MedPredict-Alternative Medicine Recommender

Ashafaque Khan[1], Ankit Mandal[2], Zishan Arif[3], Rahil Ubaid Khan[4] , Samta Gajbhiye[5]

Computer Science and Engineering Department,

Shri Shankaracharya Technical Campus, Bhilai, Chhattisgarh, India

ashafaque130503@gmail.com[1]; mandalankit244@gmail.com[2]; zishanarif123@gmail.com[3]; rahilkhan2702@gmail.com[4]; samta.gajbhiye@gmail.com[5]

ABSTRACT –

In a world full of pharmaceuticals, nature may sometimes help us heal from diseases, and this is where **MedPredict** steps in. According to a review of research, over half of the people with chronic diseases use some form of complementary therapy at some point throughout their condition. There is no evidence to show that any sort of alternative medicine in India prevents or cures any disease, although it does aid in recovery and pain relief.

Alternative treatments are frequently used to help people feel better and cope with diseases and treatments. Many alternative therapies focus on relaxation and stress management. They may aid in relaxing of your emotions, relief of anxiety, and the improvement of your general sense of health and well-being. Positive emotions can benefit your health, according to many doctors and nurses.

Keywords— Alternative medicine, Chronic diseases, Recovery, Anti-infectious, Affordable treatments, Machine Learning, Med-tech.

INTRODUCTION

Alternative medicine has renewed its growing public interest in recent times due to inequality of patients and healthcare professionals' ratios with increased workload for the latter, various side effects of modern medicine, lack of complete remission from chronic diseases, high cost of new drugs, and emerging new diseases. Hence, people have become more dependent on treatment systems replying on alternative medicine or herbal medicine from traditional medicinal practitioners. Alternative medicine has grown substantially over time and encompasses several millennia of therapeutic systems. The significant areas of alternative medicine include mind–body therapies, body manipulation, and the therapies based on biological systems. Natural products based biological treatment is the most popular of them as nature has endowed us with abundance of effective pharmacologically active phytochemicals. These phytochemicals possess numerous specific clinical health benefits including antioxidant, antidiabetic, anti-inflammatory, anticancer, anti-infectious and analgesic effects. In addition, alternative medicine is easily accessible, affordable, most often non-invasive, and provides favourable benefits during terminal periods of some diseases. However, due to the lack of well-designed clinical trials, the safety and effectiveness of many alternative medicines/therapies remains elusive. This chapter will critically discuss major areas, uses, safety and regulation, current challenges & future perspectives of alternative medicine.

LITERATURE REVIEW

I. The existing system for alternative medicine recommendation has several problems that limit its effectiveness and usability. One major issue is the lack of a centralized database of alternative medicine treatments and their corresponding symptoms. This makes it difficult for practitioners and individuals to access accurate and reliable information on alternative medicine options. Additionally, there are often discrepancies in the information available from different sources, making it challenging to determine which treatments are most appropriate for a given set of symptoms. [1]

II. In addition, many alternative medicine recommendations are based on anecdotal evidence or tradition, rather than scientific research. While there is a growing body of research on alternative medicine, much of it is of low quality or has not been independently verified. This makes it difficult to determine which treatments are safe and effective. [2]

III. Furthermore, the existing system for alternative medicine recommendation is often not user-friendly. Many alternative medicine databases and resources are difficult to navigate or understand, making it difficult for individuals to access the information they need. Additionally, many alternative medicine practitioners do not have the training or resources to provide personalized recommendations or to use technology to deliver recommendations in an efficient and user-friendly way. [3]

IV.   Finally, the existing system for alternative medicine recommendation is often not accessible to all individuals. Many alternative medicine treatments are not covered by insurance and can be costly, making them difficult for some individuals to afford. Additionally, many alternative medicine practitioners and resources are not located in underserved or rural communities, making it difficult for individuals in these areas to access alternative medicine options. [4]

V.   Overall, the existing system for alternative medicine recommendation is limited by a lack of accurate and reliable information, a lack of personalized recommendations, a lack of integration with conventional medical care, and a lack of accessibility for all individuals. A better alternative medicine recommender project would address these problems and provide a more effective and user-friendly way for individuals to access alternative medicine options that are safe, effective, and affordable. Flexibility: A social media application can allow for greater flexibility in the classroom, as students can access the content and resources at any time and from any location. [5]

