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A Novel Technique to Investigation of Infectious Diseases

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ABSTRACT

To carry out this research, a systematic review methodology will be used along with three different investigations for viral disease. As the viral disease has various forms of occurrence as they have less infected or highly invested. The recent scenario also very aware about the covid. A systematic review is a well-planned examination to answer research questions using a systematic and clear technique to locate, select, and critically assess the outcomes of prior research studies. When doing a systematic review, it is important to use strict methodological procedures in order to ensure that the results are unique. This thesis investigates two illnesses, one for the purpose of analytical data analysis using machine learning, and the other for the purpose of contaminated area identification using artificial intelligence. There is one additional inquiry that has been initiated for covid Exploration. Data has been gathered constantly from the 10th of March, 2020, and will continue to be collected until the 6th of May, 2021, according to the schedule. The total number of occurrences of the covid case has been represented. For this we used the chaste images (Infected) on which the SVM has been apply with the to detect the affected area. For this we have train the affected area and test on the chaste image. This thesis tries to detect the pattern of the affected area within the images. The detection started with an image-based identification algorithm from the UCI library. The data sets were run via the MATLAB simulator to determine the prediction accuracy using the UCI image data base. Data augmentation is all about adding data points. It refers to the growing dataset. We need to extend the dataset to prevent overfitting. Applying Pneumonia treatment, filtering data conditions, and constructing data may accomplish this. Our models would perform better with additional data. Now we look at the AI work for infected area detection. We utilized virgin photos (Infected) and used SVM to identify the impacted region. Then we test on a chaste picture. The work for the detection of contaminated regions applying artificial intelligence was also studied further in this thesis, according to the results. A clean picture (Infected) was used to train the SVM, which was then utilized to detect the affected area on the image. For this, we trained the affected area and tested it on a chaste image in order to get the

desired results. It is the goal of this thesis to identify patterns in the pictures that represent the affected area as shown in the GUI-based Layout by searching for patterns in the images.

Keywords : Covid, SVM, Pneumonia Infection, Viral Disease Detection

I. INTRODUCTION

Artificial intelligence, an intelligent entity's ability to do tasks typically associated with a computer driven robot or a digital computer. The term is frequently used to create systems characteristic of human intellectual processes such as the ability to perceive, comprehend meaning, generalize, or learn from experience. The added advantage of image processing in recent research has been shown by machine learning when conventional equipment cannot identify early disease signs. This is particularly true with cancer, often assisted by AI diagnosis and treatment techniques. Even in impoverished countries where resources, healthcare costs and other limitations prevent optimal treatment. More than 7 billion connected products are expected to be utilized worldwide, which will improve our lives. These datasets and conventional healthcare datasets are used to better study infection diseases, infection processes, therapy resistance, transmission, and creation of vaccines [1].

1.1 Artificial intelligence in health care

The most potent and promising artificial intelligence (AI) for mankind has been discovered within the existing analytical equipment. AI is the input output for large data must be cleaned up, organized and integrated. However, most of the healthcare information today is not sufficient in quantity and speed to need large data. Most health-related research requires the support of biologists and statistics, not data scientists. Improved instruments for the detection of certain instances based on the overall data direction were necessary for omics [2].

1.2 Predicting Future Outbreaks

Although COVID-19 prevails, infectious diseases are not a new narrative, since the history of humans has undergone comparable outbreaks. Nevertheless, the digital tools accessible today to scientists and public health organizations are novel. Machine learning and artificial intelligence (AI) can help prevent, cure and control infectious illnesses [3]. Big data technology, which can analyse massive volumes of data, such as medical information, human behaviour patterns, and environmental variables, may be useful in the management of lethal epidemics in the future.

