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Review Article

A Survey on Prevention from Emerging Viruses

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Abstract - *A small collection of genetic code, either DNA or RNA is known as virus, which will be surrounded by a protein coat. It cannot replicate alone. The data of the worldwide pandemic corona virus disease obtained from the World Health Organization made its impact to the world and has now infected millions of people across the world. Considering these situations, In the absence of highly effective drugs, vaccines many measures are used to manage the infection, the only feasible way to prevent from COVID-19 is to maintain Social Distance and by wearing Face Mask.*

Avoiding social contact might result in the reduction of spread of virus among people. The demand for travelling is expected to reduce and less usage of public transportation. Social distancing limits physical contact and might result in social isolation. It also assists in bringing down the interactions among people to slow down the spread of virus.

To create safe environment around us, we propose a Real Time System which determine both social or physical distancing and protective face masks by deploying the model using raspberry pi in public places that can recognize the violations and monitor activity via cameras with the help of Artificial Intelligence and Machine Learning Algorithms

Keywords *- Virus, COVID-19, Social Distancing, WHO, CDC, Face Mask, Artificial Intelligence, Machine Learning*

I. INTRODUCTION

The extensive branch of computer science is the Artificial Intelligence (AI) is relevant to the evolution of smart machines which have the ability to execute tasks that requires the human intervention and intelligence. AI is an interdisciplinary technology which compromises of variety of implementations, but the improvements in machine learning and deep learning are becoming the most widely used branch in almost all the industries. Artificial intelligence (AI) is what makes it possible for machines to assimilate from the experience, adjusting with respect to new input data and execute human-like tasks. Most AI instances that is heard about – ranging from computers that can play chess to self-driving cars – depend much on natural language processing and deep learning. The computers are trained using these science and technologies to accomplish tasks by processing huge amounts of data and detecting the patterns in data that is processed.

Machine Learning is the process of instructing computer system to train on how to obtain accurate predictions on the provided data set. It is a field where computers get trained to behave like people. They are trained using Algorithms and later predict the outcome. There are different kinds of ML algorithms, with hundreds publishing every day. Broadly machine learning algorithms are of 3 types such as supervised, unsupervised and reinforcement learning.

Internet-of-Things (IoT) is a system that is inter linked, Internet-connected objects that can gather and move information without human mediation, over a wireless remote organization. The individual or business prospects are various.

An IOT framework consists of good hardware components that allow use of embedded systems such as processors. Sensors and communication devices, to gather, transmit and act on the information they receive from their surroundings. IOT devices sends the sensors data that are cumulated by coupling them to an IOT gateway or it might be any edge devices where that data can be sent to the cloud for further analyzation.

The combination of ML and IOT has already created new paths for the future technologies. Everything starts with data, sensors which sometimes questions the privacy of the people.

More constant and concurrent movement across international countries by tourists, workers and refugees. Social distancing which means an action taken to reduce quick spread of emerging viruses. When referring to a person maintaining minimum distance (6 feet or more) between one and another person to avoid getting infected.

The CDC or also known as Disease control and prevention Centre has reported as avoiding physical contacts as set of"methods for reducing frequency and closeness of contact between people in order to decrease the risk of transmission of disease". People who are near the infected ones pose a great threat to themself and the society.

If he/she is being tested Positive to COVID-19, the contact tracers identify the folks who might have meet them and makes certain they quarantine themselves to end the further out spread of the Coronavirus. Physical distancing is particularly important in huge gatherings and crowded arears, where people are close to each other.

Thus, it plays a crucial role in times situations like these. The usage of masks may help preventing people. Hence having the knowledge of importance of social distancing and face mask we are coming up with a project which could help the society by Detecting the Distance between the people and whether they follow the distance or not.

Fig.1 Ways of Preventing Virus

II. RELATED WORK

In this paper, we endeavor to arrange the different Coronavirus research exercises utilizing data science, where we characterize data science comprehensively to envelop the different strategies and apparatuses—including those from man-made reasoning (computer-based intelligence), AI (ML), statistics, modeling, simulation—that can be utilized to store, cycle, and concentrate experiences from information. Just as investigating the quickly developing group of late examination, we review collective datasets and archives that will be utilized for additional process to follow Coronavirus extension and moderation methodologies. A feature of this, we present a bibliometric examination of the papers delivered in this limited ability to focus time. At long last, expanding on these experiences, we feature normal difficulties and entanglements saw across the reviewed works. We additionally made a live asset repository1 which we mean to retain refreshed with the most recent assets as well as fresh papers and datasets.

