

Role of Emerging Technologies in COVID 19: Analyses, Predictions, and Future Countermeasures

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Abstract. Arising advancements, for example, man-made reasoning, blockchain innovation, distributed computing, the Internet of Things (IoT), and so on, have transformed people (regarding living) a great deal in the most recent decade. Computerized reasoning (AI) has been broadly utilized in our every-day lives with innumerable viable stories in various structures. Artificial intelligence has additionally assisted with adapting to the pandemic of illness (COVID-19), which is really happening over the globe. From clinical picture preparing, information examination, text mining and regular language handling, the Internet of Things, to computational science and medication, we address an assortment of territories wherein AI plays a significant part. A synopsis of information sources pertinent to COVID-19 that are accessible for research purposes (for possible specialists) is additionally accommodated this explanation. For that we have the essential datasets, instruments, and devices to encourage We have likewise tended to how it very well may be helpful for Artificial Intelligence and the Internet of Things to make savvy and quick purpose of-care diagnostics. In this work for instance, the utilization of the Internet of Medical Stuff for Smart Healthcare (essential accentuation on identifying indications of COVID-19 and admonitions for different clients) was tended to. To put it plainly, this work offers significant information on (capability of) AI strategies, AI, web of things, utilized in numerous applications, for example, Medicare, COVID-19 episode, and sums up in this unmatched war numerous urgent functions of Artificial Intelligence research (counting AI and web of things). We likewise present numerous potential exploration ways, crown's worldwide impact on the web of things and a few applications. This work is expected to give a diagram of the ebb and flow status of AI and ML applications to AI and ML scientists and the more extensive network. What's more, inspire analysts in saddling AI possibilities in the battle against COVID-19.

Keywords- Artificial Intelligence (AI), Coronavirus (COVID-19), Middle East Respiratory Syndrome (MERS-CoV, SARS-CoV-2; Pandemic; Epidemic; Machine Learning; Future Research Directions.

1. Introduction

The COVID-19 infection has significantly affected individuals' lives over the globe (90 areas have secured, 120 countries are influenced). With the quantity of passing's around the world previously arriving at 70,000 and proceeding to rise, numerous individuals have lost their friends and family. Note that 8 Crore cases have been accounted till date (15 December 2020) (refer figures 1 and 2). The most recent COVID-19 pandemic (COVID-19) has spread to more individuals (more than 125,000 in under 50 days) in more nations (in excess of 120 nations) in a lot more limited time-frame (50 days), however considerably less deadly than the Ebola and past SARS infection scourges. On March 11, 2020, COVID-19 was authoritatively pronounced a worldwide pandemic by the World Health Organisation (WHO). Coronavirus faces serious issues, in the same way as other different episodes, for example, finding the base of the sickness (or patient zero), limiting the spread of the infection, and offering satisfactory clinical types of assistance to treat outrageous side effects in all patients. It requires tremendous HR to follow the source of a flare-up, to isolate conceivably tainted patients, to treat basically sick patients and to stay away from cross-contamination between clinical staff and patients, and a quickened scourge would additionally strain the framework [31-33].