II. Research Background

In paper [4], The novel 2019 coronavirus disease (COVID-19), which began in China, spread rapidly to people living in other countries. According to statistics from the World Health Organization, there are about 101,917,147 cases in the world. In hospitals, due to the increasing daily number of cases, there are a limited amount of COVID-19 test kits. Therefore, an automated detection technique must be used as a fast alternative diagnostic option to prevent transmission of COVID-19 between people. This paper [5] used in-depth neural coevolutionary networks to establish how the infection of lung diseases using portable chest X-rays (CXR) was as bad as coronavirus (COVID-19). The research has investigated the connection between the AI and radiology scores. This approach may assist to stage, predict, and anticipate the severity of the response and survival of lung illness and therefore guide risk

management and resource allocation. In [6] The whole world risks a health emergency in 2019 due to a newly found coronavirus (COVID-19). Covid-19 impacts nearly 196 countries, but COVID-19 is of the greatest importance in America, Italy, China, Spain, Iran, and France. The issues, medical and health sectors, suffer delays in detecting COVID-19. Many artificial intelligence-based technologies are designed to automatically detect COVID-19 using chest x-rays. In this article we will examine the many techniques of detection of COVID-19 and the challenges facing us. Described in[7], Severe Acute Respiratory Syndrome Coronavirus 2 caused about 26 million cases of Corona (COVID-19) in the world (SARS-COV-2). The screening for appropriate quarantine and treatment for large numbers of suspected patients is a priority for monitoring the spread of the disease. They collected 1065 CT images from COVID-19 pathogenic confirmations together with normal viral pneumonia previously identified. The original model of transfer-learning was amended and the technique was subsequently validated both internally and externally. In [8], The world is now thinking about coronavirus sickness, which means that it is not unique to this pandemic disease. In short, machine learning may include programs and methods for evaluating and assessing COVID-19 cases. Controlled learning produced better results with a test accuracy of 92.9 percent than other uncontrolled learning algorithms. Recurrent supervised learning may be utilized in future to improve accuracy.

The results obtained suggest SPM techniques and mutation analysis methods for examining advances and variations in strains of COVID-19 may offer interesting information and patterns in genomic sequences of COVID-19 described in [9]In paper[10], The scientists have worked together to minimize the current outbreak of COVID-19. Early identification and evaluation of the progression of the illness is an excellent step towards the timely use of medical regimes. The results on the subject to date are promising. However, there are shortcomings that must be addressed in some results of these research to create acceptable models for therapeutic use. The development of new illnesses is an essential element in human health and society. Progress in artificial intelligence (AI) enables rapid processing and analyzing of extensive and complex data. This forum post explores the present applications of disease prediction and drug development in relation with the COVID 19 pandemic [11]. Proposed in [12] In order to combat and cure emerging illnesses, new technologies such as artificial intelligence, the Internet of Things, big data, and machine learning must be integrated into the healthcare system. They would want to investigate the role of artificial intelligence in the analysis, planning, and combatting of COVID-19 and other pandemics as a critical technology. In[13], Bacteria, viruses, fungi, or parasitic microbes are the cause of infectious diseases. Infectious conditions in some individuals may be asymptomatic, while in others they may bring catastrophe. Proposed in [14], COVID-19, a viral SARS-CoV-2 disease, was declared a pandemic by the World Health Organization, reporting 18 million confirmed cases on 5 August 2020. In this paper, we provide an overview of current research, in broad terms, on machine learning and on artificial intelligence to solve various aspects of the COVID19 problem. They also evaluate data sets, technology and resources needed for artificial intelligence research and address strategic problems related to the actual implementation of multidisciplinary and open scientific cooperation. They emphasize the need for global cooperation to maximize the potential of AI in this and future pandemics. In [15], Since the beginning of the 21st century, the amount of information collected through monitoring has increased considerably due to the development of information and communications technology and current data collection systems. This article aims to highlight the opportunities that artificial intelligence (AI) technology provides for accurate disease-oriented surveillance and projection in this digital age.

The study of mass infectious illnesses and monitoring data, in combination with trustworthy AI data management systems, should effectively support government agencies, healthcare providers and medical specialists in the future. In[16], COVID-19 is related to increased admission and death of the Intensive Care Unit (ICU), resulting to serious respiratory symptoms. Early coronavirus diagnosis lowers its frequency. The method used in the clinic to identify this type of virus or its absence is the appearance of x-ray chest images differs in 2019 from any other pneumonic disease. The aim of this research is to utilize artificial intelligence techniques to detect COVID-19 early on using chest rays.

