International Journal of Scientific Research in Science, Engineering and Technology
Print ISSN: 2395-1990 | Online ISSN : 2394-4099 (www.ijsrset.com)
doi : https://doi.org/10.32628/IJSRSET23102120

Prediction Analysis Using deep learning Smart Health Care

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ARTICLEINFO

Article History:

Accepted: 10 April 2023
Published: 06 May 2023

Publication Issue
Volume 10, Issue 3
May-June-2023

Page Number
14-22

ABSTRACT

The purpose of Smart Health Care System is to automate the existing system by providing end to end solution for various departments by dividing the complete application into multiple modules and integrating it with a symptom checker tool. These smart and efficient systems take care of operational aspects so that the healthcare center can concentrate on enhanced patient
care. Smart Health Care system is a computer or web-based system that facilitates managing the functioning of the hospital or any medical set up but with a symptom checker tool. Smart Health Care System, as described above can lead to error free, secure, reliable and fast management system. This system provides end-to-end solution for Appointment booking, Viewing Medical records, Initial Diagnosis, Consulting doctor over the web and Billing. This
system can be implemented for a single hospital or a chain of private clinics. The other objective is to provide essential online medical assistance to users irrespective of their location. The diagnosis of a disease in most cases depends on a complex combination of clinical and pathological data; this complexity leads to the excessive medical costs affecting the quality of the medical care. This system helps the patient in the initial diagnosis based on the symptoms and allows users to interact with doctors over the web, based on the diagnosis.

Keywords : Smart Health Hospital, Private Clinics, Symptoms, Diagnosis, Patient.

I. INTRODUCTION

Healthcare institutions often face many challenges, ranging from epidemics to determining the most suitable therapies for treating diseases. If an AI technology system is applied to medical research, owing to the development, validation, and deployment of various machine learning algorithms for industrial applications with sustainable performance [7], it has the potential to diagnose, find vaccines, and personalize healthcare services, moving toward highly advanced e-Health [8]. Patient-centered care cannot ignore the continuous expansion of data in terms of its volume, variety, and velocity, propelling it tow ard a

new technological paradigm, now widely called BD [9,10]. The analysis of the enormous volume, heterogeneity, and velocity of the information provided by BD allows for the extraction of the greatest value from

tests and medical records enables precision medicine to operate under predictive and preventive conditions [14]. Having abundant data is crucial, especially in critical care environments, to be able to rapidly identify diagnoses and specific treatments for particular or rare pathological cases [15]. The improvement of critical stages of diagnosis and the personalization of therapeutic treatments for various diseases are spreading rapidly due to the emerging technological development of BD and the use of social media and IoT that allow for collecting various kinds of data generated by a huge number of devices. In particular, these are biomedical sensors and intelligent devices that, during the diagnosis and monitoring of a patient, collect data related to their health and make them accessible through interconnected and integrated systems, facilitating the transmission of information.

II. LITERATURE REVIEW

In the literature, there is a lot of research showing what opportunities can be offered to companies by big data analysis and what data can be analyzed. However, there are few studies showing how data analysis in the area of healthcare is performed, what data is used by medical facilities and what analyses and in which areas they carry out. his paper aims to ill this gap by presenting the results of research carried out in medical facilities in Poland. he goal is to analyze the possibilities of using Big Data Analytics in healthcare, especially in Polish conditions. In particular, the paper is aimed at determining what data is processed by medical facilities in Poland, what analyses they perform and in what areas, and how they assess their analytical maturity. In order to achieve this goal, a critical analysis of the literature was performed, and the direct research was based on a research questionnaire conducted on a sample of 217 medical facilities in Poland. It was hypothesized that medical facilities in Poland are working on both structured and unstructured data and moving towards data -based healthcare and its benefits. Examining the maturity of healthcare facilities in the use of Big Data and Big Data Analytics is crucial in determining the potential future benefits that the healthcare sector can gain from Big Data Analytics. here is also a pressing need to predicate whether, in the coming years, healthcare will be able to cope with the threats and challenges it faces. his paper is divided into eight parts. he irst is the introduction which provides background and the general problem statement of this research. In the second part, this paper discusses considerations on use of Big Data and Big Data Analytics in Healthcare, and then, in the third part, it moves on to challenges and potential beneits of using Big Data Analytics in healthcare. he next part involves the explanation of the proposed method. he result of direct research and discussion are presented in the ifth part, while

the following part of the paper is the conclusion. he seventh part of the paper presents practical implications. he inal section of the paper provides limitations and directions

III. Proposed Syste

Smart Health Care is a website that predicts the disease of the user with respect to the symptoms given by the user.