Data scientists have been dynamic in tending to the arising moves identified with Coronavirus. This model has been composed of make accessible a summary of progressing work for the more extensive local area. We have endeavored to make five wide commitments. We originally summed up openly accessible collective datasets for use by analysts. This is expected as a local area asset to abbreviate the time taken to find important information. We at that point introduced significant use instances of data science, which can possibly help in the pandemic. Following this, we studied a portion of the progressing research around there. As the paper is primarily planned for a software engineering and designing crowd, we subjected our investigation around the various sorts of datasets accessible. From this, we widened our examination and introduced a bibliometric investigation of thousands of distributions as of late. At last, we featured a portion of the regular difficulties we saw as a component of our precise audit, e.g., accessibility of information and protection concerns. Likewise note that a considerable lot of the frameworks talked about in this paper are not operational yet. Considering this, we mean to continue to refresh our live asset storehouse with new data. [1]

They propose a new model of dynamic reconnaissance for Coronavirus through AI. Both old and late occasions of virus infection illness episodes have demonstrated us that we do not have compelling strategies to screen the entire populace, and endeavors are neglecting to stop the pandemics. In addition, at this stage, social separating and home isolate are just estimating to forestall the spread of Coronavirus contamination.

The reason for our venture is to present a vigorous strategy for utilizing discourse acknowledgment procedures through a portable application in investigating hack hints of suspected individuals who already were healthy, experiencing a respiratory affliction, and effectively screen the advancement of their indications continuously. The proposed portable application is essentially a device to tell the clients whether his/her cough sound is disturbing or not and might be utilized to analyze the illness dependent on the affectability and particularity of an infection. The high-level procedures of neural organizations are utilized to examine cough sounds in different respiratory illnesses, particularly Coronavirus, which is critical to make this application more proficient. The application is intended to follow the quantity of associated cases found in various districts with the nation, comprehend the example of spread of contamination, effectively advise the nearby wellbeing specialists to take fundamental measures, and thus, break the transmission to forestall infection episode. This model can be applied in comparative future flare-ups and help make mindfulness among individuals. The proposed idea can possibly shape future works in growing further developed dynamic wellbeing observation. [2]

In this article we introduced a potential answer for Coronavirus fundamental patient separating utilizing Man-made consciousness. In the initial segment of the article, we depicted the means that are needed to clean the information dataset, to deal with missing information and to lessen the impacts of imbalanced preparing information. In the second part we introduced our half breed PSO-SA calculation, which is a conventional answer for programmed man-made consciousness model determination and hyperparameter tuning. We utilized this calculation to consequently locate the best man-made intelligence model and tune its boundary to coordinate the setting of the issue, to expand the assessment measurements like exactness, review, or AUC.

After the algorithm being run on various occasions, we introduced the best three models and the most amazing aspect them was chosen for starter quiet separating. The algorithm with the most elevated score was the Additional Tree Classifier with 199 assessors and it got a f1-score of 98.2% with an accuracy of 99.8% and 96.8% of review, which is an amazing outcome. In the last piece of the article, we utilized component significance to clarify the aftereffects of the chose Additional Tree classifier. We clarified the effect of each element from the preparation information, this way assisting the specialists with comprehension, decipher and assess the choices of the algorithm. By clarifying and seeing each outcome and choice of the calculation, we attempted to expand the dependability and the ease of use of this algorithm in medical clinics. As new and more complete datasets with respect to Coronavirus will be distributed in various nations, it would be extremely valuable and down to earth to arrangement a ceaseless learning pipeline, to improve the grouping execution of the model. It is valuable to screen the wonders of" idea floats", which for this situation would mean an adjustment in the conduct of the infection (suggestive changes) as expected or identified with various topographical areas or populaces. There is additionally a requirement for more clinical tests to check whether the hypothetically excellent outcomes are approved in the clinical practice. The contribution from the momentum specialists would likewise impact the advancement of our exploration. [3]

The Coronavirus episode showed up in Wuhan in December 2019 and spread quickly everywhere on the world. The Coronavirus illness does not yet have a clinically demonstrated immunization and medication for treatment. The main actual variables in diminishing the spread of the scourge are washing hands, lessening social distance, and utilizing a veil. Today notwithstanding clinical examinations, PC helped considers are additionally broadly done for Coronavirus flare-up. Man-made consciousness strategies are effectively applied in plague considers. In this investigation, fluffy principle basing framework (FRBS) used to anticipate the quantity of Coronavirus day by day cases. Because of the investigation, the quantity of every day cases was effectively assessed with FRBS (R2 = 0.96, MAE = 186 and RMSE = 254).

