



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 3, March 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

[ijirset@gmail.com](mailto:ijirset@gmail.com)

[www.ijirset.com](http://www.ijirset.com)

# Healthcare System Using CNN

Anamika Jewalikar, Anushka Jewalikar, Vishal Pawar, Aishwarya Salunkhe, Prof.R.M.Kedar

Department of Computer Engineering, K J College of Engineering and Management research, Pune, India

**ABSTRACT:** The world today is gradually transforming the technical work into the field of artificial intelligence, machine learning and also more into deep learning. These concepts are a pure replication of the human brain being described through the data processing concept. The development of the Healthcare system is definitely a boon to the futuristic work as the medical field is one which has the urge of using the new technologies into their medical machines. The Healthcare system is self-descriptive as it detects the diseases by itself through the images and displays the results. This process works efficiently as the concept known as Convolutional Neural Network (CNN) is used in this system to scale out the images. While working on the Convolutional Neural Network (CNN) the overall accuracy of this system turns out to increase as compared to the older times healthcare systems. Including the CNN there are some more techniques used here which support CNN and this system to work in an efficient manner. The techniques used here is where firstly the XGBoost supports the flow of this system and in turn helps the CNN to work on the images. There are also other techniques used known as the bagging, boosting, etc which are used here. The system is designed in a way to detect the heart, pneumonia and COVID disease altogether.

**KEYWORDS:** Machine learning, Healthcare, Convolutional Neural Network (CNN), XGBoost, Bagging.

## I. INTRODUCTION

Healthcare is a system where Python is like a buttness which contains a huge collection of freely available packages which envelopes a variety of topics. Various scientific python libraries are wielded, such as Numpy, Scipy, Pandas which elucidates the implementation of the numerical tasks and operations in the science and engineering field. This system encompasses of three prime modules which are the heart disease detection, pneumonia disease detection and corona-virus or COVID-19 disease detection. The heart disease module is incorporated for the detection of the disease to be done with the images which are being examined through for an appropriate prediction of the disease. The heart disease to be detected is a major and also a very censorious task in today's world. The healthcare system makes this task elementary. The pneumonia disease and the COVID disease too is detected by the images being scaled out. This scaling out of images is done by the very well-known concept of machine learning called as the Convolutional Neural Network (CNN). A convolutional neural network is primarily a feed-forward neural network which scrutinises the visual images where the data is processed with the topology which is like a grid. The Convolutional Neural Network (CNN), detects and classifies the object in an image.

Supporting the CNN are the various algorithms like the XGBoost, Bagging, Random Forest that are used in this system. The XGBoost embraces the gradient boost framework which predicts the unstructured data. Bagging and Random Forest algorithms fall under the XGBoost or it can be said that they are the part of the process or flow to get the XGBoost output. Random Forest is also known for bootstrap aggregation or it is also symbolised to as the bagging method to explain the bagging method in detail. The more the images are transformed and scaled out the more the accuracy of the system is displayed to its end.

## II. RELATED WORKS

In this paper [1], author propose an approach which includes this research, they have examined the potential of Healthcare system and examined the most challenges they have faced in healthcare system. They have built the building blocks, use cases that in operation. T. Foley and F. Fairmichael, "The Potential of Learning Health Care Systems," The Learning Healthcare Project.

In this paper [2], author propose an approach which includes this research, The Learning Health System (LHS) concept is perhaps understood components. They have every patient's experience available as data. These data support to take decision by individual member of health service. C. P. Friedman "The science of learning health systems: foundations for a new journal," Learning Health System".

In this paper [3], author propose an approach which includes this research, they have to gather evidence of LHS data model which is used to deliver healthcare improvement. Any kind of report delivery of healthcare should be captured. J. Enticott, A. Johnson, and H. Teede, “Learning health systems using data to drive healthcare improvement and impact: a systematic review”.

In this paper [4], author propose an approach which includes this research, they have Healthcare System which is faced burgeoning population, rising complexity, escalating costs. They have goal to study describe process on learning healthcare system framework, and the framework is “learning together for better health”. Joanne C Enticott, Alison Johnson.