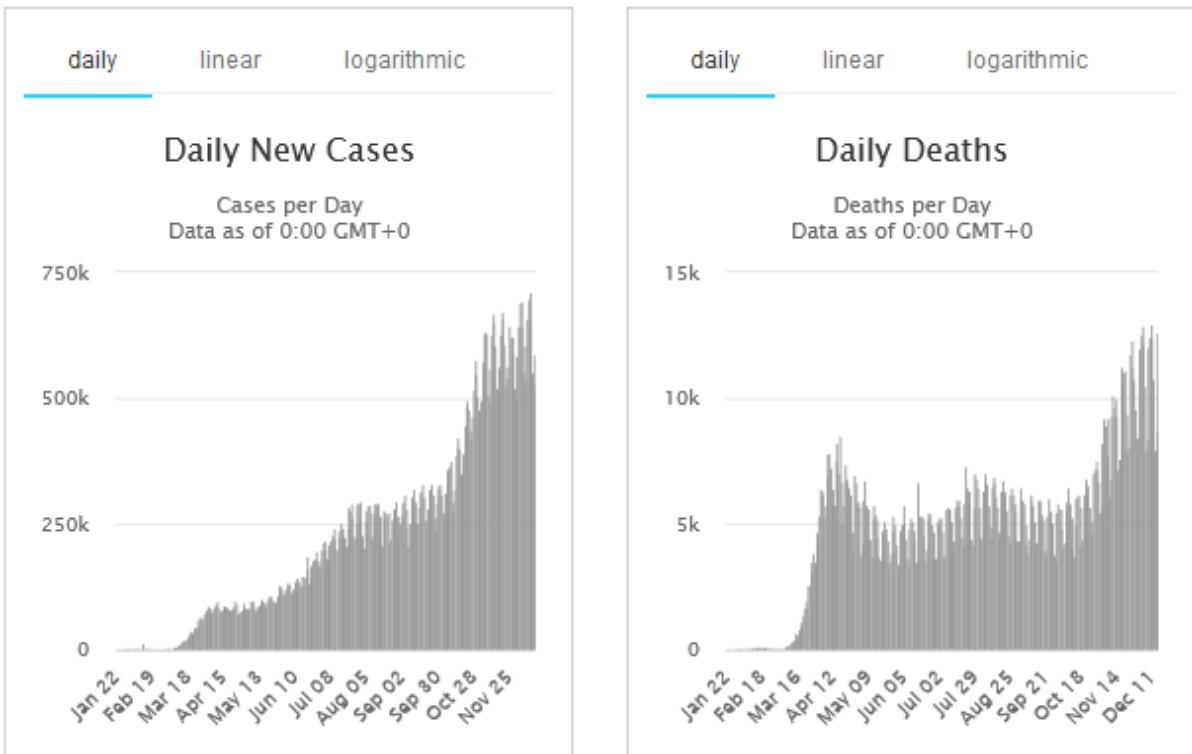


Figure 1. New Cases and Deaths Evolving per day [34]

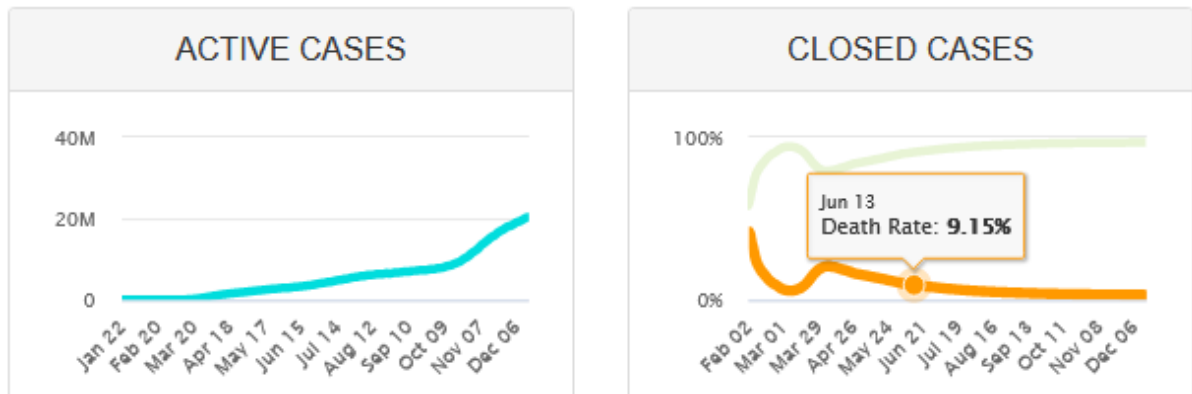


Figure 2. Active Case and Recovered Cases Till Mid December 2020 – Mid [34]