The Coronavirus flare-up has influenced in excess of 210 nations starting today. The quick expansion in the quantity of cases made medical services ventures breakdown. Nations have dealt with serious issues, for example, medication, work force, and clinic limit. Every nation was taken on measures to lessen the spread of the infection. Also, nations are making expectations for the future circumstance of the Coronavirus episode by utilizing man-made reasoning techniques. Along these lines, the weight of the wellbeing area can be diminished by predicting future circumstances and making systems and arrangements. In this examination, the quantity of day-by-day cases in Turkey were assessed by FRBS strategy. Because of the examination, it was seen that the quantity of day-by-day cases could be assessed effectively (R2 = 0.96, RMSE = 254, MAE = 186). [4]

COVID19 has its serious effects on respiratory system and might lead to death in extensive cases. Our main intension here is to automatically detect the patient suffering from COVID19 through X-ray images.
A dataset containing X-ray images of patients who are having normal bacterial pneumonia, patients with Covid-19 disease, and normal diseases, were made use for the Coronavirus disease detection. The main goal of this work is to assess the outcome of state-of-the-art convolutional neural network that is being used in the recent days for medical image classification. The procedure is specifically called Transfer Learning.

Using transfer learning, outcome and performance are uplifting and demonstrate the effectiveness of deep learning, and also much focused on transfer learning with CNNs to automatically detect the abnormal X-ray images from datasets, of the people suffering from the Covid-19 disease.
In order to achieve high performance, clusters of common bacterial-pneumonia X-ray scans were being added to the dataset, in order to train the CNNs to distinguish Covid19 disease from common pneumonia flu or influenza.

On the basis of prediction, it is demonstrated successfully that deep learning with CNNs may have notable effects to automatically detect and extract essential features from the X-ray images, associated with the diagnosis of the Covid-19

One of the advantage of automatic detection of Covid19 from either medical image leads to the reduction of exposure of nursing staff and medical staff to the outbreak.
Also it is noteworthy that the MobileNet v2 effectively distinguishes the Covid-19 cases from viral and bacterial pneumonia cases from the particular dataset.[5].

The Covid Illness promoted as Coronavirus is a profoundly contagious viral disease and seriously affects worldwide wellbeing. It affected the worldwide economy additionally seriously. In the event that positive cases can be distinguished early, this pandemic infection spread can be shortened. Forecast of Coronavirus infection is worthwhile to distinguish patients at a danger of medical issue. Uses of Man-made reasoning (man-made intelligence) methods for Coronavirus expectation from X-beams can be exceptionally valuable and can assist with beating the deficiency of accessibility of specialists and doctors in distant spots. This paper proposes an exchange learning model utilizing Google net for Coronavirus forecast from chest X-beam pictures. For picture grouping we utilized Google Net which is one of the CNN design and is additionally named as InceptionV1. The decidedly arranged pictures by our model demonstrate the presence of Coronavirus. The outcomes got in Coronavirus

forecast utilizing Google Net with a preparation exactness of 99% and testing precision of 98.5% underscore the utilization of Move Learning models in illness expectation.

In this paper, a system for utilizing Google net to foresee Coronavirus tainted cases from understanding chest X-beam pictures is introduced. We showed how move learning can be adequately utilized for novel Coronavirus expectation. This model can be utilized for quick and dependable finding of Coronavirus from patients\' chest X-beams. Our prepared model had the option to get a preparation precision of 99% and testing exactness of 98.5%. This programmed Coronavirus expectation framework can be utilized by essential wellbeing laborers in far off where the accomplished specialists are not accessible. This work can additionally be reached out for building an enormous dataset of X-beams of Coronavirus and non-Coronavirus patients enduring with other Pneumonia infections to additionally improve explicitness and affectability further. The framework can be coordinated with the Web of Things (IOT) to additional help the clinical professionals as it has been spreading at a quicker rate and till now its immunization has not been found.[6]

This system proposes of resolving the covid-19 using computational intelligence techniques. Computational intelligence is classified into five different principles: neural networks, fuzzy logic, evolutionary computation, computational learning theory, and probabilistic methods.

