

A Survey on Covid-19 & Its Impacts

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Abstract: In this survey paper, we have gathered nearly 30 papers to help us in the identification of the new corona virus variant and the impact it has had. The global community has been traumatized by the Corona virus disease epidemic that originated in the end of the year 2019 that spread from China. The epidemic has overloaded advanced health care teams all around the world. WHO is actively looking into and reacting to this epidemic. The current statistical increase in the number of patients has prompted the use of AI approaches to foresee the probable result of a COVID affected patient that will benefit the health care teams to make a decision on the manner of treatment to be administered. The intention is to find out whether machine learning-based algorithms can accurately compute whether or not Covid-19 recovery is achievable. We have analyzed papers that looked into the prediction of the new corona virus in suspected ill-patients, subject of vaccine acceptability, misuse of vaccine, effects of fake news among the community and repercussions that resulted in the usage of social media. This survey has assisted us in gathering a wide range of research information regarding Covid-19, its effects, and some of the treatment approaches proposed by other authors.

Keywords: Covid-19, Machine learning, Datasets, Pandemic, Deep learning.

1. Introduction

This survey takes a look at the various reports that were presented as a solution to the corona virus disease that decimated the worldwide community. The corona virus spread that set about from Wuhan, China has overburdened the ultra-modern health care systems all across the globe. The WHO is closely monitoring and responding to the outbreak. The objective of all these studies are to see if machine learning-based systems can predict whether or not Covid-19 recovery will be successful.

A survey of 30 journal papers were reviewed around the topic of Covid-19, its diagnosis, treatments measures and the effects it has caused. In order to detect covid in a potentially infected patient, a variety of diagnostic procedures were used. The RT-PCR test and a Chest CT scan were two of the diagnostic procedures utilised by health care personnels to detect covid. Several articles cited the use of the following: neutrophil-lymphocyte ratio, platelet-to-lymphocyte ratio, and the c-reactive protein to albumin ratio. Some publications looked into the consequences of Covid-19 on the general public, such as the shift to internet shopping, the distress experienced by low-wage workers, and so on.

2. Related Works

The article[21] looked into determining how the knowledge workers scheduled their time through a normal working day. The authors studied the findings from a survey at different phases of the pandemic wave i.e., one survey in the pre-pandemic and the other during the post-pandemic wave. This was done at different times to make sure the longitudinal data analyzed from the 203 participants covering the workdays alone were valid. They also concluded that the DRM(Daily Reconstruction Method) was able to accurately apprehend the difference in their work behaviour. It is also noted that the workers have experienced a comparatively lesser time in commuting. Additionally, a rise in the time spent on work

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and/or personal responsibilities were seen. Some of the effects during the epidemic time were miscellaneous among workers designated with different roles and varied based on the large/small size of the firms.

The authors were keen on linking Work From Home (WFH) with technology that can aid the workers in finding themselves a work-life balance. This was called about because WFH appeared to pose a conflict between work and the employee's personal life. The authors mentioned that the 'Rudnicka et al. (2020)' report had suggested several manageable approaches that will help use technology to create a barrier in this collision by sculpting some necessary boundaries. This 'sculpting of boundaries' can be accomplished by either using planning tools or real-time assistants. Thus, the authors conclude by stating that using technology with barriers in work and personal life could help in completing multiple tasks with efficiency.

The meta-analysis in the article[22] focused on evaluating the potency of the neutrophil-lymphocyte ratio to scale out the severity of the Corona virus Disease. The authors were able to conclude the value of the NLR was able to predict Covid-19 severity. In turn, for patients who were found to have high severity; the NLR could help guide in the decision-making process clinically. According to the article, a persistent reduction in the peripheral blood lymphocyte count could show a

substantial Covid-19 effect on the patient. Although the NLR marker has a higher specificity than the WBC count, it cannot be used to identify severity in the infant stage.

Some drawbacks of the NLR pointed out was that the generalizability of the outcomes have been limited since most of the studies were observed from china; Given that the virus can have various impacts on various environmental/genetic factors, more research is needed to validate the results of their approaches.

The paper[23] focused on looking into the usefulness of the c-reactive protein to the alb ratio to classify the severity of affected victims. The authors' examined and categorized affected victims with severe corona virus into stable and progressive groups as shown in fig.2.1. based on how their sickness developed (severe ill-health or unexpected demise). It is observed that NLR, PLR, CRP/Alb and SII were high in patients of the progressive disease group than in the other.

It was discovered that patients with an increased CRP/Alb ratio experience a significant clinical decline. This ratio is closely linked to the rate of hospital mortality, ICU admission and the duration of stay in the hospital. The authors' thus stated that the information obtained from the CRP/Alb ratio helps the doctors in identifying the risk classification early on for taking the right decisions clinically.