- Reducing life risk due to time and distance especially for rural people which might be needed diagnosis immediately.
- Data management becomes simple
- Administrators have a centralized view and control on every function.

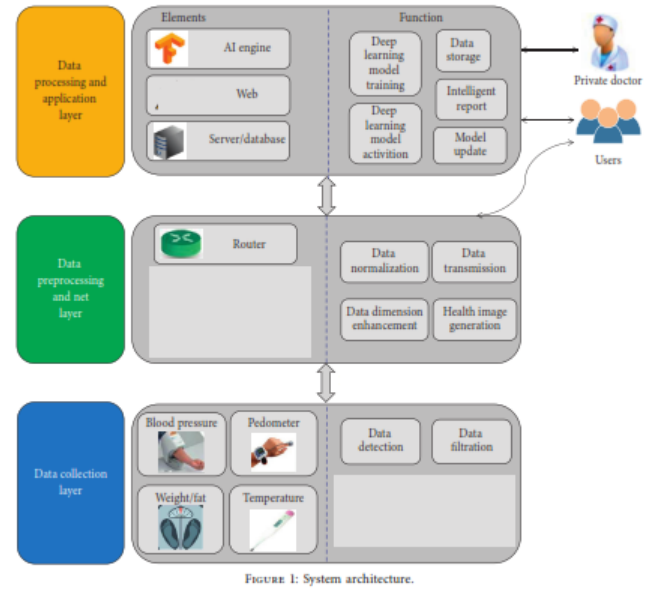


Figure 1: System architecture.

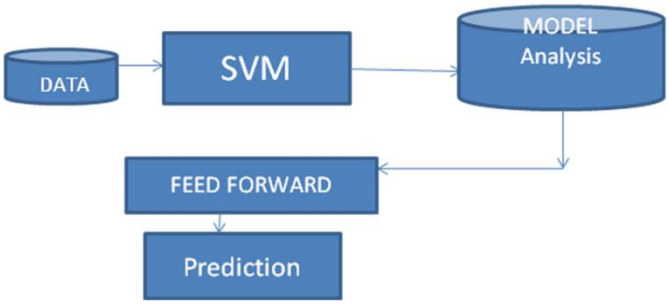


Fig 2. Prediction System

E. Dataset Generation
F. User interface model
G. Data processing
H. Data Analysis system
I. Interfacing with cloud
J. Predication analysis
K. Feedback System

IV. DATA STUTURE

Diabetes is a chronic disease and a major public health challenge worldwide. It happens when a body is not able to produce or respond properly to insulin, which is needed to maintain the rate of glucose. Diabetes can be controlled with the help of insulin injections, a controlled diet (changing eating habits) and exercise programs, but no whole cure is available.

Diabetes leads to many other disease such as blindness, blood pressure, heart disease, kidney disease and nerve damage . There are three main types of diabetes mellitus:

Type 1 DM results from the body's failure to produce insulin. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes".

Type 2 DM results from insulin resistance, a condition in which cells fail to use insulin properly, sometimes also with an absolute insulin deficiency. This form was previously referred to as non insulin-dependent diabetes mellitus (NIDDM) or "adult-onset diabetes".

Gestational diabetes, is the third main form and occurs when pregnant women without a previous diagnosis of diabetes develop a high blood glucose level.

Main 3 diabetes symptoms are:-

1. Increased need to urinate (Polyuria)
2. Increased hunger (Polyphagia)
3. Increased thirst (Polydipsia)

There is a need of Prediction and finding Severity of Diabetes:-

- Because the Risk of Developing diabetes will critically affect the overall health of the patient.
- Early detection will protect the high risk developed in the patient.
- Detection helps in planning medication at early stage which will avoid patient to undergo extensive treatment.
- It will help in avoiding negative impact of diabetes on critical organs like heart, kidneys, eye etc.