### III.METHODOLOGY

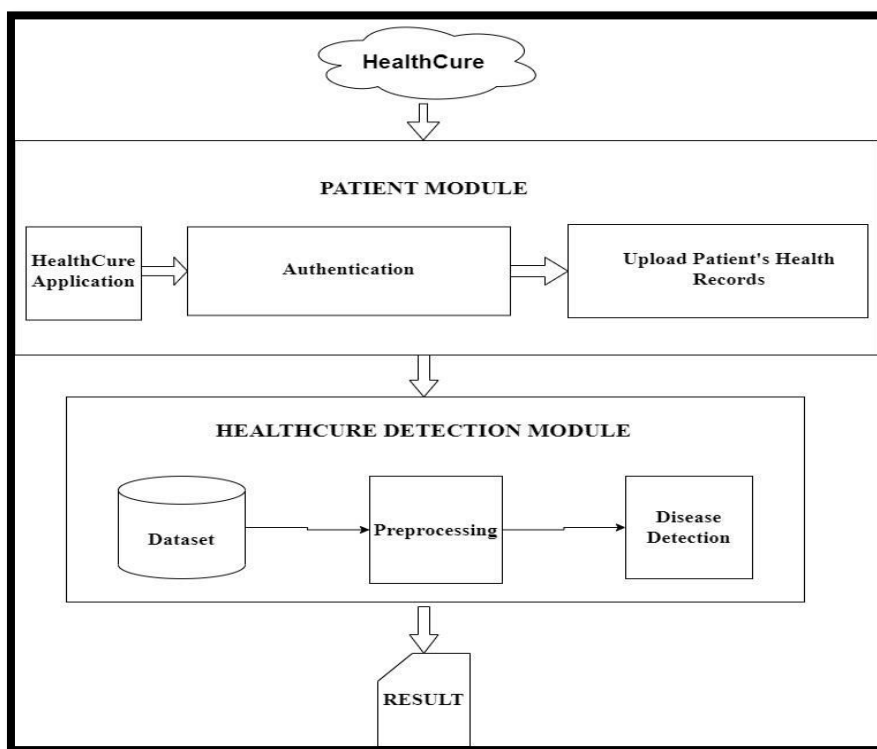


Figure 1: Block Diagram of System

### IV.PROPOSED SYSTEM

In this big data world, we are trying to find hidden patterns in the data, which provide excellent result by decision making. The proposed system actually works at deep level in semantic relationship and mapping every medical entity. The proposed system is based on Convolutional Neural Network (CNN) health cure system. It is feed forward neural network which is backpropagation, which is used for reduce cost and fetch images on many featured levels. CNN is mainly used for identify an image, diagnose the report. A CNN is using convolutional filter mask. The healthcare system suffers through many problems. Although this technique is implemented with other techniques XGBoost, Bagging and Random Forest etc.

The XGBoost is open-source library, which is gradient boosting tree model, that provides effective as well as efficient implementation. It is helps to develop high and fast performance of model. Through the help of this library, we can achieve the best performance of difficult task.

Bagging has been used to medical data prediction. Ensemble learning is used for a bioinformatics. Bagging is also called as bootstrap aggregation. Bagging is the ensemble learning method, which is mainly used to reduce noise in the dataset and it is easy to implementation, loss of interpretability, computationally expensive and less flexible. Random forest is an extension of bagging method, which is used to solve complex problem as well as to improve performance of model. It is reduced risk of overfitting; it provides flexibility and easy to determine feature importance.

## V.CONCLUSION

Health Systems are complex and constantly changing entities.This provides an early step towards such a resource. As well as signposting useful resources, it presents a framework for considering important topics in developing a Learning Health System and an introduction to each of these topics.

## REFERENCES

- [1] T. Foley and F. Fairmichael, "The Potential of Learning Health Care Systems," The Learning Healthcare Project, 2015. [Online]. Available: <https://learninghealthcareproject.org/the-potential-of-learning-healthcare-systems/>
- [2] C. P. Friedman et al., "The science of learning health systems: foundations for a new journal," Learning Health Available: <https://onlinelibrary.wiley.com/doi/full/10.1002/lrh2.10020>
- [3] D. A. Garwin. (1993) Building a Learning Organization. Harvard Business Review. 73-91. Available: <https://hbr.org/1993/07/building-a-learning-organization>
- [4] J. M. McGinnis, D. Aisner, and L. O. Olsen, "The Learning Healthcare System," National Academies Press, Washington (DC), USA, 2007. [Online]. Available: <https://www.nap.edu/catalog/11903/the-learning-healthcare-system-workshop-summary>
- [5] J. M. McGinnis, L. Stuckhardt, R. Saunders, and M. Smith, Best care at lower cost: the path to continuously learning health care in America. National Academies Press, 2013.
- [6] J. Enticott, A. Johnson, and H. Teede, "Learning health systems using data to drive healthcare improvement and impact: a systematic review," BMC health services research, vol. 21, no. 1, pp. 1-16,2021.Available: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06215-8#Tab3>.
- [7] T. Foley and F. Fairmichael. "Professor Charles Friedman Interview." The Learning Healthcare Project. <https://www.learninghealthcareproject.org/section/evidence/25/50/professor-charles-friedman-%20interview>
- [8] University of Michigan. "Revolutionizing Learning, Transforming Health." University of Michigan. <https://medicine.umich.edu/dept/learning-health-sciences>
- [9] MCBK. "Annual MCBK Public Meeting." MCBK.



**INNO SPACE**  
SJIF Scientific Journal Impact Factor  
**Impact Factor: 8.118**



**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details