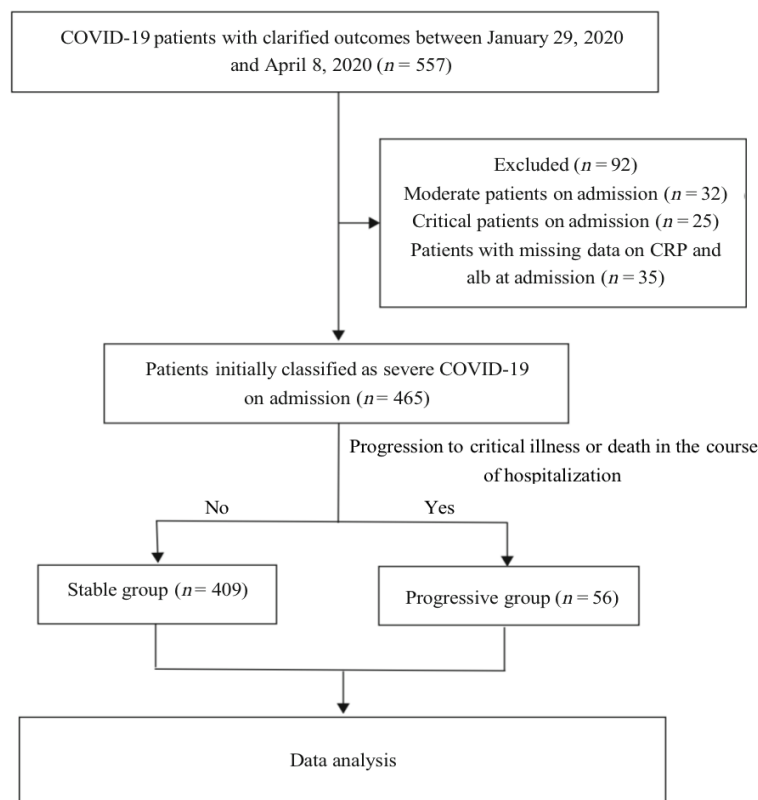


Fig. 2.1. Flow chart depicting the population study

In article[24], it is suggested that the initiative taken by the health care workers to either get vaccinated or not had an influence on the general public's decision on the corona virus vaccine acceptability in Ghana. Authors have conducted descriptive, bivariate and multivariate analyses that produced a result with a value of 39.3% of the health care workers who planned on getting vaccinated against Covid-19. Some of the main causes as to why the health care workers have turned down the vaccines is the unfavorable ramifications of the vaccine, concern regarding safety of taking the vaccines and fear concerning the contraction of corona virus after taking the vaccine. This cross-sectional survey used a convenient technique by implementing a Google form questionnaire and a snowballing technique by motivating fellow medical employees to forward the survey-analysis link. Survey presented that 60.7% were not for the acceptance of taking the vaccine. Certain factors that were connected to the acceptance of the vaccine are the sex, kind of health care worker, family members who had previously contracted the virus and the reliance in the steps issued by the head authorities.

It was noted that male health care workers preferred to take the vaccine when compared to nurses/midwives. On the other hand, medical doctors were less likely to take the vaccine in comparison to the nurses. Some of the drawbacks linked to the survey were: the results were obtained only from the health care workers of Ghana, many submissions from one participant and no data were obtained from health care workers that have no internet access. The authors conclude by stating that the acceptability of the Covid-19 vaccine is dependent on sociodemographic variables, trust in the government's moves, and Covid-19 experience.

In the paper[25] it was seen that Patients with varying degrees of illness commonly experience ailments like fever, dry tussis, sore throat, difficulty breathing, and weariness. It is important to spot the possibly suspected cases and isolate them from the patients that have contracted Covid-19. To determine whether a suspected patient is infected with Covid-19 or not, a diagnosis would be beneficial. The diagnosis can be checked with an RT-PCR or a chest CT. A Start-up worked on paper-based tests that will help detect Covid-19 early on and they aim at providing the results within 30 minutes.

RNA vaccines are an alternative for vaccines; since vaccines take a much longer time to come up with. RNA vaccines make the host cells bring about multiple copies of the encoded proteins that help build a much stronger immune response. Antipyretic medication is also given to the patients. Because the virus targets the lungs, a nasal catheter is required due to the higher risk of hypoxia.

Boosting immunity, washing hands regularly with soap, and maintaining social distance are some of the strategies to protect oneself from the virus, according to the authors.

The article[26] looked at how ever since the lockdown became prevalent, many services and factories were put at a pause. People prefer online shopping over offline shopping because of the risk that is at play here. This paper seeks to explore factors of e-shopping during the epidemic and to identify the products that are preferred by consumers online. This will help in the understanding of consumer behavior, which will benefit online shopping service companies in strategizing their market.

Customers like a long time period for returns, reasonable/affordable product prices, and no-contact delivery. This paper's methodology is referred to be descriptive. Retailers must look into selling essential products to the consumers rather than products of less requirement. The constrained movement pattern of the lockdown, the ease of purchasing in the comfort of our own home and the time-saving factor has contributed to the online shopping attribute of consumers during the Covid-19 pandemic.

The ramifications of corona virus in the livelihood of low-income households is investigated in the report[27]. It also searches for evidence of outward signs of the epidemic's number of casualties, including access to essential services and government assistance programmes, as well as borrower households' coping strategies. The distress signs are visible as workplaces steadily grow more productive, While urban households continue to plummet behind, reduced consumption of necessary commodities is frequent. The paper presents the coping strategies as the increased reliance on informal borrowings. It is concluded that households continue to experience significant discomfort as a result of lower incomes. With low resources, welfare transfers play a critical role in assisting these families. Those in need, however, are excluded at various phases of welfare distribution, as proven by several polls.

The intention of the journal[28] is to observe how fake news and myths affected the emergent Covid-19 epidemic. The study's findings include a number of the concept's negative repercussions. This could include trivial repercussions like the propagation of misleading information to more serious consequences like the misuse of medications to treat the sickness. The article also addresses the various incentives for the transmission of false information, which, among other things, are primarily motivated by financial gain through digital marketing.

In general, previous discussions on false news and its consequences suggest that there are various implications. Fake news not only makes a lot of money by being shared across multiple media channels. However, it can also have a detrimental impact.

The repercussions caused by corona virus on the educational institutions was explored in the article[29]. The content was gathered using a poll that was completed by fifty professors and pupils. The findings found a detrimental effect on the educational system, such as a deficit in human resources, funding in building virtual classrooms, & leveraging technology to provide data and information.

As per the survey, people are experiencing serious academic challenges and are searching for innovative ways to understand. Top officials should recognise the depth of such situations and take proper measures to address them, that will aid in the restoration of normalcy and the improvement of human well-being. On the other hand, Students' and lecturers' lack of technical understanding further hinders the system in order to provide education and support. The proper application of social distancing and sterilisation regulations would also bring about increased costs for the facilities.

The intention in the journal[30] is to look at the corona virus research from a bibliometric viewpoint and see how the publication has affected bibliometric indicators. Bibliometrics are tools that can be used to demonstrate this remarkable occurrences in scholarly works.

The current analysis demonstrates how a rare occurrence has a negative influence on bibliometric markers like the h-index and the Journal Impact Factor. Greater the degree of expertise, greater the potential repercussions of a inopportune event. The Covid-19 research study demonstrates the relative nature of indicators and the importance of context.