V. Implementation Details

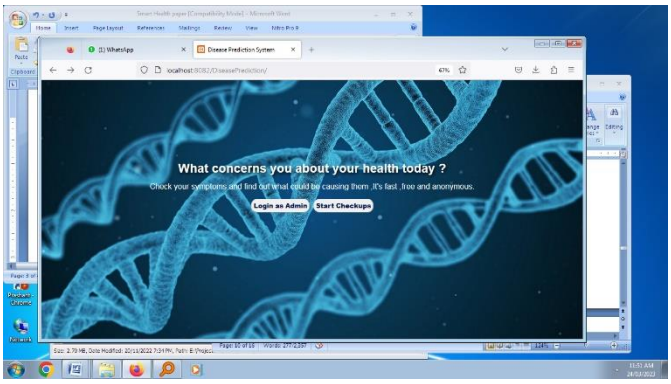
A hospital or healthcare center is a full-time activity zone. Hundreds of patients get treated for a variety of problems. Other than trained medical and paramedical professionals who take care of treatment and patient care, there is a fleet of non-medical professionals who take care of administration, billing, finance and HR. Since a large volume of data gets generated on the daily basis, maintaining it in conventional methods is highly

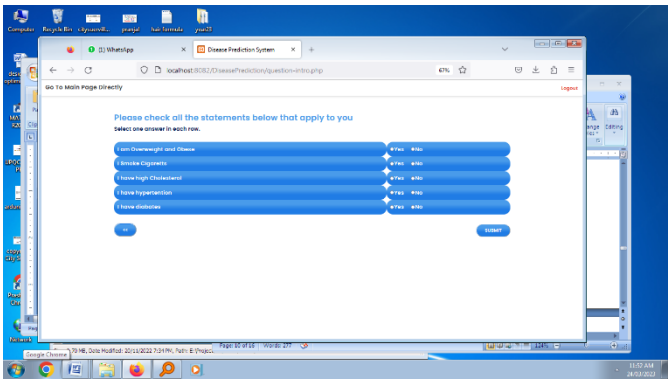
daunting and cumbersome. In the modern world driven by technology, a hospital can't afford to be a laggard by following age-old methods. When other hospitals offer online registration and scheduling facility for patients; a progressive hospital must replicate the same. It is the reason we see a demand of versatile applications for streamlining operational aspect of the healthcare center.

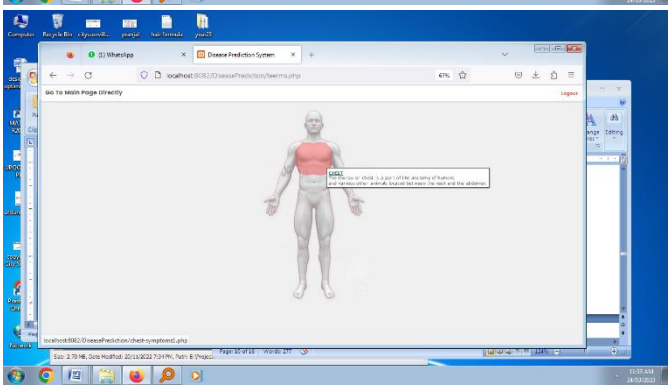
A. Smart Health Care is a website that predicts the disease of the user with respect to the symptoms given by the user.
B. Reducing life risk due to time and distance especially for rural people which might be needed diagnosis immediately.
C. Data management becomes simple
D. Administrators have a centralized view and control on every function.

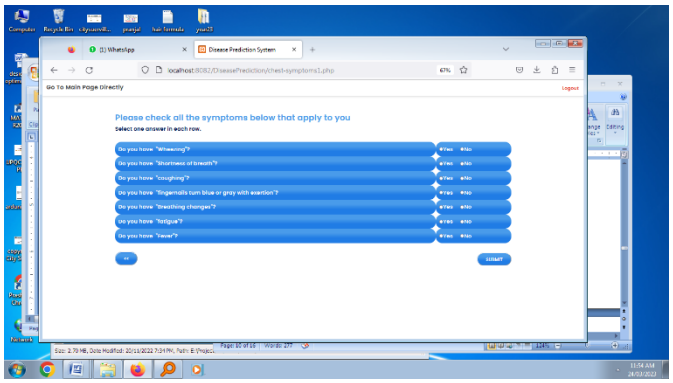
The proposed system combines the functionality of a Hospital Management System and Symptom checker, which is why it is named as Smart Health Care System. The features of the proposed system are:

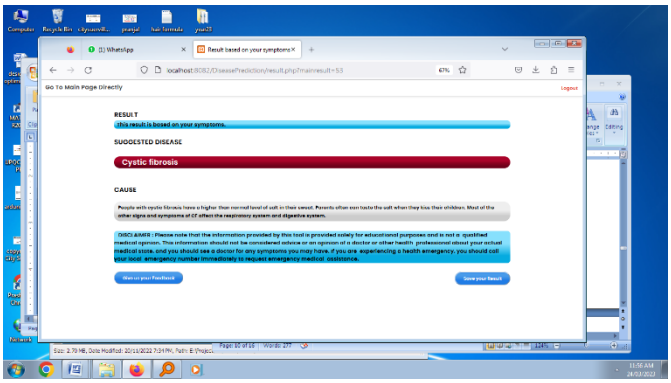
- Offers online registration.
- Offers scheduling an appointment.
- Provides access to medical records.
- Provides access to billing and other aspects in just a few clicks.
- Patients and Doctors are given access to the symptom checker for initial diagnosis.
- Ask doctor feature is included.
- Improves the communication and interaction of doctors with their patients.
- Users can provide feedback which is used for improving the system and symptom checker tool.
- The higher management gets at-a-glance view of all the billing and count of patients vising the hospital which helps in Financial analysis and taking accurate business decisions.
- Having all data in a single platform provides valuable insights of hospital operations and quality of patient care.
- It reduces the dependency on human resources. Even if the business expands, there is no requirement of additional resources. Thus, it keeps operational expenses under control.
- Administrator has centralized view and control on every function. It streamlines operations and enhances system efficiency.
- It offers the interface to extract and retrieve the data quickly.
- No ambiguity or duplication in data.

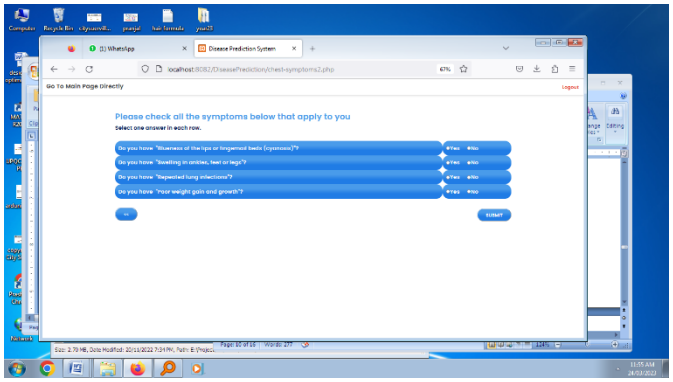


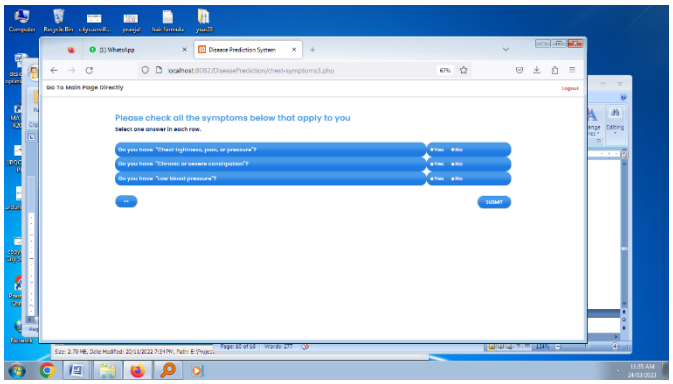


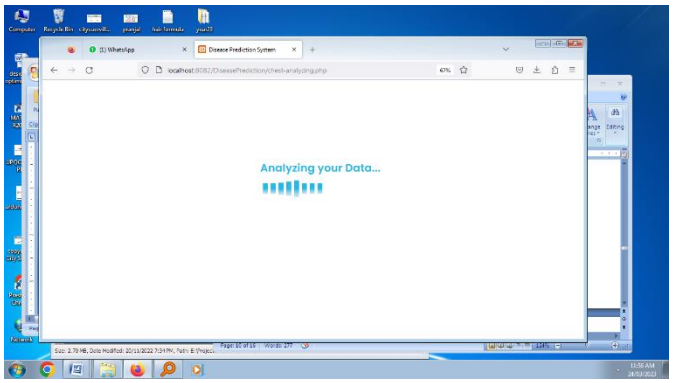












In this proposed architecture, Disease Identification module provides the most efficient Symptom checker tool for self-diagnosis. User enters the symptoms as input and system outputs the likely diagnoses list. The user is provided an option to interact with the doctor based on the diagnosis report.

The improvement of critical stages of diagnosis and the personalization of therapeutic treatments for various diseases are spreading rapidly due to the emerging technological

VI. Conclusion

The proposed system is successfully designed and tested. All the above-mentioned features are successfully implemented and tested. This system successfully integrates Hospital Management system and symptom checker tool. All the key features of a Prediction Analysis Using deep learning Smart Health Care are successfully implemented. The symptom checker tool developed displays the accurate results depending on the dataset. The symptom and disease relationship is successfully implemented and tested.