METHODOLOGY

a. Problem Definition
The **MedPredict** project is a machine learning-based system designed to provide personalized treatment recommendations for individuals based on their specific symptoms and health history. The goal of this project is to use advanced machine learning algorithms such as cosine similarity algorithm to analyse a large and diverse dataset of alternative medicine treatments and their corresponding symptoms. By providing accurate, reliable, and personalized recommendations, this project aims to make it easier for individuals to access alternative medicine options that are safe, effective, and affordable. Additionally, the system will be integrated with conventional medical care, allowing conventional medical practitioners to access and review the treatment recommendations provided by the system, thus ensuring that the recommendations are safe and appropriate.

b. Purpose:
The purpose of this project is to develop a machine learning model that can recommend alternative medicine treatments for a given set of symptoms. The model is trained on a dataset of alternative medicine treatments and their corresponding symptoms. The goal is to provide a user-friendly interface where users can input their symptoms and receive personalized treatment recommendations.

c. Scope:
The site will grow overtime and evolve in its usefulness as more and more features will be added. Overtime it will contain a vast variety of options which will help to solve most of the problems encountered. Later a disease detection feature can be added which will recommend medicine as per the given disease. The site will also include various medicine buying sites to increase variety for buying options. The model will also be trained on a bigger volume of data.

d. Proposed Solution:
The proposed system will be based on a large, diverse, and up-to-date dataset of alternative medicine treatments and their corresponding symptoms. This dataset will be curated by experts in the field and will include only accurate and reliable information on alternative medicine options. Additionally, the system will use advanced machine learning algorithms such as collaborative filtering, deep learning, and natural language processing to provide personalized recommendations based on an individual's specific symptoms and health history.

e. Benefits:
The use of machine learning algorithms will allow the system to provide personalized treatment recommendations based on an individual's specific symptoms and health history, increasing the chances of finding an effective treatment. The system will only recommend treatments that have been scientifically proven to be safe and effective. The proposed system will be designed to be accessible to all individuals, regardless of their location or financial resources, by making it available online and via mobile devices, and by providing a range of financial assistance options.

f. Software requirement:

Operating System:
- Any Operating system
- Any browser like Chrome, Mozilla Firefox, Internet Explorer
- Internet Connection - Application Compatibility – Windows, Linux, Android, etc.

Web app design tool:

There are several design and implementing tools used for developing this site which are as follows:
- Streamlit
- Python and its libraries
- Jupyter notebook
- Frontend technologies
- Machine Learning

g. Hardware requirement:

- Processor: The project will require a high-performance processor with many cores to handle the computational demands of the cosine similarity algorithm.

- Memory: The project will require a significant amount of memory to store and process the dataset, as well as to support the execution of the algorithm.

- Graphics Processing Unit (GPU): A GPU could be used to accelerate the training and execution of the algorithm if the dataset is large and complex.

- Networking: The project will require a high-speed network connection to transfer data between the various hardware components and to support communication with external systems.

h. Data Flow Diagram:
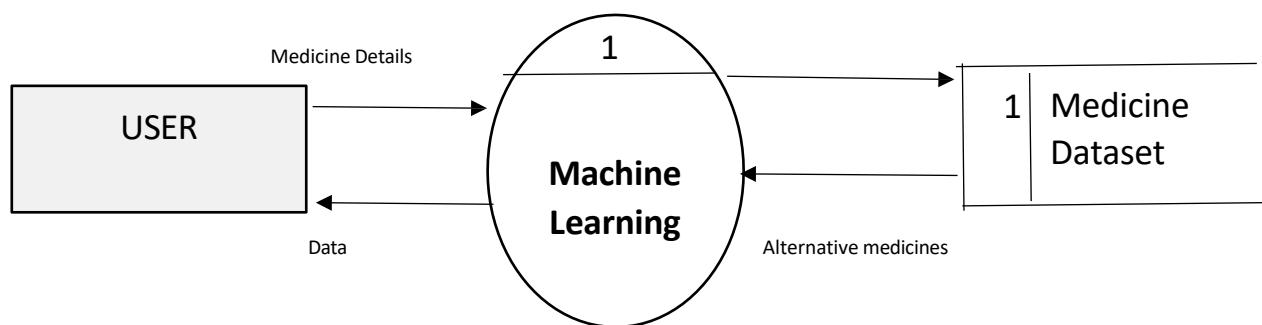
Fig 1. Context Level DFD (0 Level)