The article[1] cites how Corona virus 19 was derived from severe acute respiratory syndrome corona virus 2, a respiratory ailment corona virus that was designated an outbreak in India in early 2020. This covers information about the virus's history and research based on a few questions generated from the virus's human-to-human propagation, the virus's transmission through asymptomatic agents and subsequently confirmed with victims, the disease's manifestation in families ranging

from mild to severe, and by inflicting serious effects on older members of a family, COVID's influence in the gastrointestinal portions of the body also plays a crucial role in identifying its symptoms.

The first issue is how SARS-CoV-2 is presently propagated in Wuhan's epicentre. Secondly, it concerns SARS-transmissibility CoV-2's and pathogenicity in tertiary and quaternary human transmission. The third discussion relates the significance of asymptomatic and pre-symptomatic viral shedding in the advancement of Sars-Cov-2. The next subject concerns the role of the fecal-oral pathway in the dissemination of Sars-Cov-2. The fifth topic is about how to diagnose corona virus and what detection chemicals should be made available. Referring the sixth concern, It all comes down to how corona virus should be handled and what treatment modals are available. One of the problems is whether inactivated vaccines for Sars-Cov-2 are a realistic alternative. The origins of Sars-Cov-2 and corona virus is discussed in the eighth debate. The ninth point is why Sars-Cov-2 is less virulent than Sars-Cov-1. Finally, the authors conclude that Sars-Cov-2 can still be removed from humans if it is not eradicated by quarantine and other methods.

The paper[10] looks into how the corona virus epidemic has made changes in the lives of humans. The considerable impact on daily life and extensive steps are taken to prevent the diseases from spreading further. Institutions, religious and social gatherings have been put on lockdown for a prolonged period of time, and everyone has been advised to maintain a fair social distance of around 6 feet and have elbow-shakes when necessary instead of handshakes. As seen in fig.2.2. people had to undergo a range of stress endured from the beginning up until the end of covid-19 followed by its repercussions. Teenagers had to deal with a lot of stress on top of their developmental process.

Despite this, research shows that gaming addiction and online addiction are on the ascent, both of which have negative psychological impacts. The purpose of this research is aimed to investigate if teenager web browsing habits have any alterations before and after the pandemic, and if so, if lockdown was the major cause for it. In this study, the researchers also sought to discover if there was a link within excessive gaming, overrated internet usage, and corona virus' outcomes.

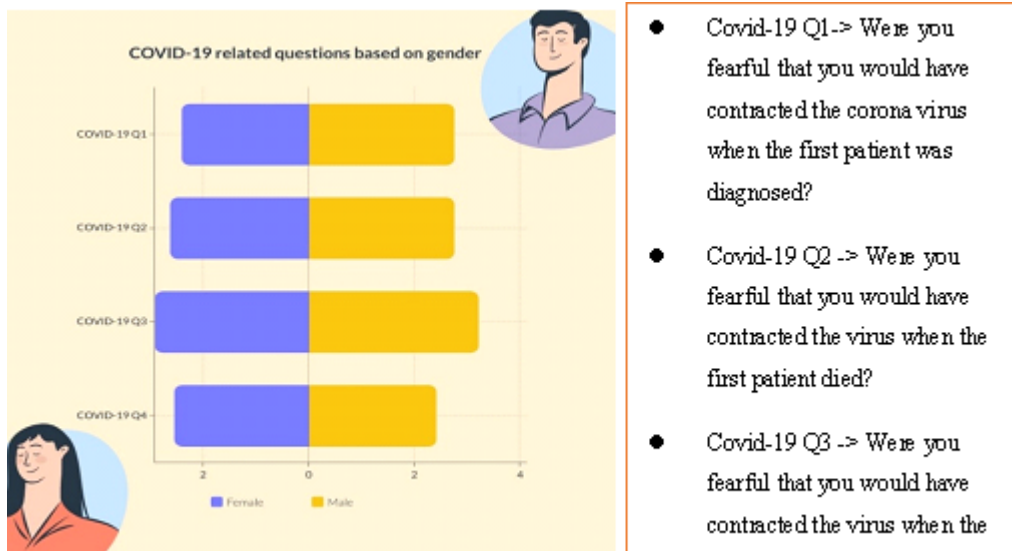


Fig.2.2. Types of covid-19 related questions that were posed to the patients based on gender.

Young adults from various nations answered online surveys, which were then disseminated through social networking websites and teen forums. Surveys about the usage of the social platform, depression, online gaming

and sadness, alienation, and corona virus were among the assessments used as depicted in fig.2.3. Adolescents have expanded their usage of social forums and online streaming, according to the findings.

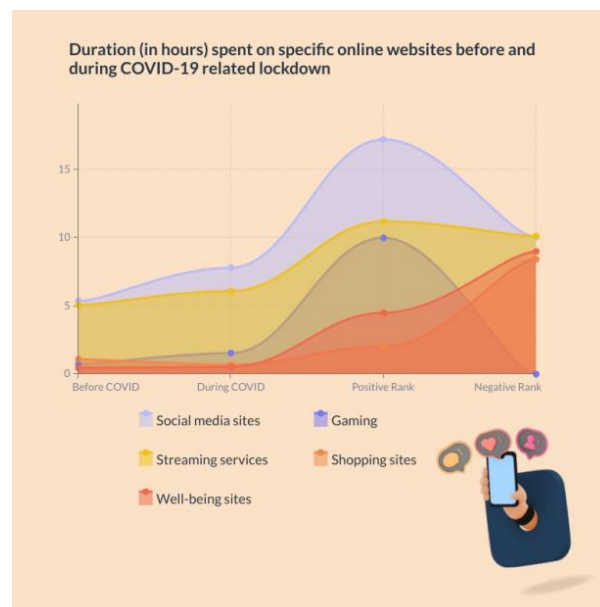


Fig. 2.3. A graph depicting the internet usage during the covid-19 epidemic

Furthermore, people with high ratings on addiction to video games, obsessive internet usage, and social network use also have issues with loneliness, isolation, escapism, insomnia, and anxiety related to the epidemic. Our data show that the corona virus epidemic has a major impact on teenage online use and psychological state of one's being, regardless of background. An emphasis is made on addressing disease outbreak anxiety in order to lessen the adverse effects of the dysfunctional techniques to deal with the aftermath. nML based technologies have played a significant role in tackling complicated problems, and some companies have been quick to

embrace and tailor them in response to the Covid-19 pandemic's obstacles.