Evolutionary computation initially creates a set of candidate solutions and refines the set iteratively. The set of candidate solutions at each iteration is called the population. By stochastically removing the less-desired solutions and putting small random changes in the current generation, the next generation is produced.

Techniques including Computational intelligence are much effective and successful in integrating variety of systems having concern with the challenges of COVID19 diseases. Before we discuss about the specified issues in which computational intelligence are used to clear up to fight COVID-19, we are supposed to understand the past and different categories of this method.

On the basis of principles of computational intelligence, further clarification can be made on what types of issues can be solved with when fighting against COVID-19 with computational intelligence.

we can classify techniques of computational intelligence into five broad categories: neural networks, fuzzy logic, evolutionary computation, computational learning theory, and probabilistic methods.

artificial neural network applies the principles of deep learning and tend to achieve more level of representation learning.

Fuzzy logic is particularly the main principle of computational intelligence and empower measurements and process modelling for complicated processes in real life. Not similar to artificial intelligence where we need accurate idea, fuzzy logic can applied with incomplete and even incorrect data applied in a process model [7].

This paper is devoted to study of recent viruses, detection and prediction of viruses using AI and Machine Learning Techniques. Recently in December 2019 a new virus was discovered named coronavirus. So, to detect this type of viruses in the future and present, we can use AI and Machine Learning concepts for the detection of viruses. Artificial intelligence (AI) research is growing rapidly within the medicine research. In 2016, Artificial Intelligence projects on health care attracted more investment than Artificial Intelligence projects within any other sector of the global economy. It is well, known that in feature we may overcome the different types of new viruses across the city. The detection of the viruses is done with the help of the MS Kinect sensor. This sensor analyses human breathing, and if that person is not able to breathe properly then that person must be suffering from coughing, sneezing, etc. This sensor will be fixed at the public places if it identifies the person who is suffering from breathing problems, the person will be sanitized or will be provided with the mask or if it is a serious condition that person will be admitted to the hospital for the treatment. So that the spreading of virus decreases at public places. This sensor can also be used for checking the heartbeat pluses of the humans and animals also. Animals should also be monitoring with their health conditions because there are chances of spreading viruses from animals also.

In this paper the research work in the detection of virus, study of virus and prediction of virus using Artificial Intelligence and Machine Learning Concepts is successfully done. The data sets for the predicting the virus is also been verified and analyzed with the recent data. This system can be implemented in the future upcoming generations also for the detection and prediction of virus, if any new virus gets discovered [8].

Social Distancing detection can be made either by a live video, or captured video. Human Detection can be made using CCTVs and Drones. Closed Circuit Television (CCTV) can be used as a video capturing tool where Distance between people can be seen. But CCTV provides the recorded video and it is not that much efficient due to its limitations. It will not be Reliable. In such Cases Drones can be brought to circumstances as the areas under Drone surveillance can be divided among areas such that there is no loss in the track of humans. Social Distancing Can be monitored by using Computer Vision, OpenCV and Deep Learning.

First, Human detection will be made through either CCTV or Drone followed by calculating distance between two people. Finally comparing the value obtained by calculation with the Standard Distance (6 feet). A frame will be depicted where Red Frame represents violating Rules whereas Green Frame when rules are followed. In Scenario of Violating the Rules,

the local Police Authorities will be notified Immediately. Thus, when the authorities get to know about such scenarios, they can reach the exact location and disperse people. Hence the Authorities time can also be saved from visiting every place [9].

Social Distancing Can be monitored by using Computer Vision, OpenCV and Deep Learning. First, Human detection will be made through either CCTV or Drone followed by calculating distance between two people. Finally comparing the value obtained by calculation with the Standard Distance (6 feet). A frame will be depicted where Red Frame represents violating Rules whereas Green Frame when rules are followed. In Scenario of Violating the Rules, the local Police Authorities will be notified Immediately. Thus, when the authorities get to know about such scenarios, they can reach the exact location and disperse people. Hence the Authorities time can also be saved from visiting each and every place [10].

