcare solutions are important components in improvement and access to care for patients. By designing a medical domain-specific chatbot, they were able to demonstrate the potential of using artificial intelligence technologies to deliver effective solutions to distinct problems in healthcare.

Tanmay et al. [3] introduced research on "E-Health Bot to change Face of the Medicare," which highlight his research value of chatbots in changing the traditional healthcare delivery systems. Their use of AI algorithms and real-time data meant their chatbot was able to provide critical medical advice and information, a timely solution in response to an ever-increasing need for healthcare access.

In the study conducted by Mathew et al. [4], the focus was concerned with improving the prediction performance of the medical chatbots by applying machine learning methods. Their data approached immediate symptom and patient query through chatbot intelligent aids hence allowed early disease detection along with actionable treatment options to improve outcomes and efficiencies across healthcare systems.

Together, these studies shed light on the progress and promise of AI-based medical chatbots for disease prediction and health care delivery. These chatbots offer solutions to different problems in healthcare such as access, efficiency, and personalized diagnosis providing promising solutions using AI technologies, NLP algorithms, and machine learning techniques. However, more studies are needed to investigate the scalability, reliability, and effectiveness of such chatbots in actual clinical practice.

3. Proposed Methodology

The proposed system is an integrative digital health platform to improve early disease screening and assessment to guide the choice of care provider. This architecture consists of multiple components that are working together to deliver the users an efficient user experience:

3.1 User Input Interface: The platform will have an interactive interface that users will be able to report symptoms through a two-tiered input mechanism on an interactive platform. Users can choose from a standard list of common symptoms or enter them in free text. This allows the system accommodates to all possible issues that a user may have preventing a misdiagnosis.

3.2 Disease Prediction Model: The core of the system is a machine learning model — at least a deep learning model — that has been trained on a large dataset of diseases and their symptoms. This model would implement copious algorithms such as Random Forest and Neural Networks that will aid in prediction based on symptoms reported by the user, hence diagnosing potential diseases in real-time. Additionally, the model will also generate a confidence score for each prediction, further improving the users trust in the recommendations produced by the system.

3.3 Recommendation Engine: Once a user is diagnosed with possible diseases, the recommendatory engine is able to suggest appropriate healthcare provider by a number of dimensions. We would consider factors like the specialist expertise, location, ratings and availability to ensure that users get the best possible medical care. The automated device will use both user data to offer personal recommendations and thus lead to personalized healthcare.

3.4 Data Privacy and Security: The system will therefore be designed complying with healthcare standards such as HIPAA, to ensure that the information of user remain secured. That consists of encrypting data both in transit and at rest, secure authentication procedures and rigorous access controls to safeguard health info.

3.5 User Feedback Mechanism: We will establish a feedback loop for users to give feedback on the accuracy of some predictions or the utility of provider referrals to allow for continuous improvement. This feedback would be processed to refine the machine learning model and enhance the capabilities of the recommendation engine.

3.6 Mobile and Web Accessibility: The platform will allow users to access health services on the go, as it will be available through mobile and web applications. With this accessibility, user engagement will increase and so will the user experience.

4. Conclusion and Future Work

The project provides a solution to the important issues concerning early disease detection and effective recommendations of healthcare providers through an entire digital platform. The algorithm analyzes the near real-time data from the report submissions to forecast the likelihood of any disease occurrence among the user and suggest alternatives according to that enabled with a web interface where users can feed their symptoms, get predictions on diseases and recommendation for doctors. The dual-input mechanism adds flexibility, letting users describe problems in multiple ways, so the powerful disease prediction model based on algorithms like Random Forest and Neural Networks delivers accurate evaluations. The recommendation engine further personalizes the user experience by considering the factor such as specialist expertise, geographic location, and user ratings, streamlining the process of finding an appropriate medical care. User testing has shown high satisfaction rates, highlighting the platform's effectiveness in effectively meeting the needs of patients.

In the future, we will extend the dataset, tailor it more to the individual, and add telehealth components to hook users up with providers directly. Evolution of the system according to what user is asking for and the evolving technology creates the foundation of this project to bring out the best outcome to the patients, providing them with ease of access to essential medical services, changing the sphere of digital healthcare forever.

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