The goal of the article[5] is to undertake a systematic literature review on the role of machine learning (ML) as a complete and decisive technique in combating the Covid-19 issue in the areas of epidemiology, diagnostics, and progression.

A systematic search was conducted in several databases using the PRISMA guidelines to recognise the possibly equivalent journals made accessible between December 1st of 2019, and June 27th of 2020. The syntax for search in regard to corona virus was created with corona virus

and ML specific terms. Based on the ML techniques implied to predict, identify and tackle the corona virus issue, the research papers published were divided into three divisions: Computational epidemiology, Early detection and diagnosis, and Disease progression.

To promptly test patients for this novel kind of respiratory and pulmonary disease, the paper[9] presents a method for automatically finding Covid-19 disease by evaluating medical imaging such as X-ray or MRI. They use several algorithms in SMLT to develop a model using a data set of roughly 80 chest X-rays that is publicly available for research purposes, These X - rays are used added in dataset and is used to detect COVID in the patient admitted and also if detected with the unique corona virus then we can recognize COVID 19's damage to the lungs of the patient. The experiment demonstrates

the efficiency of the suggested strategy in distinguishing between Covid-19 illness and other lung diseases based on the various X-Rays given. Given the rapid spread of Covid-19, automated systems for illness identification are required. In this article, a ML strategy to detect new variant of the corona virus illness is suggested.

The method to detect corona virus from x-rays is discussed with supervised machine learning techniques. This method implements supervised machine learning and it includes two main phases to train the dataset developed and implemented and they are the training and testing phase. The training phase is to develop a model to find the difference between x-rays images related to Covid-19 and images related to other pathogens as seen in fig.2.4. and the testing phase is to test the working of the trained dataset.

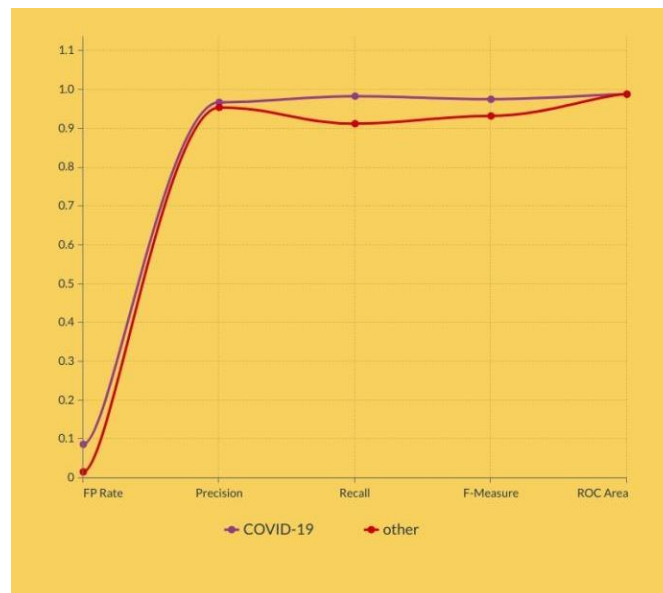


Fig.2.4. Comparison in a graph between covid-19 and other lung illness

To use values from medical images instead of images themselves to train and work with them, we consider a set of color layout descriptors. CLD is designed to capture the spatial color range distributed in an image. Then this color is extracted, this extraction process has 2 steps and they are grid-based color selection and then the discrete cosine transform using quantization. The evaluation revealed the efficacy of the suggested technique, with average accuracy and recall of 0.965 in distinguishing between Covid-19 and other lung disorders with comparable symptoms.

The paper[8] cites that among the key obstacles in the present corona virus pandemic are prior identification and

detection of Covid-19, and the separation of other patients at the least possible cost and in the beginning stages of the disease. Regarding the disease's uniqueness, despite its widespread use in diagnostic centers, diagnostic approaches based on radiological imaging have flaws. As a result, In fig.2.5. we can observe how doctors and computer scientists frequently employ machine-learning algorithms to evaluate radiological pictures.

A total of nearly one seventy articles were retrieved, and thirty seven articles chosen for the research based on inclusion and exclusion criteria to include COVID and exclude other diseases.

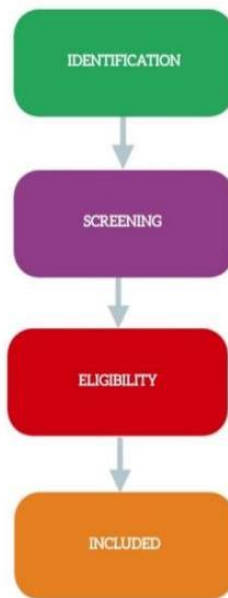


Fig.2.5. Flow chart to identify covid-19 using deep learning in radiology

The review paper gives an outline of the methods used in the process of identification, treatment of corona virus using radiological techniques along with deep learning as shown in fig.2.6. Accordingly, the deep learning algorithms have an outstanding ability to provide an effective and precise system for the identification and detection techniques of corona virus, thus would result in

a considerable improvement in specific values if used in processing modalities. Deep learning with regard to the field of corona virus, the radiological image processing reduces fake positivity and negatives in spotting and diagnosis of this illness, providing new potential that helps serve patients with rapid, inexpensive, and safe diagnostic testing.

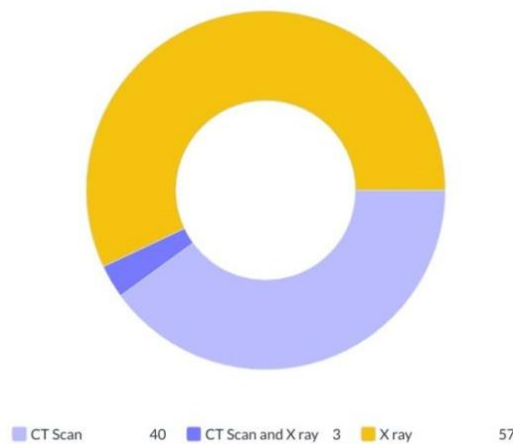


Fig.2.6. A pie chart representing the various radiological scanning techniques by using deep learning to process covid-19.