Artificial intelligence (AI) researchers in the biological sciences were pushed to progress faster than previously. Large, multi-level and integrated information sets offer fresh insights and discoveries. While more data is available than ever, just one part is chosen, integrated, processed, and analyzed. This document examines applications for machine learning in health services with an overview of the key role of privacy in clinical, translation and public health applications, the sharing of data and genetic information described in [17].In paper[18], machine learning (ML) techniques provide efficient prediction models using longitudinal information, since they can incorporate numerous predictor variables without compromising accurate risk forecasting. Models of clinical risk prediction may be challenging because of the non-linear character of chronic hepatitis C virus disease progression (CHC). They have assessed two ML systems utilizing longitudinal data in order to forecast the development of cirrhosis in large CHC-infected populations. The outcomes of several non-linear phases of chronic disease may be predicted using similar statistical methods. Described in [19], Extensive genetic data have been provided by current research and improved experimental techniques. This need resulted in extensive rigorous effort and the development of powerful models of artificial intelligence (AI) and ML. In[20],Artificial intelligence (AI) has grown stronger in healthcare, with advances in inexpensive technology that may contribute to diagnoses, predictive health care and personalized medicine. In order to utilize universal non-biased AI in healthcare, data from different settings must be represented (gender, age, and ethnicity). They report on Fitzpatrick 6 skin type dermatological issues from beta-tests using dermatological algorithms called dermatological image-searches, which have been used by the online dermatology company First Derm. This article [21]proposes an artificial neural network-based approach for the detection of hepatitis virus.

New advancements in bioinformation, bioinformatics, and biostatistics, as well as artificial intelligence (AI), have an immediate and critical impact on the translation of health-care research findings into practice. The degree to which VI is controlled by immune cells and soluble chemicals, as well as the kind of treatment provided, is determined on an individual basis [22]. This article provides a unified approach to the utilization of these techniques and treatment options for illness diagnosis [23].The study indicates that Decision Stump provides maximum accuracy than other techniques [24].Diabetes is one of the most common diseases in the world that have not yet been detected in therapy. Every year, it costs a lot of money to treat people with diabetes. The most important issue is thus the highly precise and reliable prediction. In this study [25], they employed artificial neural networks to determine whether a person is diabetic. With the use of a neural network model, the goal was to reduce the error function in the process of neural network training. Small Blue Round Cell Tumors (SBRCTs) are a group of cancers that are difficult to identify due of the overlap between moral, immunological, and clinical features. Approximately two thirds of the EWSR1 negative SBRCT have a connection to the CIC DUX4 fusion, whereas the X-chromosome BCOR-CCNB3 is seen in a small percentage[26].Existing classification methods are usually created for a thoroughly studied family of viruses. They propose a machine-learning

classification framework for CASTOR viruses. The motivation of CASTOR is a well-known technology in molecular biology: restriction of the length of polymorphism (RFLP) [27].They expect that word frequency machine learning methods can be used to study infectious viral hosts efficiently. They show the greatest results of the random forest coupled with the relative words frequency vector in detecting viruses that infect specific hosts with at least 45 infectious viruses, utilizing nine generations of host bacteria. Their further show that in metagenomic studies [28]. Dengue is one of humanity' most renowned viral illnesses. They also propose the development of a novel ensemble classifier for Dengue Epidemic Prediction [29]. In paper [30] data mining, large-scale data analysis, or artificial intelligence (AI) or contemporary machine education. It provides solutions with an effective learning and adaptation approach for a variety of engineering applications. The application of AI in biomedical research has significantly reduced the fluidity and unpredictability of data processing. This research aims at assessing if these CDSSs improve chronic treatment processes, including diagnosis, treatment and monitoring of diseases [31]. In the tropical region, dengue virus infection is prevalent and a worldwide public health issue. The results of Cross-Validation show that an SVM using a Gaussian kernel has defeated other models, with an AUC score of 0.81. The test results below showed a score of 0.75 ROC AUC. Promising validation and test results as well as future research and development are supported [32].Viral development continues to be a significant obstacle to the effectiveness of antiviral treatment. Machine learning is one of the methods used to investigate links between structure and activity, secondary and tertiary forecasting, and sequence error correction. This research provides a novel technique for machine learning to anticipate possible point motions in fundamental alignment of the RNA sequence structure [33]. SARS-CoV-2 is an emergency of global health with unknown clinical features. This article covers the most recent techniques of medical imaging for SARS-CoV-2 and their potential contribution to epidemic improvement. Research shows that SARS-CoV-2 often shows an ultrasound imaging of the B lines and anomalies of the pleural line. They also found numerous studies aimed at assessing the severity of SARS-CoV-2 about artificial intelligence tools described in [34].