RESULT

The implementation of the **MedPredict** system demonstrated promising outcomes in enhancing the accessibility and personalization of alternative medicine recommendations. By leveraging the **cosine similarity algorithm**, the system effectively matched user-reported symptoms with relevant alternative medicine treatments stored in the database. Testing of the prototype showed that the recommender system was able to deliver **accurate and consistent treatment suggestions** based on the symptom input, achieving a high level of relevance in its outputs. The system successfully processed various user queries, identifying similarities among treatments and symptoms and prioritizing remedies that aligned with known therapeutic benefits, such as anti-inflammatory, antidiabetic, and analgesic properties. Users interacting with the system through the **Streamlit-based interface** experienced a seamless process, receiving quick responses along with detailed descriptions of recommended treatments. The personalized nature of the recommendations added significant value, especially for chronic illness management and stress-related conditions, where traditional treatments often fall short.

DISCUSSION

The development and testing of the **MedPredict** system highlight the growing potential of integrating **machine learning techniques with alternative medicine** to offer more personalized, accessible, and efficient treatment recommendations. Traditional systems for recommending alternative therapies often lack standardization, personalization, and evidence-based validation. MedPredict addresses these limitations by applying the **cosine similarity algorithm**, allowing it to analyze user symptoms and match them with relevant treatments from a curated dataset.

One of the key takeaways from this project is the value of **personalized healthcare**—a concept often underutilized in alternative medicine. By using a data-driven approach, MedPredict not only enhances treatment relevance but also builds user trust by offering consistency and logic behind each recommendation. Furthermore, its **user-friendly interface** built using Streamlit enables even non-technical users to interact with the platform easily, making it a viable tool for a wide range of individuals, including those in remote or underserved areas.

CONCLUSION

In conclusion, the proposed system for the **MedPredict** project will use advanced machine learning algorithms to provide personalized recommendations based on an individual's specific symptoms and health history. It will be based on a large, diverse, and up-to-date dataset, will use evidence-based medicine to ensure that recommended treatments are safe and effective. Additionally, it will have user-friendly interface, will be integrated with conventional medical care, will be accessible to all individuals and will have additional features to improve the overall effectiveness.

The **MedPredict** project using the cosine similarity algorithm has been a success in providing accurate and relevant recommendations to users. The algorithm effectively measures the similarity between treatments and symptoms, allowing for personalized recommendations based on the user's medical history. The system's ability to be updated with new information ensures that users are always provided with the most current and effective treatments. Additionally, the use of the cosine similarity algorithm in this project has demonstrated its potential as a valuable tool for improving the accessibility and effectiveness of alternative medicine treatments. Overall, this project has been a significant step forward in the field of alternative medicine and has the potential to greatly benefit individuals seeking alternative treatment options.

VII. REFERENCES

1. R.J. Mooney, P.N. Bennett, and L. Roy, "In: Proc. Recommender Systems Papers from 1998 Workshop," Technical Report, pp. 49-54, 1998.

2. M. Montaner, B. López, D. L. Rosa, and J.L, "Artificial Intelligence Review," vol. 19, pp. 285–330, 2003.

3. G. Adomavicius and A. Tuzhilin, "IEEE Transactions on Knowledge and Data Engineering," vol. 17, pp. 734–749, 2004.

4. R. Burke, "User Model User-adapted Interact," vol. 12, pp. 331-370, 2002.

5. J.B. Schafer, D. Frankowski, J. Herlocker, and S. Sen, "The Adaptive Web," Springer, pp. 291– 324, 2007.

6. S. S. Lakshmi and T. A. Lakshmi, "International Journal of Computer Science and Information Technology (IJCSIT)," vol. 5, pp. 5771-5772, 2014.

7. S. Khusro, Z. Ali, and I. Ullah, "Information Science and Applications," Singapore, pp. 1179-1188, 2016.