Corona virus disease is infectious when compared to influenza, therefore cluster contractions are common. Yet, the symptoms of the condition appear to be out of the ordinary such as cold, fever, diarrhoea, headache, body pain. These outbreaks may be contained if individuals with symptoms were tested and their contacts were traced as soon as possible. Unfortunately, Covid-19 individuals have symptoms that are alike to those of common diseases as cold and fever.

The paper[7] predicts that the sequence of symptom manifestation might help patients and medical frontliners

in distinguishing corona virus from the other lung disorders, but still such critical information is mostly inaccessible. For such as that purpose, considering use of Markov Process that is graded partly ordered collection of corona virus observation cases that is used in order to determine the order of detectable symptoms in the variant corona virus patients. Then it is next compared with the evolution of the symptoms in variant corona virus to those of other infections, such as SARS, influenza and MERS,(fig.2.7.) and see what differences we might find.

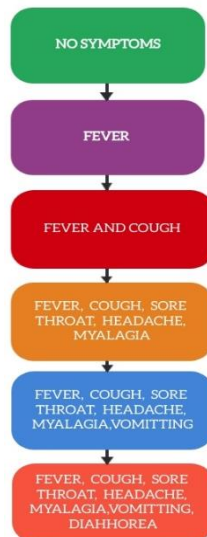


Fig.2.7. Categorizing covid-19, influenza, MERS, SARS using markov's process

Influenza and COVID are not the same, and our algorithm can predict this. According to this concept, influenza starts with a cough, but new variant corona virus, like other coronavirus-related disorders, starts in with fever. New variant corona virus, on the other hand, varies from MERS as well as SARS in the sequence with gastro intestinal issues. Findings of this model agree that the fever must be a filter to admission into facilities when regions begin to reopen aftermath epidemic. Furthermore, the data imply that optimal clinical practise in Covid-19 and other disorders should include noting the sequence of symptom onset. Perhaps the shift from local epidemic to pandemic could have been averted if

such systematic clinical approach had been norm since ancient illnesses.

The report's[6] main goal is to give modern technological features of AI along with other important technologies, as well as significance to deal with variant corona virus and mitigating the awful impacts. The paper opens up AI approaches that have evolved health care department significantly, AI is also made to facilitate in outlining and categorizing models combating variant corona virus, in processes (fig.2.8.) as in screening, prevention, raw information processing, hospitalization procedure, drug discovery and growing advancements, controlling the masses and assistance, and outbreak forecasting.

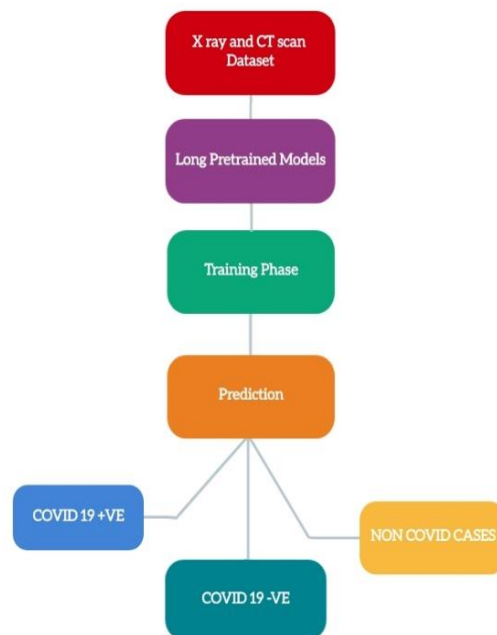


Fig.2.8. Flow chart representing the training of an unsupervised machine to detect covid-19 or not.

The study looks at the relationship between technologies and outbreaks, as well as the possible effects of technology on healthcare coverage, such as the use of natural language, machine learning, and deep learning processing tools. Data plays a significant role in helping society in both Governmental bodies, and frontliners of health sector to overcome the new variant corona virus pandemic. It is a highlighting feature that reminiscent all data is imperfect and imprecise. Thus, it is necessary to take hold of ambiguities along with inconsistencies in the corona virus datasets. In recent times, not a single dataset is dependent in research regarding covid but, varied multiple datasets are considered by researchers related to new corona virus variant.

The article[4] looks into the corruption risks in the corona virus vaccine drive. With new variant corona virus vaccines licensed for use among varied parts in the world, the amount and complexity in the allocation, production, and distribution in a global scale is not precedented in any part of the history. Thus it paves way to create corruption concerns, which may jeopardize critical public health objectives. These hazards include poor and fraudulent vaccines entering markets, vaccines missing inside preorganised networks, inconsistency within emergency money earmarked for vaccination creation and deployment, favouritism, partiality, along with misleading procurement systems.

The corruption threats listed must be detected, reduced by respective bodies in order advance the citizenry's access

to safe new corona virus variant vaccinations, particularly with the most vulnerable and marginalised populations. For these efforts, the UNCAC is a robust worldwide foundation. During the pandemic, vaccines were made illegitimately available for large sums of money, given to specific people based on biases, and had other consequences such as fake vaccinations, illegal business on public property, and a high demand for vaccines when they were needed because they were all swept by some private groups at a stretch. This must be prevented by ensuring effective vaccine deployment without waste or release to a nepotistic group by placing vaccine distribution in the hands of the national or state government.

The authors in the study[3] are inspecting corona virus CT images using a clustering method. When it comes to diagnosis, COVID - 19 is the successor of pneumonia. As a result, researchers are attempting to address numerous variables that may aid in the identification of severe pneumonia. Image segmentation is a procedure to perform image processing by analysing and categorizing applications. As a result, the desired end result (as seen in fig.2.9.) is aimed at creating an image segmentation strategy for corona virus utilising CT images. Image segmentation method is used to enhance the density peaks clustering (DPC) distribution with the GEV distribution. DPC is speedier and produces more stable results than other clustering methods. However, without visualisation, determining the ideal number of clustering centres is challenging.