A Thorough study has been done on authorizing and arising technologies for avoiding distance between two individuals. Our main aim is to bestow upon new ideas on physical distancing and the machineries that can be carried out to practice the same. Data Sharing and AI Technologies are playing a major part in health monitoring and There are a few future technologies such as AI, blockchain,3d-printing etc.., that can be used as applications for social distancing. Social Distancing is practically used to monitor and keep an eye and distance between two individuals with the usage of Bluetooth, ultrasound, and Thermal technologies. Real Time Monitoring can be brought into use with the help of WI- FI, Computer Vision which helps in crowd detection, lockdown violation detection. WI-FI based Technologies are focused mainly on indoor places as it needs an access point for localization and it has a range set which cannot be feasible for outdoor places.

Other environments, like wire-less technologies, Bluetooth, GPS, cellular technologies can be considered. mass observation and modelling the spread of the virus, the movement data or information can be used to estimate the network traffic by virtue of huge locational data information given by carriers and the recent advancement of machine learning [11].

For all the models, MobileNetV2 is used as the core model for observation. The model needs a framework to implement a process at a minimum speed of 2-3 frames per second. MNV2 gives a great benefit in computational cost when compared to other normal 2D convolution model.

The Viola Jones Face Detector cascaded Hear feature is one such face detector used widely. Similar model for face detection was put forward by Li et al. That is Multi-View Face Detector using surf property.

Additionally, a tree composition based deformable part model was proposed. Thus, with the advent of deep learning, CNN based face detectors are being widely used by the research community and industries. CNN form models learn face representations from the annotated data [12].

Current process uses camera video feeds from the Network Video Recorder (NVR) which are cascaded using RTSP then the frames are converted to grayscale to improve their rate or speed and exactness later on sent to processing model which is inside raspberry pi4. In the model MobileNetV2 architecture is used as the core model for observation. It supplies a large cost advantage when compared other models. This model also contains SSD MultiBox Detector, which is a neural network planning that has been trained on a huge data of images, which are Image- Net and Pascal-VOC for highest class of image categorization. [13].

As known coronavirus disease pandemic is a major health crisis. Many plans of actions were implemented to combat it, including these measures such as wearing masks, hygiene, and maintaining public distancing. The competition of the events of these diseases from week 2016 to 2020 and performed linear regression analyses.

The weekly occurrence of reported cases was plotted using MS Office and SPSS. Linear regression analyses were carried out, the data were deliberated yearly. The equation of linear trend approximated with the equation $y=\alpha x+\beta$. here a positive α coefficient denoted a high value, and a negative α value denotes a low value. The value of α represents the slope of the trendline and the measure of effects [14].

A structured study was conducted. Databases were used for gauging the barriers related or linked with SDMs and describe accordingly. Few studies about meta-syntheses were performed to examine the best distance to keep away from transmissions and ethnicity outcomes.

Maintaining Social distancing among people and population behavioral changes with socially and economically impacted low disruptive than total lockdown can control COVID–19. Control measures made an essential reduction in disease transmission in early February 2020. This observation informs the same measures would also have pretentious COVID–19 transmission in the community, since some resemblance and differences, in the mode of spread of influenza and COVID–19 [15].