Hence, figure 1 and figure 2 show the new cases, deaths per month, active cases, recovered cases till mid of December 2020. Such a large number of developments have emerged and have likewise made a huge impact on everyday life, and these advancements make life less difficult, yet in addition achieve a huge improvement in outcomes because of our application. In actuality, each individual's life was streaming easily, until the planet was hit by the poisonous Corona Virus, taking the lives of millions around the globe. The COVID'19 ejection has stopped all vertical work while different ventures and organizations are battling to adapt to the rising difficulties. People have now started to depend on IoT arrangements that help offer straightforwardness, continuous checking, increment wellbeing and security, and so forth The worldwide impact of COVID-19 on the Internet of Things (IoT) is extended to increment from USD 150 billion of every 2019 to USD 243 billion by 2021, with a Compound Annual Growth Rate (CAGR) of 13.7 percent over the gauge time frame, as indicated by gauges. In this viewpoint, one of the exceptionally applied procedures is increment the utilization of keen instalment techniques to lessen human intercession, which at the hour of exacting and severe lockdowns would supplement market development. Expanding network joins and effective versatile instalment philosophies keep on upsetting instalments across digitalized stages. With numerous achievements, computerized reasoning

frameworks have entered into our every-day lives, in any event, supporting people in the inconceivably intense fight against COVID-19.

With a portable application, South Korea tracks isolated individuals. It will likewise utilize GPS to monitor their situation to guarantee that their isolate period isn't broken. By depending on individuals' telephones to outline their progressing organization of actual contacts, computerized contact following mechanizes a piece of this cycle. Apple and Google divulged a proposition to change telephones into select in Covid-19 checking gadgets that will make it simpler for wellbeing specialists to perceive and caution people in the event that they have been presented to the infection if everything goes true to form. The Apple-Google structure would utilize the Bluetooth sign of a cell phone to make an information base of the individuals that the client of the telephone has drawing close to while keeping the names and places of individuals mystery. The idea is recognizable on the grounds that in nations like Singapore, China and Taiwan, where COVID-19 arrived at sooner than in the US, comparable tech-based activities have been progressing for quite a long time and even months.

In the valuable century, numerous sorts of vents, for example, flying creature influenza, pig influenza, and pandemics, for example, Ebola flare-up, Spanish influenza pandemic, and so forth, were by individuals. Due to this flu/influenza, billions of individuals have lost their lives. Around 5 crore people lost their carries on with in 1905, for instance because of pig influenza. To forestall or against the clash of COVID 19 (aside from medical care or police specialists), a few countries are securing and forestalling any development, for example, transports, train, carriers, residents, and so forth Three types of lockdown are: Soft-lockdown-USA, Japan, Pakistan, South Korea, Hard-lockdown-India, Russia, Italy, Germany. Then again, the mix of man-made reasoning/AI and the Internet of Things/keen gadgets is utilized to countermeasure numerous countries. For eg, nations with a higher populace utilized innovation/savvy applications, for example, Singapore government Trace Together, India government ArogyaSetu, QR code-China, filtering an administration commanded QR "wellbeing code" on their PDA that is either green (most likely liberated from Covid-19), yellow (in danger of positive of Covid-19), or red (presumably certain of Covid-19). Thus a considerable lot of the applications used to countermeasure COVID 19 (right now) in Germany, Italy and different countries. To help specialists and established researchers, this work offers the best work pertinent to COVID 19. This work offers significant information that will be more valuable in the battle against COVID.

Scope of the work: This work is a summarized work of reputed articles which have downloaded from Research network publication like Elsevier, Springer, Wiley, IET, IEEE, etc., and provide useful information to its readers. This work will help readers to know about possible uses of technology in helping society like Post COVID 19 era. Also, researchers will get various new ideas to continue their research work using technology and provide efficient solutions to the society.