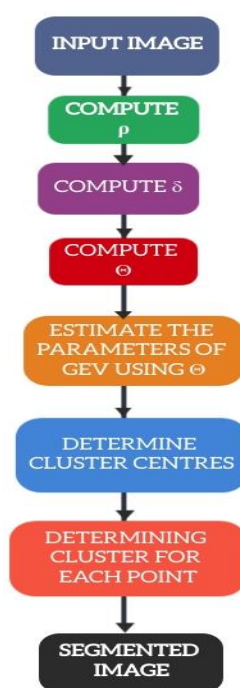


Fig.2.9. Flowchart indication the segmentation process of the acquired CT image.

Thus the ideal number of cluster centres is necessary for improved analysis and performance, and GEV is employed to find the appropriate threshold value for spotting the best set of centres, resulting in an improvement in the segmentation stage. Among twelve corona virus CT scans, the suggested model is used. It was also compared to classic k-means and DPC algorithms, this outperformed them on numerous metrics, including PSNR, SSIM, and Entropy.

The authors in the study[2] focus on the rising worldwide issue: the continuous outbreak of coronavirus illness

(Covid-19) and its variations. Sars-cov-2, a newly found coronavirus, is sweeping the globe among different age groups like shown in fig.2.10. The amount of people with illness arising in a day in China has been reduced, thanks in significant portion to restriction measures, although it has already become a worldwide epidemic. Massive outbreaks in Italy, Iran, South Korea and others are the cause of an increase in cases worldwide, resulting in many modifications of the variation itself, triggering waves of dissemination all over the world.

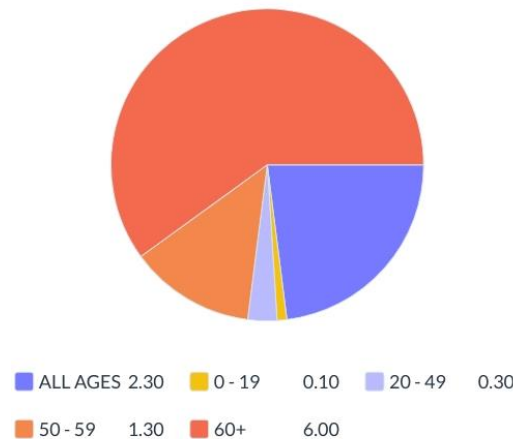


Fig.2.10. The spread of covid-19 virus across different age groups.

The article[11] claims to be beneficial in investigating Corona virus by achieving a range of 95-99% in the F-measure. Three forecasting methods are used here are: PA, ARIMA model, and LSTM. These had been put to action in order to test the results over a span of 7 days - the recovery and death count due to Covid-19. The predicted results had an accuracy rate of 94.80% in Australia and 88.43% in Jordan.

Deep-learning methods allow computational models with several processing layers to learn data representation over numerous abstraction levels using deep-learning

techniques. They have great accuracy rates and, in some cases, can enhance human output. The following two categories were focused in this paper,

- 1) CT Scan Diagnosis Using Deep Learning,
- 2) Covid-19 Infection Prediction Using ML Techniques

Diagnostic model based on VGG16 as shown in fig.2.11. was developed to discern if a patient had corona virus or not using X-ray images of the chest. Using an enhanced dataset, the model was able to detect Covid-19 quickly and reliably, with an F-measure of 99%.

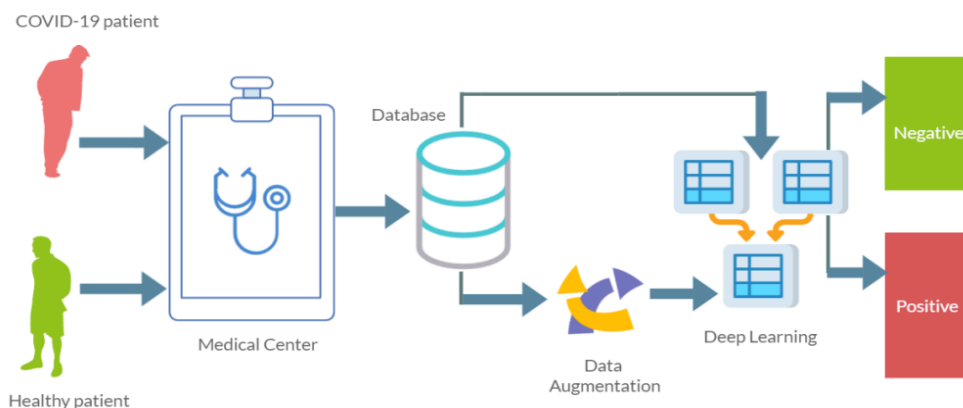


Fig.2.11. Diagnostic model analysing the medical data of a healthy and infected person to identify if they are covid positive or not.

The research[12] compares several machine learning classification methods for processing patient data and determines which is the most accurate approach for forecasting correct recovery possibilities. The input data and the precondition of the Covid-19 patient are compared to the past dataset. The data from the dataset is analyzed in order to extract meaningful information from it and to make a decision based on the results. This is where the data gets cleaned, transformed, and modeled.

The data that has been analyzed is then trained and tested. Test data is used to evaluate the performance of the algorithm you're using to train the machine, such as its accuracy or efficiency. These data are then used to anticipate the model's greatest accuracy outcomes using different machine learning classification techniques. After preprocessing the data and

analyzing the columns to determine the dependent and independent variables, various ML algorithms are implemented for uncovering patterns and for obtaining most accurate results.

The aim of the study[13] was for creating and comparing the prognosis identifying ML models according to the non-invasive clinical, invasive laboratory and demographic raw information collected and obtained on the day of admission into hospitals for patients, two of which were using each of these groups and one using both.

Invasive, noninvasive, and both groups were used to compare three SVM models. Findings demonstrated that non-invasive characteristics would be able to predict mortality in a comparable way as shown in fig.2.12. to invasive features and on par with the joint model.