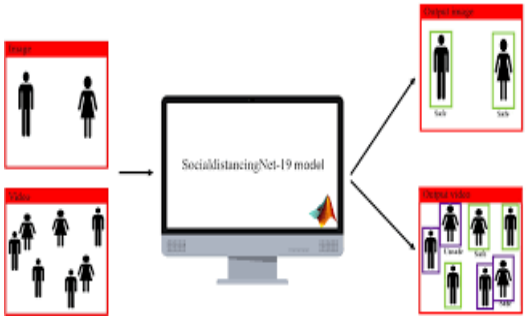

Fig. 2 Classifying as safe and unsafe

SI NO	TITLE OF THE PAPER	METHODOLOGY	ADVANTAGES
1	Leveraging Data Science to Combat COVID-19: A Comprehensive Review	Data science is a very broad term which covers topics such as Ml, statistical learning and time series modelling. Risk Assessment and Patient Prioritisation, Screening and Diagnosis, Simulation and Modelling which can be sub categorized into two models such as Epidemic Models and Simulation Models, Contract Tracing.	From a Deep Learning perspective, organizing applications by input data type will help readers understand common frameworks for research. Therefore, data science techniques have emerged to support the supply chain management for healthcare supplies. By using data of hospitalization rate and lab results, the health system is able to predict the needed supplies in real-time
2	Active Surveillance for COVID-19 Through Artificial Intelligence Using Real-Time Speech-Recognition Mobile Application	The proposed mobile application is simply a tool to notify the users whether his/her cough sound is alarming or not and may be used to diagnose the disease based on the sensitivity and specificity of a disease. The advanced techniques of neural networks are used to analyse cough sounds in various respiratory diseases, especially COVID-19.The app is designed to understand the pattern of spread of infection and successfully address the authorities or admin hence breaking the transmission to prevent disease outbreak	This System prototype has advancements like, use of device inbuilt microphone to record audio signals and processed to determine the presence or absence of the cough sounds in real-time.
3	COVID-19 Preliminary Patient Filtering based on Regular Blood Tests using Auto-Adaptive Artificial Intelligence Platform	The rRT-PCR testing is the brilliant norm for Coronavirus identification; however, it is tedious, difficult manual cycle and it is short in stock. To diminish the quantity of tests, in this article we will introduce a potential answer for Coronavirus primer patient sifting dependent on customary blood tests, utilizing computerized reasoning models.	This method is Much efficient technique in choosing people to involve in testing is by including tests which are slightly less expensive and more common tests to assess the threats of being infected by SARS-CoV-2.
4	Fuzzy Rule-Based System for Predicting Daily Case in COVID-19 Outbreak	This model uses the fuzzy algorithm, rule extraction and DE fuzzifier. fuzzifier convert input values to fuzzy values through membership function which are represented by triangle, trapezoid and gaussian curve.	The burden of the health sector can be reduced by foreseeing future situations and making strategies and plans.
5	Covid-19: automatic detection from X-ray images utilizing transfer learning with convolutional neural networks	A dataset containing X-ray images of patients who are having normal bacterial pneumonia, patients with Covid-19 disease, and normal diseases, were made use for the Coronavirus disease detection.	One of the advantages of automatic detection of Covid19 from either medical image leads to the reduction of exposure of nursing staff and medical staff to the outbreak.
6	Prediction of COVID-19 Cases Using CNN with X-rays	Uses of Man-made reasoning (man-made intelligence) methods for Coronavirus expectation from X- beams can be exceptionally valuable and can assist with beating the deficiency of accessibility of specialists and doctors in distant spots. Google Net which is one of the CNN design and is additionally named as InceptionV1.	This model can be used for rapid and reliable diagnosis of COVID-19 from patients' chest X-rays.

7	Computational Intelligence Techniques for Combating COVID-19: A Survey	This system proposes of resolving the covid-19 using computational intelligence techniques. Computational intelligence is classified into five different principles: neural networks, fuzzy logic, evolutionary computation, computational learning theory, and probabilistic methods.	Evolutionary computation initially creates a set of candidates solutions and refines the set iteratively. By stochastic call removing the less-desired solutions and putting small random changes in the current generation, the next generation is produced
8	Detection of virus using Artificial Intelligence and Machine learning concepts	In this paper the research work in the detection of virus, study of virus and prediction of virus using Artificial Intelligence and Machine Learning Concepts is successfully done. The data sets for the predicting the virus is also been verified and analysed with the recent data.	This system can be implemented in the future upcoming generations also for the detection and prediction of virus, if any new virus gets discovered.
9	Monitoring Social Distancing for Covid-19 Using OpenCV and Deep Learning	Social Distancing Can be monitored by using Computer Vision, OpenCV and Deep Learning. First, Human detection will be made through either CCTV or Drone followed by calculating distance between two people. Finally comparing the value obtained by calculation with the Standard Distance (6 feet).	Thus, when the authorities get to know about such scenarios, they can reach the exact location and disperse people. Hence the Authorities time can also be saved from visiting each and every place.
10	Considerations relating to social distancing measures in response to COVID-19 – second update (Article)	Social Distancing does not completely stop the spread of the virus but plays a principal role in slowing down the wide spread of disease and thus becomes more efficient.	In order to control sudden huge gatherings of people many measures have been taken by the government to maintain social distance among the people, this helped to reduce the spread of the disease.
11	A Comprehensive Survey of Enabling and Emerging Technologies for Social Distancing—Part I: Fundamentals and Enabling Technologies	Social distancing scenarios practically used to detect and monitor distance between any two people have the usage of Bluetooth, ultrasound, Thermal technologies. Real Time monitoring can be brought into use with the help of Wi-Fi, Computer Vision which helps in crowd detection, lockdown violation detection.	Crowd detection monitoring and modelling the spread of the virus, the movement data can be made utilized to predict the network traffic due to the large-scale location data provided by carriers and the recent advances of machine learning.
12	Using Computer Vision to enhance Safety of Workforce in Manufacturing in a Post COVID World"	In the model, we have utilized MobileNetV2 as the key model for identification. This is due to the fact that we need a framework with models to accomplish processing at a least speed of 2-3 frames per second. It provides a greater advantage in the computation cost when compared to a normal 2D convolution model.	CNN based models learn face representations from the annotated data as described, hence helps in fast processing.
13	Deep Learning based Safe Social Distancing and Face Mask Detection in Public Areas for COVID-19 Safety Guidelines Adherence	In the model MobileNetV2 architecture is used as the core model for observation. It supplies a large cost advantage when compared other models. This model also contains SSD MultiBox Detector, which is a neural network planning	Network Video Recorder (NVR) are streamed using RTSP converted to grayscale to improve speed and High accuracy and are send to the model for further processing inside raspberry pi4.
14	Coronavirus Pandemic: Retrospective National Epidemiological Surveillance Study"	Linear regression analyses were carried out, the data were deliberated yearly. The equation of linear trend approximated with the equation $y=\alpha x+ß$. here a positive α coefficient denoted a high value, and a negative α value denotes a low value.	The value of α reflected the slope of the trendline and the magnitude of effects. R2, also known as the coefficient of determination, represented the degree of dispersion between individual data and the regression line.