Organisation of the work: This work is additionally organized as: Section 2 discusses several Technologies which are in use for COVID-19 mitigation, tracking, etc. Section 3 discusses the literature work in detail. Further, the motivation behind this work, writing article for this crucial topic is discussed in Section 4. IoT, AI, E-medical services are outline in Section 5. Further, section 6 discusses effective financially savvy COVID-19 finding framework utilizing AI. Then, Section 7 discusses, How IoT and IoMT help in COVID-19 analysis. Application of Artificial Intelligence and Internet of Things on COVID – 19 are discusses in section 8. Section 9 discusses several future works for future researchers/ scientist related to COVID 19, i.e., its tracing, mitigation, prevention, solutions to cure, etc. In last, section 10 concludes this work with including several interesting comments in brief.

2. Overview of Technologies Emerged for Identifying/ Tracking COVID-19 Symptoms

Some of the vastest and widely used technologies that really create impact on COVID-19 diagnosis are listed below:

Table 1: Technologies emerged for helping COVID-19

Artificial Intelligence	Through the consolidation of warm imaging, AI, PC vision, and distributed computing, the ID of infections, individuals with fever, and associated manifestations with COVID-19 and compelling treatment direction. What's more, this has diminished the hour of hereditary discovery to minutes.
Cloud Computing	All necessary data is put away and made available on a PC stage to permit clients with the guide of the web to have a colossal measure of computational force and to help settle on ongoing choices in infection

	demonstrating. With blockchain and different instruments, programming can be utilized to demonstrate basic office necessities at an alternate level, from the clinic to the nation.
Big Data	Give extra room to definite populace information in an organization that can be utilized viably for examination and fitting advances can be taken to forestall the transmission, development, observing of wellbeing and avoidance of illnesses.
Telemedicine	By means of video calls, a patient may have a discussion with very much prepared masters about their clinical issues, wiping out the requirement for an emergency clinic visit and accordingly helping social removing and human-to-man collaboration and transmission of sickness. In any case, these distant counsels are presently conceivable using improved computer-generated simulation broadcast communications framework and increased reality.
Blockchain	Calculation Assistance furnishes all key partners with continuous information and recognizability in the infectious prevention cycle and serves to productively deal with the gracefully chain.
5G+ smart Application	The fast organization encourages video and sound quality information progressively for tolerant information preparing, telemedicine, clinical, and careful intercession.
Internet of Things (IoT)	All gadgets in medical clinics and vital areas are connected to the web. These connected gadgets in this way help to advise clinical staff of any missteps during the treatment cycle like the production lines of things to come) and change determinations.
Drones	These distant controlled automated vehicles can assume the positions of coordination's suppliers and territory observation and can likewise be utilized to purify far off areas
Robotics	Precisely and proficiently do routine positions in and around emergency clinics in the hazardous universe of irresistible illnesses and can settle on an educated choice with contributions from populace information investigated by AI
Modern enterprise communications platform	video The product structure serves to effectively and quickly oversee video and sound messages, discussions, and online classes across immense quantities of specialized gadgets.
Additive Manufacturing	Makes, at whatever point required, altered gadgets for medical care laborers and patients, utilizing 3D printing innovation for COVID-19.
Smartphone Apps	It is additionally conceivable to connect the program with the fast organization to help screen key areas, tainted patients and record information and model illness results as indicated by the application programming and different advancements.

