CNN Based Health Monitoring System

¹Shweta Udamale, ²Puja Balu Shinde, ³Ajay Chavan, ⁴Prof. Shubham Bhandari

Department of Computer Engineering,
JSPM's Imperial College of Engineering & Research, Wagholi.
Pune, India.

Abstract— **A disease's symptoms are entered into the system based on predictive modelling, according to the abstract. Disease prediction using the system classifier is completed. CNN Classifier determines the likelihood of the disease. In addition to estimating disease severity, the disease prediction system also recommends treatments depending on that severity. The suggested approach also recommends appropriate activity and nutrition. The user's current health status and medical background are taken into account when predicting diseases. to research required techniques and computational neural network programming models. to create an entirely CNN-based health system Monitoring System with elements such as Exercise, Workout Tracking, and Disease Classifier Generator of recommendations and statistics.**

I. INTRODUCTION

Healthcare big data analysis is a significant application of medical information technology that has been intensively investigated in the areas of intelligent-consultation, post disease like diagnosis, intelligent-question-answer-doctors, and decision support for medical assistants.

This paper aims to use deep learning technology and healthcare big data analysis to provide patients with potential diseases that are typically ignored due to a lack of professional knowledge, thereby improving the thoroughness and relevance of the medical examination. Patients can then perform targeted medical examinations to stop their health conditions from getting worse.

People today deal with a variety of ailments as a result of their lifestyle choices and the surroundings. As a result, it is crucial to predict diseases early on. However, the precise forecast based.

In-depth research has been done on the use of healthcare big data analysis in the areas of intelligent consultation, disease diagnosis, intelligent question-answering doctors, and decision support for medical assistants. It is necessary to do research and establish a system that would enable end users to foresee chronic diseases without having to see a doctor or physician for a diagnosis. In order to identify different diseases, a variety of machine learning models are utilised to analyse patient symptoms.

Inspired-existing recommendationable by methods, this paper proposes a novel deep-learning-based hybrid recommendation algorithm, which is called medicalhistory-based potential disease prediction algorithm.

II. Objectives

Following are the major objectives we have finalized,

- To Study existing Models of Health Monitoring Systems
- To Study Computational Neural Network Programming Models and other necessary algorithms.
- To Develop End to End CNN Based Health Monitoring System which includes parameters like Diseases Classifier, Workout Tracking, Exercise Recommendations, Statistic Generator.

III. Methodology

1. System Architecture

A system that would make it simple for end users to forecast chronic diseases without visiting a doctor or physician for a diagnosis needs to be researched and developed. Various Machine Learning Models are used to analyse patient symptoms in order to identify various diseases.
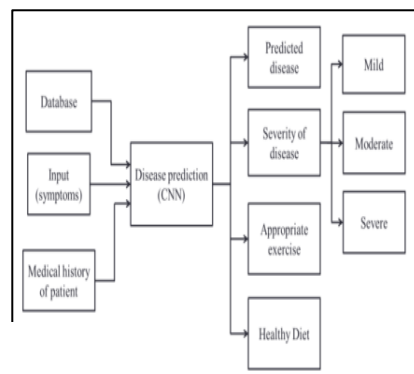
Figure 1 Architecture

2.User Sequence Diagram

The hardest task is making an accurate diagnosis of a condition. Data mining is crucial in predicting the sickness in order to solve this issue. Each year, there is significant data increase in the medical sciences. The proper analysis of medical data has benefited from early patient care due to the increased amount of data growth in the medical and healthcare fields.
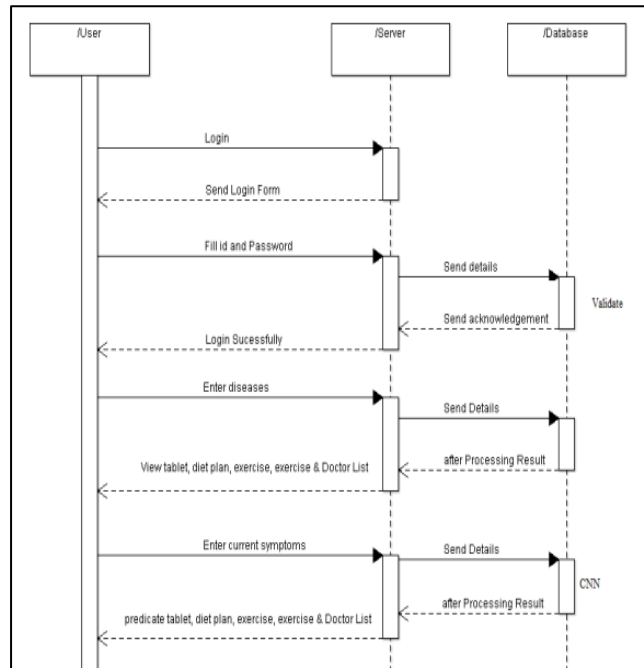