III. Research Strategy

In this study, a systematic review approach will be utilized. A systematic review is a well-planned examination to answer research questions using a systematic and clear technique to locate, select and critically assess the outcomes of prior research studies. The thesis of systematic review is deemed original since they are carried out utilizing rigorous methodological methods. This thesis explores two diseases, one for the analytical data analysis using ML and second is for the infected area detection using AI. One additional investigation has been carried out to explore the spreading behaviours of covid-19. This investigation also has predicted the future occurrence of covid case.

3.1 Data Collection

The gathering of data will be carried out utilizing secondary resources exclusively. It describes the methodological approaches of each research (variables, samples, measurements, and data analysis) and results that enable a comparison between the chosen studies and/or between them. To find and obtain scientific studies using various sources. These sources should contain all relevant research databases, conference proceedings and gray based on mathematical models for epidemiological studies.

3.2 Data Analysis

Studies will be categorized by their methodological commonalities. This method is discussed in the project. In order to help the reader, comprehend the findings, the numerical and graphical presentation of the data will also be discussed in the paper.

IV. Proposed Steps for Data Modelling

Phase 1: initially, make sure the data sets are relevant. For statistical study, the characteristic with the lowest and biggest values in our data set is selected.
Phase 2: Test's data normalcy using mathematical data patterns.
Phase 3: Equate the "mean column evaluation" for the missing value space

Phase 4: It is recommended to add the median and mean data sets to the missing values.
Phase 5: Divide the data into a ratio of 70:30 for ML algorithms to train data and further test outcomes.
Phase 6: Perform the Train Data Sets Machine Learning Algorithm.
Phase 7: Check consistency with the test data sets of the test findings.

4.1 Procedure

Stage 1: Pre - data processing.
A figure that shows the data
Identify and eliminate outliers.
Classify and handle the missing information.
The statistics for the findings are applied to the appropriate application.
Replace vacant space with average and average values data.
}
Stage 2: model selection. {Data for the reasons {(classes)
ML algorithms application and Python application.
}
Stage 3: Find the best model to categorize the data {All the information waiting for simulation using Python impress.
}
Stage 4: Performance is assessed with precision
{
Calculate accuracy using the operator "Performance." Then determine the precision by using the "exactitude measure."
}

4.2 Pseudo Code

Take as input the supplied malaria dataset Å=, the set of Algorithms classifiers Ë= Mean and Median Ë 1, Ë 2 ... Ë n for all Columns.
Locate the Values that aren't there.
Replace Ë with the mean or median of the set.
with respect to (í=vacant, í = 0, í ++);
{
with respect to (å= unoccupied, å = 0, å ++);
}
Utilize the ML Algorithm
Ě = ML (Mod: Data); ǎ= ML (Mod: Data);
Let Ď: đ1, đ 2, đ 3,... đ n represent the malaria dataset that has been provided.
ĝ = ġ1, ġ 2, ġ 3,... ġ n, which represents the collection of ensemble classifiers.
The collection of classifiers Ĉ = ċ1, ċ 2, ċ 3,... ċ n is represented as
χ is the training set, while χ Ď is the data set.
Ý = the test set, χ Ď = the data set
ǩ denotes a meta-level classifier.
Ł= n is a mathematical formula (Ď)
for í =1 to Ł execute
Ě (i) = Model trained on X using ę(i) on the input dataAfter that,
Ě = Ě ǩ
Ě categorized Y as a result of the experiment.
Â primary result is equal to the best possible result in the main result (ML).
Ď []: Combine Ź with Max_ precision-ML.
Ŗ[i] is used to test Y.
Ŗ [] = Ŗ [i] = Ŗ [i]
Ŗ [] = Fz []
}
End