3. Literature work

M N Muhammad et. al. [2] recommended a warm imaging gadget in their paper that can recognize Coronavirus from a warm picture utilizing a savvy head protector with less contact. Related to IoT innovation for following the screening cycle, the warm camera innovation is consolidated with the shrewd cap to acquire constant information. Moreover, the proposed gadget is fitted with innovation for facial acknowledgment. A framework for the recognition of COVID-19 utilizing information got from on-board sensors of cell phones, for example, cameras, receivers, temperature and inertial sensors is proposed [3]. AI strategies are utilized dependent on the information acquired to learn and pick up data about the manifestations of the infection. Contrasted with clinical units or CT filter draws near, this gives a minimal effort and brisk way to deal with COVID-19 discovery. This is apparently conceivable on the grounds that information gathered from the sensors of the cell phones has been utilized effectively in different individual applications and the proposed arrangement consolidates these applications in a particular framework together. For instance, for fever level expectation [13], information acquired from the temperature-unique mark sensor can be utilized. Pictures and recordings taken by the camera of a cell phone or information acquired by ready inertial sensors can be utilized to identify human weariness [4, 5]. Story et al. [6] additionally use cell phone recordings for anticipating sickness, while Lawanont et al. [7] use camera pictures and estimations of inertial sensors for estimating neck act and anticipating the degree of human migraine. Then again, sound information got from the cell phone mouthpiece is utilized in [8, 9], for hack type identification.

A way to deal with get-together the essential travel history of people and their basic signs utilizing a telephone based online review is recommended in [10]. These information are valuable in learning and anticipating the disease danger of every individual for AI calculations, hence assisting with grouping high-hazard cases for isolate purposes almost immediately. This prompt diminishing the spread of the infection to populaces that are vulnerable. In another article, during the COVID-19 pandemic, Allam and Jones [11] propose the utilization of AI and information sharing normalization conventions for better worldwide agreement and the board of metropolitan wellbeing. For example, if AI incorporates with warm cameras, which may have been introduced in many brilliant urban communities, extra advantages can be acquired for early location of the flare-up. In helping administrators to settle on better choices for infection control, AI approaches may likewise exhibit their incredible adequacy as huge loads of metropolitan wellbeing information are gathered by information sharing across and between keen urban communities utilizing the proposed conventions.

4. Motivation

With the guide of trend setting innovation, the critical proverb here is to determine the Coronavirus issue, which will be a more noteworthy favourable position for clinical fields. As this paper focuses on 2 key advances, for example, IoT and AI that could hypothetically incorporate into specific cycles, for example, the improvement of antibodies, purifying zones, alarming individuals if asymptomatic people are meandering around sure tried people. Notice that at different scales, including producing, business, sub-atomic, clinical, and social applications, Machine Learning and Artificial Intelligence will fathom numerous parts of the COVID-19 emergency. Survey the datasets, instruments and apparatuses needed to advance AI research for that reason. Also, conversation on AI uses to treat patients enduring with COVID-19 in medication definitions, how man-made consciousness and the web of things can be useful in making financially savvy and quick purpose-of-care diagnostics. In last, we feature the requirement for worldwide collaboration to augment the capability of AI in this and future pandemics.

5. Internet of Medical Things (IoMT), Artificial Intelligence (AI), Data Analytics, and e-Healthcare Technology.

In the wellbeing reaction frameworks of governments, the quick spread of COVID-19 has uncovered and heightened numerous fundamental issues. Every one of these issues recommend a failure to scale the arrangement as indicated by the episode's extension. With the help of IoT, there is a vivid commitment from shrewd gadgets, wearables, mechanical guardians in the medical services industry. For clinical businesses, the new developments, for example, man-made reasoning, large information, AI, progressed sensors, portable applications and different advances will keep on producing numerous potential outcomes. IoT and Artificial Intelligence are presently making an achievement in the determination and treatment of different infections in the medical services industry. Man-made consciousness is presently making its quality known in the medical services industry, from cell phones to robots. Development in the creation of associated clinical gadgets has been fuelled by IoT innovations with the coming of mechanical advances, the consistent ascent in the quantity of associated clinical gadgets assists with gathering and convey clinical information anyplace and at whatever point conceivable [27].