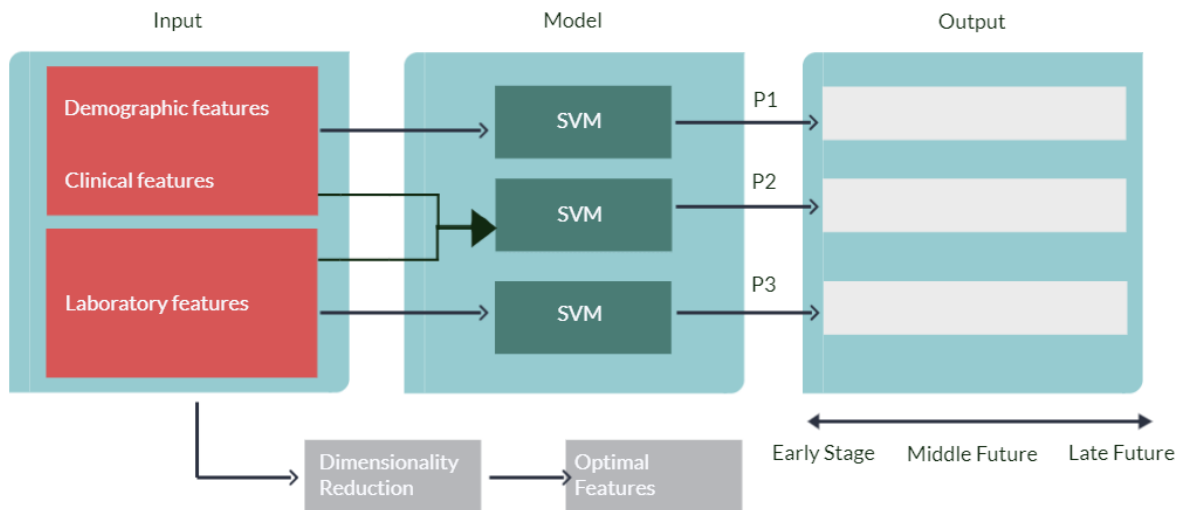


Fig.2.12. A block diagram representing the usage of SVM models to predict the mortality rate.

Noninvasive models that predict early death can help us figure out where and when to act. These models, when combined with cutting-edge technology like wireless wearable devices, can provide strong frameworks for a variety of medical assignments including patient triage.

The study[14] trains the ML models to investigate survival rates with respect to the person suffering from corona virus (or is suspected to have contracted the virus). It breaks down who's most likely to survive than die. They use historical data to train this algorithm, which includes health background, data on demographics, and corona virus linked information.

The study also claims that the suggested technique can accurately predict patients that are exposed to higher danger in the four clinical stages, allowing for better hospital capacity planning and prompt treatment. It uses a characteristics vector with data gathered from a

directory that comprises data for 4,700,464 verified/potential corona virus cases to train our neural networks. Information on comorbidities, data on the demographics, and raw information about the corona virus episode are among the 21 items.

The study demonstrated that the development of our neural networks could cope and complete the extremely difficult task of discovering and selecting the best estimator being part of the general hypothesis testing approach. Using methods such as the ensemble and classical machine learning algorithms, the study[15] has sorted the clinical reports into four separate classes. Feature engineering was carried out using the Bag of words (BOW), the term frequency/inverse document frequency (TF/IDF), and report length. These features were included to both traditional and ensemble machine learning classifiers as seen in fig.2.13. By achieving 96.2 percent testing accuracy, Multinomial Nave Bayes and logistic

regression outperformed the other ML methods. Recurrent neural networks may be utilized in the future

to improve accuracy.

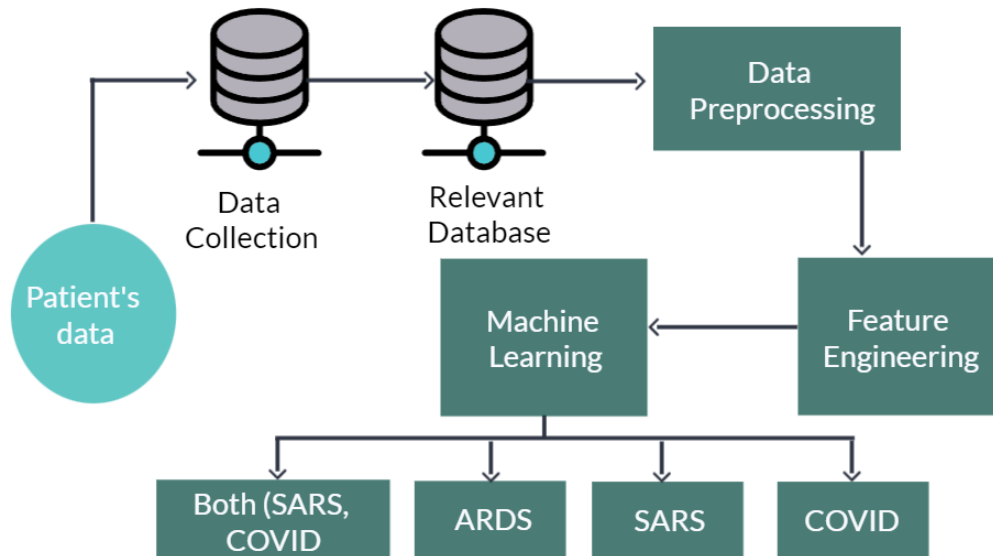


Fig.2.13. A representation of the process of feeding patient’s data into the database.

They used 212 clinical reports that were classified into four groups: SARS, COVID, ARDS, and both (COVID, ARDS). Machine learning algorithms are used to classify the clinical data into four groups. Following the classification process, it was determined that logistic regression and the multinomial Nave Bayesian classifier gave good results., with a precision of 94%, a recall of 96%, an f1 score of 95%, and an accuracy of 96.2 %.

The study[16] constructed a Machine Learning model based on the records of 51,831 people who were tested. This model makes a claim to be able to predict the coronavirus disease results accurately. In simple terms, this model identifies COVID-19 using simple characteristics that may be obtained by asking fundamental questions like sex, age, and possible interaction with an infected individual, among other things. This model can be utilized especially when the testing resources are very limited.

To generate and create predictions, a gradient-boosting model of machine learning was created utilising decision-tree base-learners²⁰. Gradient boosting is widely recognised as the cutting-edge technique for

predicting tabular data²¹, and it is used by many successful machine learning systems.