4.3 Investigation of Covid -19

The methodology of this research work can be described in following steps: -
Step 1: Current research the infection rate and mortality rate of Covid.

Step 2: To extract and analyses relevant data from the rate of infection and death of Covid.
Step 3: Apply techniques of regression analysis to estimate covid infection rate and death rate
Step 4: To find the forecast for the next five years with a regression and line forecast analysis of covid infection and death rate.
Step 5: To collect data from recent survey-based research to obtain an understanding of covetousness in Indian contexts.

4.4 Forecasting of Covid

The time series data of covid has been apply over the trend analysis through Adv excel.

Table 1: Forecasting of Covid

Time	Day	Total Case
03/10	1	47.00
03/11	2	60.00
03/12	3	74.00
03/13	4	81.00
03/14	5	84.00
03/15	6	110.00
03/16	7	114.00
03/17	8	137.00
03/18	9	150.00
03/19	10	171.00
03/20	11	223.00
03/21	12	283.00
03/22	13	360.00
03/23	14	434.00
03/24	15	519.00
03/25	16	606.00

The data has been continuing from 10 March 2020 to 06 May 2021. Total number of occurrences of covid case has been represented correspondingly. The graph has further forecast from June 2021 to June 2022. The future one-year prediction has been drawn in yellow line. Whereas the current data reflected by blue line.

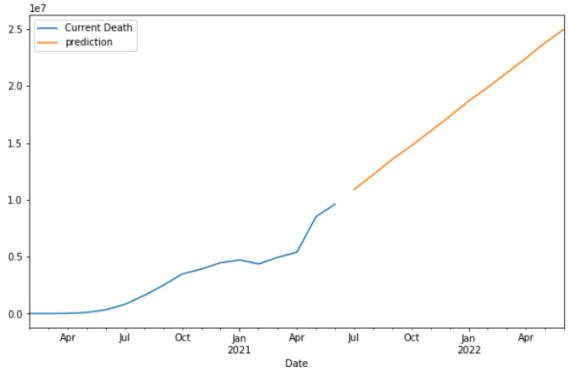


Fig. 1. Covid-19 Prediction Chart

So, the trend line reflected that the covid case in next year reaches more than 25 lakhs cases. This model used **Holt-Winters's** method which is **a very common time series forecasting method. This method can forecast the data.**

Table 2. Comparison of Existing model and Proposed model

	Existing model Cheshmehzangi et.al., (2021)	**Proposed model**
Platform	SEIR Data Analysis	Python
Base Research	Data Analysis and Exploration	Data Analysis, Exploration, Forecasting
Research Area	Covid-19	Covid-19
Method	SEIR Model	Regression Method
Modules	Single (only Exploration)	Two (Exploration+ Prediction Method)
Outcome	In Graphical Form	Graphical and Numeric

As the proposed scenario has apply Data Analysis, Exploration, forecasting whereas the existing research has only exploration based on SEIR Data Analysis. The proposed feature profound the prediction and well as the analytical method to this investigation.