III. CONCLUSION

Proposed approach makes use of computer vision to observe the activity of the workers with the help of Camera feeds that ensures safety of the People in the setup and thus help in maintaining a guarded environment and ensure each person's protection by monitoring people for the control of dissemination of the corona virus in public places. Solving the problems of transmission of viruses allows a rapid inspecting of the gathered people for identifying possible behaviors which have the tendency of causing health issues, particularly concerned with the latest pandemic diseases. The system will function efficiently in the current situation when the lockdown is released and may help in tracking public places effortlessly in an automated way. It has been dealt to track and detect social distancing and face masks identification that helps in ensuring human health and welfare. The implementation of the proposed approach has been successfully examined in real world by working on the model using raspberry pi4 component.

This solution has the capacity to control the transmission of the emerging viruses by avoiding the physical contact in public gatherings and helps in bring down the rapid transference of corona virus-19. It also having the potential to diminish violations significantly. We believe and ensure that this method not only progress in the security at place of work but will also help in enhancing the productivity of Workplace processes.

IV. FUTURE SCOPE

Further enhancement of the model is not only for monitoring the people but also to calculate the risk factor and point a low frequency laser beam on those who do not maintain social distancing. The cases that were discussed in prevailing models are only few of the numerous features that have been combined as a part of the solution. Some attributes, presently under development are discussed in brief in the following phrases:

A. Contactless Attendance

Working people are needed to put up their attendance using fingerprint biometric machine while entering their place of work. And using systems like this pose a high risk in a post COVID situations as the surface of the scanner becomes a powerful medium for spread of the Virus. As the face gets occluded by the person in the front, Samples of data which contains various face masks Shows faces which gets inaccurately identified. In the model, contactless attendance has been made using facial recognition technology.

Deep learning models are used in detection of faces and extracting embeddings which will be then matched with repository of embeddings that are created using the HR database.

B. Sneezing and Coughing Detection

Constant, continuous coughing and sneezing are major indications of COVID-19 given as per World Health Organization regulations and this becomes the major transmission medium of covid- 19 from an infected person to non-infected person. Deep learning which is the subbranch of Machine learning is made use in order to slow down the disease spread and also helps in the detection of the virus. In the proposed solution study of movement of the body is applied to understand whether a person is continuously coughing and sneezing in crowded areas if violating face guard and public isolation rules and regulations. Based-upon consequences of this, required authorities can be alerted.

C. Temperature Screening

Another major symptom of COVID-19 infection is Raised body temperature, in the current situation thermic testing is being done using Infrared thermometers without physical contact. And COVID-19 warriors are supposed to come in close contact with the person who undergoes. screening which makes the warriors exposed to high risk of infection and also its practically impossible to have a note of temperature of every individual in crowded areas, hence this instance can be well furnished with the thermic cameras-based testing to examine warmth of the body of people in crowded areas that helps the authorities to overcome the pandemic efficiently.

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