Figure 1 User Sequence

. Using symptoms, this approach is used to forecast disease. As seen in the following graphic, a database comprising symptoms of various diseases is provided as input to the system together with the user's present symptoms and the patient's medical history (when patient observed same type of symptoms before). CNN method was utilised by a Python-based system to predict the disease a patient would have. The disease system divided diseases into mild, moderate, and severe categories after forecasting their occurrence.

If the illness is minor, the system will advise taking some medication; if the illness is moderate and the system recommends taking some medication along with it; and if the illness is severe, the system will alert the user to see a doctor right away. The system also advises following a disease-specific diet and exercising.
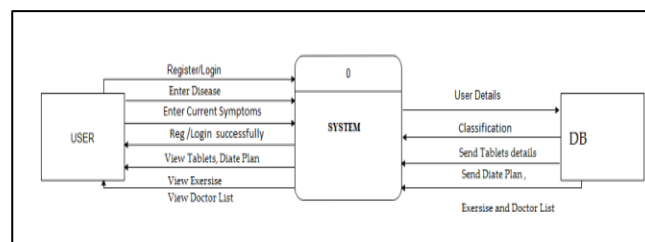

Figure 2 User - System - DB Flow

This research intends to improve the thoroughness and re10 ance of the medical examination by using sleep learning technology and healthcare big data analysis to inform patients about probable ailments that are frequently disregarded due to a lack of expert knowledge. In order to prevent their medical issues from getting worse, patients can then undergo focused medical examinations.
 In order to increase the thoroughness and relevancy of the medical examination, this study intends to employ deep learning technology and healthcare big data analysis to inform patients about probable ailments that are normally disregarded because of a lack of professional knowledge. In order to prevent their medical issues from getting worse, patients can then undergo focused medical examinations.
Accuracy of general disease risk prediction of CNN is higher as compared to other algorithms like KNN , Naïve Bayes, SMO, Multi-layer perceptron etc. We got accurate general disease risk prediction as output, by giving the input as patients record which help us to understand the level of disease risk prediction.You will need to determine whether or not your equation should be typed using either the Times New Roman or the Symbol font (please no other font). To create multileveled equations, it may be necessary to treat the equation as a graphic and insert it into the text after your paper is styled.

 A system that would make it simple for end users to forecast chronic diseases without visiting a doctor or physician for a diagnosis needs to be researched and developed. to examine patient symptoms in order to identify various diseases using various machine learning modelling techniques.

 This study suggests a novel deep-learning-based hybrid recommendation algorithm, known as the medical history based possible

disease prediction algorithm, which is motivated by the existing recommendation methodologies.
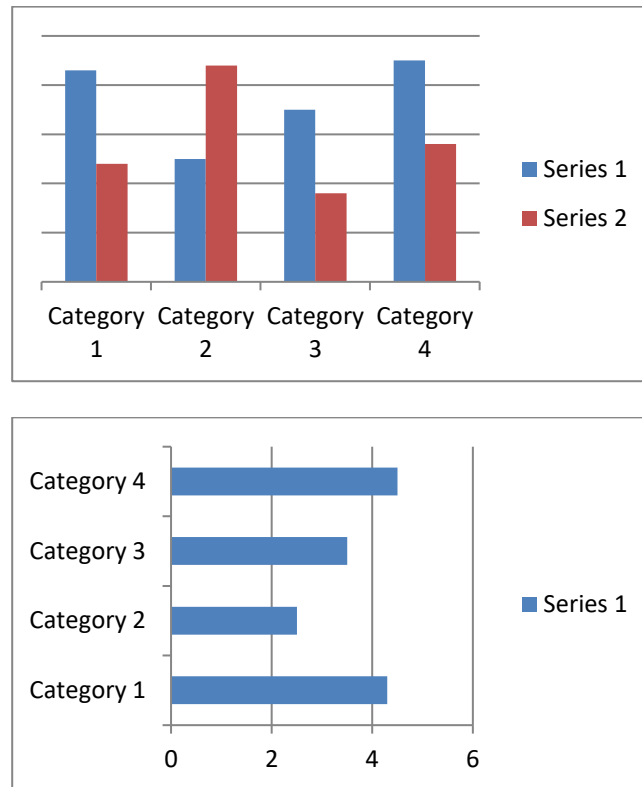
REFERENCES:

1. *Wenxing Hong, Ziang Xiong, Nannan Zheng, Yang Weng, "A Medical-History-Based Potential Disease Prediction Algorithm", A Medical-History-Based Potential Disease Prediction Algorithm IEEE Access VOLUME 7, 2019, doi 10.1109/ACCESS.2019.2940644*

2. *Dahiwade, D., Patle, G., & Meshram, E. (2019). Designing Disease Prediction Model Using Machine*
   a. *Learning Approach. 2019 Proceedings of the Third International Conference on Computing Methodologies*
   b. *and Communication (ICCMC 2019) IEEE Xplore doi:10.1109/iccmc.2019.881978*

3. *Xu, Z., Zhang, J., Zhang, Q., & Yip, P. S. F. (2019). Explainable Learning for Disease Risk Prediction Based*
   a. *on Comorbidity Networks. 2019 IEEE International Conference on Systems, Man and Cybernetics (SMC).*

4. *Repaka, A. N., Ravikanti, S. D., & Franklin, R. G. (2019). Design And Implementing Heart Disease*
   a. *Prediction Using Naives Bayesian. 2019 3rd International Conference on Trends in Electronics and*
   b. *Informatics (ICOEI). doi:10.1109/icoei.2019.8862604*

5. *Gao, J., Tian, L., Wang, J., Chen, Y., Song, B., & Hu, X. (2020). Similar Disease Prediction with*
   a. *Heterogeneous Disease Information Networks. IEEE Transactions on NanoBioscience, 1–1.*
   b. *doi:10.1109/tnb.2020.2994983*

6. *Mathew, R. B., Varghese, S., Joy, S. E., & Alex, S. S. (2019). Chatbot for Disease Prediction and Treatment*
   a. *Recommendation using Machine Learning. 2019 3rd International Conference on Trends in Electronics and*
   b. *Informatics (ICOEI). doi:10.1109/icoei.2019.8862707*

7. *Maurya, A., Wable, R., Shinde, R., John, S., Jadhav, R., & Dakshayani, R. (2019). Chronic Kidney Disease*
   a. *Prediction and Recommendation of Suitable Diet Plan by using Machine Learning. 2019 International*
   b. *Conference on Nascent Technologies in Engineering (ICNTE). doi:10.1109/icnte44896.2019.8946029*

8. *Dahiwade, D., Patle, G., & Meshram, E. (2019). Designing Disease Prediction Model Using Machine Learning Approach. 2019 3rd International Conference on Computing Methodologies and Communication (ICCMC). doi:10.1109/iccmc.2019.8819782*

9. *Pandey, H., & Prabha, S. (2020). Smart Health Monitoring System using IOT and Machine Learning Techniques. 2020 Sixth International Conference on Bio Signals, Images, and Instrumentation (ICBSII).*
    a. *doi:10.1109/icbsii49132.2020.9167660*

10. *Vijiya Kumar, K., Lavanya, B., Nirmala, I., & Caroline, S. S. (2019). Random Forest Algorithm for the*
    a. *Prediction of Diabetes. 2019 IEEE International Conference on System, Computation, Automation and*
    b. *Networking (ICSCAN). doi:10.1109/icscan.2019.8878802.*

11. *G. Similar Disease Prediction with HeterogeneousDisease InformationNetworks,Gao, J., Tian, L., Wang, J., Chen, Y.,Song, B., & Hu, X., IEEE/2020*

12. *Health Assistance (Disease Prediction And Medicine, Exercise And Diet Suggestion) Using CNN, Prof. S. S. Chavan, Sunil Digge, Sushil Ingle, Rohit Mogal, Sagar Sable, IJARCCE/2022.*

13. *Disease Prediction Using Machine Learning Algorithms KNN and CNN, K. Praveen Kumar, A. Pravalika, R. Pallavi Sheela, Y. Vishwam, IJRACET/2022*

14. *Health Assistance Using CNN , Sushant Sinha, Akshay Salve, Chetan Patil, Ganesh Gayakwad, Prof. V. D. Ghonge,IEEE/2021*

15. *A Novel Deep Similarity Learning Approach to Electronic Health Records Data, Vagisha Gupta, Shelly Sachdeva, and Subhash Bhalla, IEEE/2020*