4.5 Pneumonia Detection in MATLAB

The detection has been initiated with image-based recognition system; this data sets has been fetching from UCI library [35]. The data sets have been passed on through the MATLAB simulator to find the prediction accuracy based on the image data base taken from the UCI. Growing the number of data points is what data augmentation is all about. It refers to the increasing number of Dataset. In order to avoid the overfitting problem, we need expand the dataset. This can be achieved by apply the data of Pneumonia treating the data, filtering the data conditions, establishing the data. The more the data, the better our models would perform. Now we investigate the work for the infected area detection using AI. For this we used the chaste images (Infected) on which the SVM has been apply with the to detect the affected area. For this we have train the affected area and test on the chaste image. This thesis tries to detect the pattern of the affected area within the images as presented below.

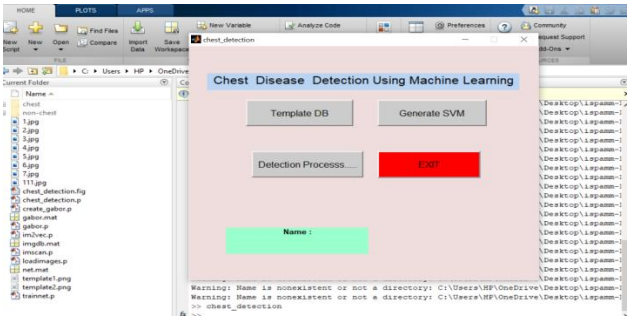
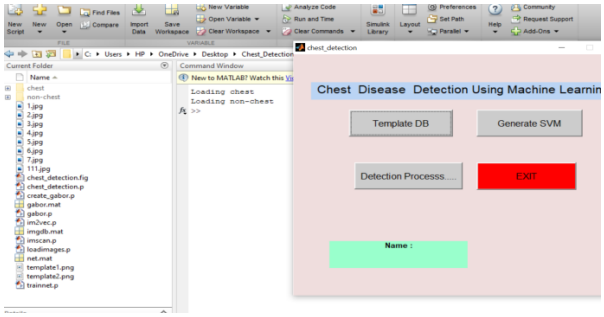


Fig. 2. Four executable buttons as the creation of templet DB,

The above figure presented with four executable buttons as the creation of templet DB, Generate SVM, Detection Process and the last on as the exit. The layout constructed in MATLAB and designed to recognize the affected area as the test pic has been examined.



Fig, 3. presented as the loading of affected chest and non-chest pic to train the machine with SVM algorithm.

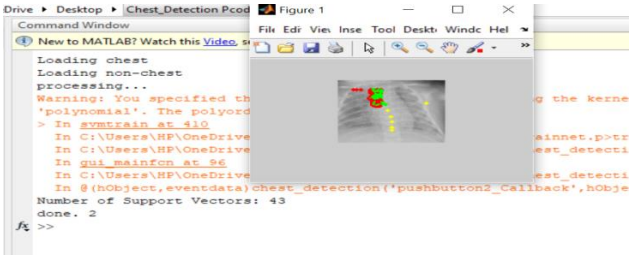


Fig. 4. picture and highlight the affected area.

The above figure presented that the scanning of the picture and highlight the affected area. Number of support vectors also been used in this examination also reflected in command prompt.

V. CONCLUSION

For patients, safe and high-quality hospital facilities are of paramount importance. Increasing privacy is a major issue in the AI-based healthcare system. A health care provider usually gathers and transmits data from its patients to health professionals or licensed clinics. Although most healthcare companies don't utilize sufficient technologies to safeguard their privacy, is important for security and privacy. These devices produce an increasing number of very complicated, highly sensitive real-time data. Diabetes is considered one of the most severe and chronic diseases producing high blood sugar. There are some difficulties when diabetes remains uncontrolled and unexplained. The total number of instances of the covid case has been expressed in the same manner as before. The graph constructed to forecasts for the period June 2021 to June 2022. Further this thesis investigated into the work for the identification of infested areas utilizing artificial intelligence. The method consisted of using clean photos (Infected) on which the SVM was used in order to identify the afflicted region. In order to do this, we have trained the afflicted region and tested it on a chaste

picture. This thesis attempts to recognize the pattern of the impacted region within the photographs as shown in the GUI-based Layout by looking for patterns in the images. An additional experiment has been carried out in order to better understand the spreading characteristics of covid-19. This experiment has also been successful in predicting the occurrence of a covid case in the future.