VII. REFERENCES

[1]. Abouelmehdi K, Beni-Hessane A, Khaloui H. Big healthcare data: preserving security and privacy. J Big Data. 2018. https:// doi. org/ 10. 1186/ s40537-017- 0110-7.

[2]. Agrawal A, Choudhary A. Health services data: big data analytics for deriving predictive healthcare insights. Health

[3]. Serv Eval. 2019. https:// doi. org/ 10. 1007/ 978-1-4899- 7673-4_ 2-1.

[4]. Al Mayahi S, Al-Badi A, Tarhini A. Exploring the potential beneits of big data analytics in providing smart healthcare. In: Miraz MH, Excell P, Ware A, Ali M, Soomro S, editors. Emerging technologies in computing—irst international conference, iCETiC 2018, proceedings (Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST). Cham: Springer; 2018. p. 247–58. https:// doi. org/ 10. 1007/ 978-3- 319-95450-9_ 21.

[5]. Bainbridge M. Big data challenges for clinical and precision medicine. In: Househ M, Kushniruk A, Borycki E, editors.Big data, big challenges: a healthcare perspective: background, issues, solutions and research directions. Cham: Springer; 2019. p. 17–31.

[6]. Bartus K, Batko K, Lorek P. Business intelligence systems: barriers during implementation. In: Jablonski M, editor. Strategic performance management new concept and contemporary trends. New York: Nova Science Publishers; 2017. p. 299–327. ISBN: 978-1-53612-681-5.

[7]. Bartus K, Batko K, Lorek P. Diagnoza wykorzystania big data w organizacjach-wybrane wyniki badan. Informatyka Ekonomiczna. 2017;3(45):9–20.

[8]. Bartus K, Batko K, Lorek P. Wykorzystanie rozwiazan business intelligence, competitive intelligence i big data w przedsiebiorstwach województwa slaskiego. Przeglad Organizacji. 2018;2:33–9.

[9]. Batko K. Mozliwosci wykorzystania Big Data w ochronie zdrowia. Roczniki Kolegium Analiz Ekonomicznych. 2016;42:267–82.

[10]. Bi Z, Cochran D. Big data analytics with applications. J Manag Anal. 2014;1(4):249–65. https:// doi. org/ 10. 1080/ 23270 012. 2014. 992985.

[11]. Boerma T, Requejo J, Victora CG, Amouzou A, Asha G, Agyepong I, Borghi J. Countdown to 2030: tracking progress towards universal coverage for reproductive, maternal, newborn, and child health. Lancet. 2018;391(10129):1538–48.

[12]. Bollier D, Firestone CM. The promise and peril of big data. Washington, D.C: Aspen Institute, Communications and Society Program; 2010. p. 1–66.

[13]. Bose R. Competitive intelligence process and tools for intelligence analysis. Ind Manag Data Syst. 2008;108(4):510–28.

[14]. Carter P. Big data analytics: future architectures, skills and roadmaps for the CIO: in white paper, IDC sponsored by SAS. 2011. p. 1–16.

[15]. Castro EM, Van Regenmortel T, Vanhaecht K, Sermeus W, Van Hecke A. Patient empowerment, patient participation and patient-centeredness in hospital care: a concept analysis based on a literature review. Patient Educ Couns. 2016;99(12):1923–39.

[16]. Chen H, Chiang RH, Storey VC. Business intelligence and analytics: from big data to big impact. MIS Q. 2012;36(4):1165–88.

[17]. Chen CP, Zhang CY. Data-intensive applications, challenges, techniques and technologies: a survey on big data. Inf Sci. 2014;275:314–47.

[18]. Chomiak-Orsa I, Mrozek B. Główne perspektywy wykorzystania big data w mediach spolecznosciowych. Informatyka Ekonomiczna. 2017;3(45):44–54.

[19]. Corsi A, de Souza FF, Pagani RN, et al. Big data analytics as a tool for ighting pandemics: a systematic review of literature. J Ambient Intell Hum Comput. 2021;12:9163–80. https:// doi. org/ 10. 1007/ s12652- 020- 02617-4.

Cite this article as :

Harsh Vyas, Samarth Sharma, Harshil Senghani, Dr. Ajaysinh Rathod, Dr. Avani Vasant, "Accident Prone System using YOLO", International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET), Online ISSN : 2394-4099, Print ISSN : 2395-1990, Volume 10 Issue 3, pp. 09-16, May-June 2023. Available at doi : https://doi.org/10.32628/IJSRSET23102120

Journal URL : https://ijsrset.com/IJSRSET23102120