The study[17] mainly looks into distributed architectures and parallel computing- different types of clouds, grids and clusters, grids which help to execute tasks with a high degree of parallelism and at a high throughput as shown in fig.2.14. to tackle the spread of COVID-19.

High throughput approaches are required to process several huge data sets for the reduction of the SARS-Cov 2. Here Hadoop and Spark are well-suited to deploy for the processing of big data tasks for COVID-19. They are also used in bioinformatics for gene analysis, MD simulation, and in-silico docking.

The research of COVID-19 has resulted in the utilization of some of the world's most powerful and fastest supercomputers, including SUMMIT by IBM— which was utilized to undertake virtual high-throughput screening against SARS-CoV-2 targets for high-throughput gene analysis and drug repurposing, as well as Sentinel, an XPE-Cray-based system made use of, to examine natural products.

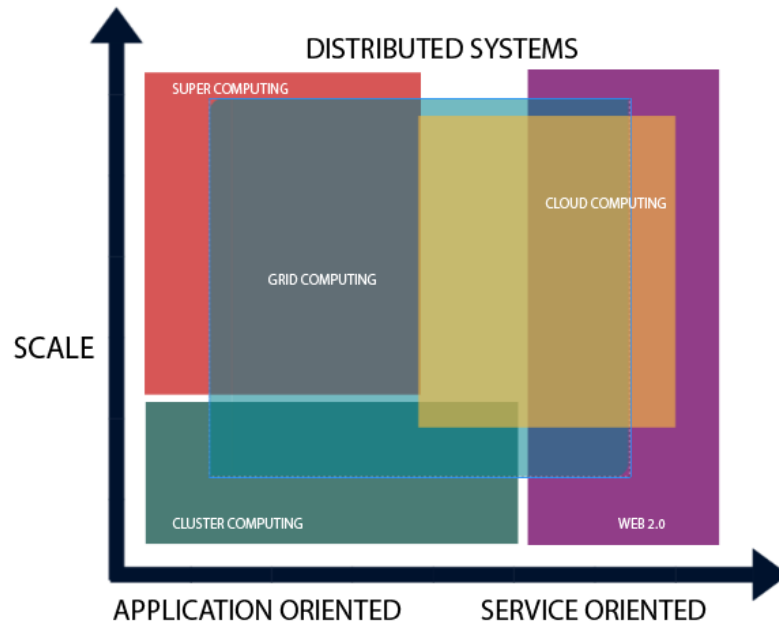


Fig.2.14 A graphical representation of distributed systems

From the article[18] we can comprehend that in the long term, standard models have demonstrated poor accuracy. Alternatively, to the susceptible–exposed–infectious–removed (SEIR) model and the susceptible–infected–recovered (SIR) model, this study compares soft computing and machine learning models and methods for forecasting the pandemic caused by COVID-19. They also claim and believe that by combining SIER models and machine learning, they may achieve real innovation in outbreak prediction.

A modified logistic regression is used here. This was done with the help of progressive algorithms like the Genetic Algorithm, Grey wolf optimizer and the Particle swarm optimizer. It was found that GWO provided the results with the highest accuracy and smaller processing time compared to the other two algorithms. This paper tested the applicability of two ML models: MLP and ANFIS that generated good results.

Although, while considering the fact that, at the moment, there is just a limited quantity of training data available, we can expect that Machine learning can further develop into predicting more accurate results in the future.

The study[19] makes use of a new approach to predicting case occurrences in the near future by analyzing past instances. The following steps are involved in making this happen:

- Poisson distribution: To develop a model for the series interval's gamma and the number of the daily incidence.

- Effective reproduction number estimation: Taking an assumption for a short interval of time, that the value stays constant.
- Calculation of future occurrences: Using posterior distributions to predict future incidence cases, while making an assumption that the current transmission rate would remain constant or fluctuate by a specific amount.

This model was put to test by predicting and forecasting the number of patients affected by COVID-19 in a single state of the United States of America and obtained fairly accurate results. A significant and drastic deviation from the actual results may point out the fact that the nature of transmission of the disease may have changed over time. This modeling has been claimed to be easy to adapt and can be implemented immediately for local and state planning.

A machine learning model was suggested in the study[20] which uses Logistic regression to determine whether a patient has COVID-19 or not. The data set used for this has been obtained from Kaggle and it has achieved 92% accuracy.

Logistic Regression: It is a straightforward and relatively simple machine learning algorithm. that is widely utilized. Logical regression is an analytical and statistical approach that is used to predict binary classes. It is widely used for classification problems as shown below in fig.2.15

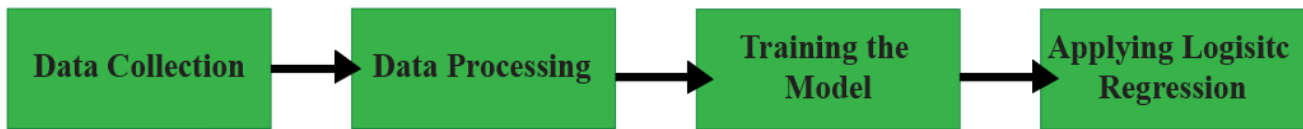


Fig.2.15. A flow diagram representing the logistic regression

This model has taken into consideration variables such as diabetes, pneumonia, hypertension, chronic obstructive pulmonary disease, asthma, renal disease (End stage kidney disease), obesity, cardiovascular disease, tobacco consumption, and contact with other covid-19 patients, thus achieving a 92% accuracy.

3. Conclusion

This report holds the study of several papers related to the novel corona virus variant and its impact, that has affected the community physically, mentally, socially, economically and globally. This report also encapsulates the ways the new corona virus variant can be prevented using vaccines, predicted using ML techniques, deep learning using radiological modalities and so on. This also throws light on the aftermath effects of new variant corona virus's impact of social platforms usage, gaming and surfing as well. This also informs us about the ways to deal with anxiety and depression which is the end result of the pandemic. Finally this survey also holds details about the misuse of vaccine by certain individuals and its impact in the society as well.

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