VI. REFERENCES

[1]. Perez, J. A., Deligianni, F., Ravi, D., & Yang, G. Z. (2018). Artificial intelligence and robotics. arXiv preprint arXiv:1803.10813, 147.

[2]. Matheny, M. E., Whicher, D., &Israni, S. T. (2020). Artificial intelligence in health care: a report from the National Academy of Medicine. Jama, 323(6), 509-510.

[3]. Lalmuanawma, S., Hussain, J., &Chhakchhuak, L. (2020). Applications of machine learning and artificial intelligence for Covid-19 (SARS-CoV-2) pandemic: A review. Chaos, Solitons & Fractals, 139, 110059.

[4]. Narin, A., Kaya, C., & Pamuk, Z. (2021). Automatic detection of coronavirus disease (covid-19) using x-ray images and deep convolutional neural networks. Pattern Analysis and Applications, 1-14.

[5]. Zhu, J., Shen, B., Abbasi, A., Hoshmand-Kochi, M., Li, H., & Duong, T. Q. (2020). Deep transfer learning artificial intelligence accurately stages COVID-19 lung disease severity on portable chest radiographs. PloS one, 15(7), e0236621.

[6]. Ilyas, M., Rehman, H., &Naït-Ali, A. (2020). Detection of covid-19 from chest x-ray images using artificial intelligence: An early review. arXiv preprint arXiv:2004.05436.

[7]. Wang, S., Kang, B., Ma, J., Zeng, X., Xiao, M., Guo, J., ... & Xu, B. (2021). A deep learning algorithm using CT images to screen for Corona Virus Disease (COVID-19). European radiology, 1-9.

[8]. Kwekha-Rashid, A. S., Abduljabbar, H. N., &Alhayani, B. (2021). Coronavirus disease (COVID-19) cases analysis using machine-learning applications. Applied Nanoscience, 1-13.

[9]. Nawaz, M. S., Fournier-Viger, P., Shojaee, A., & Fujita, H. (2021). Using artificial intelligence techniques for COVID-19 genome analysis. Applied Intelligence, 51(5), 3086-3103.

[10]. López-Cabrera, J. D., Orozco-Morales, R., Portal-Diaz, J. A., Lovelle-Enríquez, O., & Pérez-Díaz, M. (2021). Current limitations to identify COVID-19 using artificial intelligence with chest X-ray imaging. Health and Technology, 11(2), 411-424.

[11]. Park, Y., Casey, D., Joshi, I., Zhu, J., & Cheng, F. (2020). Emergence of new disease: how can artificial intelligence help? Trends in molecular medicine, 26(7), 627-629.

[12]. Vaishya, R., Javaid, M., Khan, I. H., & Haleem, A. (2020). Artificial Intelligence (AI) applications for COVID-19 pandemic. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(4), 337-339.

[13]. Agrebi, S., & Larbi, A. (2020). Use of artificial intelligence in infectious diseases. In Artificial intelligence in precision health (pp. 415-438). Academic Press.

[14]. Bullock, J., Luccioni, A., Pham, K. H., Lam, C. S. N., &Luengo-Oroz, M. (2020). Mapping the landscape of artificial intelligence applications against COVID-19. Journal of Artificial Intelligence Research, 69, 807-845.

[15]. Wong, Z. S., Zhou, J., & Zhang, Q. (2019). Artificial intelligence for infectious disease big data analytics. Infection, disease & health, 24(1), 44-48.

[16]. Alqudah, A. M., Qazan, S., Alquran, H., Qasmieh, I. A., &Alqudah, A. (2019). COVID-2019 detection using X-ray images and artificial intelligence hybrid systems. Biomedical Signal and Image Analysis and Project; Biomedical Signal and Image Analysis and Machine Learning Lab: Boca Raton, FL, USA.

[17]. Noorbakhsh-Sabet, N., Zand, R., Zhang, Y., & Abedi, V. (2019). Artificial intelligence transforms the future of health care. The American journal of medicine, 132(7), 795-801.

[18]. Konerman, M. A., Beste, L. A., Van, T., Liu, B., Zhang, X., Zhu, J., ... &Waljee, A. K. (2019). Machine learning models to predict disease progression among veterans with hepatitis C virus. PloS one, 14(1), e0208141.

[19]. Modak, S., Sehgal, D., &Valadi, J. (2019). Applications of Artificial Intelligence and Machine Learning in Viral Biology. In Global Virology III: Virology in the 21st Century (pp. 1-39). Springer, Cham.

[20]. Kamulegeya, L. H., Okello, M., Bwanika, J. M., Musinguzi, D., Lubega, W., Rusoke, D., ... &Börve, A. (2019). Using artificial intelligence on dermatology conditions in uganda: A case for diversity in training data sets for machine learning. BioRxiv, 826057.

[21]. Abu Sharekh, E. K., & Abu-Naser, S. S. (2018). Diagnosis of hepatitis virus using artificial neural network.

[22]. Chiappelli, F., Balenton, N., &Khakshooy, A. (2018). Future innovations in viral immune surveillance: a novel place for bioinformation and artificial intelligence in the administration of health care. Bioinformation, 14(5), 201.

[23]. Vashistha, R., Chhabra, D., & Shukla, P. (2018). Integrated artificial intelligence approaches for disease diagnostics. Indian journal of microbiology, 58(2), 252-255.

[24]. Nahar, N., & Ara, F. (2018). Liver disease prediction by using different decision tree techniques. International Journal of Data Mining & Knowledge Management Process, 8(2), 01-09.

[25]. El_Jerjawi, N. S., & Abu-Naser, S. S. (2018). Diabetes prediction using artificial neural network.

[26]. Al-Massri, R., Al-Astel, Y., Ziadia, H., Mousa, D. K., & Abu-Naser, S. S. (2018). Classification Prediction of SBRCTs Cancers Using Artificial Neural Network.

[27]. Remita, M. A., Halioui, A., Daigle, B., Kiani, G., & Diallo, A. B. (2017). A machine learning approach for viral genome classification. BMC bioinformatics, 18(1), 1-11.

[28]. Zhang, M., Yang, L., Ren, J., Ahlgren, N. A., Fuhrman, J. A., & Sun, F. (2017). Prediction of virus-host infectious association by supervised learning methods. BMC bioinformatics, 18(3), 143-154.

[29]. Iqbal, N., & Islam, M. (2017). Machine learning for Dengue outbreak prediction: An outlook. International Journal of Advanced Research in Computer Science, 8(1), 93-102.

[30]. Chakraborty, I., Choudhury, A., & Banerjee, T. S. (2017). Artificial intelligence in biological data. J Inform Tech SoftwEng, 7(207), 2.

[31]. Sweidan, S., El-Bakry, H., El-Sappagh, S., Sabah, S., &Mastorakis, N. (2016). Viral hepatitis diagnosis: a survey of artificial intelligent techniques. Int. J. Biol. Biomed., 1, 106-116.

[32]. Caicedo-Torres, W., Paternina, Á., &Pinzón, H. (2016, November). Machine learning models for early dengue severity prediction. In Ibero-American Conference on Artificial Intelligence (pp. 247-258). Springer, Cham.

[33]. Salama, M. A., Hassanien, A. E., & Mostafa, A. (2016). The prediction of virus mutation using neural networks and rough set techniques. EURASIP Journal on Bioinformatics and Systems Biology, 2016(1), 1-11.

[34]. Benameur, N., Mahmoudi, R., Zaid, S., Arous, Y., Hmida, B., &Bedoui, M. H. (2021). SARS-CoV-2 diagnosis using medical imaging techniques and artificial intelligence: A review. Clinical Imaging.

[35]. UCI. "Machine Learning Repository," https://archive.ics.uci.edu/ml/index.php.

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