The word Internet of Medical Things (IoMT) is coin, where medical care and the Internet of Things (IoT) meet. The IoMT permits tolerant wellbeing status to be consistently followed and recorded progressively and accordingly elevates medical care associations to proficiently smooth out clinical practices, persistent data and related work processes to build their operational adequacy. With the help of associated sensors and gadgets, the IoMT has created and keeps on conveying P4 Medicine (Predictive, Preventive, Personalized and Participatory) even too far off areas to help continuously understanding consideration. By constantly following patient-related information by means of versatile applications and connected clinical gadgets, IoMT permits specialists and parental figures to give quiet mind and backing in any event, when patients or specialists are situated at distant areas. A few chances and dangers have emerged over the span of the COVID-19 pandemic. Because of social separating and lockdowns, the IoMT has monstrous potential for medical care applications. With the end of clinic OP offices and dread of cross-tainting in medical clinics, people are compelled to access online medical care, for example, online counsels. In this pandemic, there is a need to rehearse computerized wellbeing. Exploration on the cost-adequacy of computerized wellbeing and IoMT, for instance, and how best to adjust neighbourhood/planetary wellbeing needs; social equity in the feeling of advanced wellbeing appropriation in the network; IoMT applications in clinical preliminaries and COVID-19 medication creation, and so forth In business and network, AI innovation has given better arrangements. It has been reached out to medical services also.

For example, sickness recognition, AI changes basic medical care works in a way that is better than people. Numerous calculations are presently being proposed in clinical preliminaries for spotting tumours. For huge

clinical cycle spaces, AI substitutes people. We clarify both the potential that AI gives to mechanize parts of treatment in this article and a portion of the difficulties to the quick reception of AI in medical services. The huge measure of information is totalled by information mining and broke down to acquire huge experiences. This technique is helped by arising advancements that permit the preparing of staggeringly enormous information volumes and the revelation of mystery information. With regards to the undeniably information dependent medical care framework, information examination will assist with picking up bits of knowledge into institutional asset squander, screen the yield of individual doctors, and even track the strength of networks and distinguish individuals in danger of ongoing infections. With this information, to enhance income and exceptionally considerable patient consideration, the wellbeing framework will circulate assets all the more adequately.

6. Artificial Intelligence based Cost- effective and Rapid Point-of-Care Diagnostics

Artificial intelligence has been utilized to incompletely comprehend COVID-19 or find novel medication mixes against the infection in the region of computational science and medication. These are just introductory discoveries, and accordingly there is a solid interest for AI research here, for example, examining the hereditary qualities and science of the infection and proposing approaches to create antibodies and treatment medicates rapidly. Man-made intelligence will permit researchers to pick up data about the COVID-19 rapidly with an amazing computational limit that can manage enormous volumes of information. For example, clinical scientists will have the option to discover parts needed for an antibody or medication all the more proficiently by examining and breaking down the protein structures of infections. With customary procedures, this technique will be very tedious and exorbitant. The ongoing amazing accomplishment of AI profound learning in perceiving ground-breaking new kinds of anti-toxins from a pool of in excess of 100 million atoms as distributed gives this line of examination a solid expectation in the fight against COVID19 [9].

Second, we concur that versatile information and model sharing strategies utilizing open vaults will essentially accelerate new model creation and open information for the public premium. To create and pass data between clinical foundations, worldwide archives with anonymized clinical information, including clinical imaging and patient narratives, might be quite compelling. Clinical conventions and information sharing designs should be created to empower the sharing of such information and information administration structures should be set up. Fortifying exploration is fundamental since clinical information is dependent upon exacting administrative measures and structures to secure protection. Specifically, when joined into genuine clinical work processes, AI for clinical applications ought to exhibit its prosperity on test datasets, yet in addition its viability and insurance. In general, any created AI application ought to go through an investigation to guarantee that it observes moral guidelines or more all, regards common liberties. Second, in this unique situation, the multidisciplinary idea of the examination expected to convey AI frameworks requires the foundation of profoundly assorted, integral groups and long-haul organizations. Past the models appeared in this investigation, mechanical technology (e.g., cleaning or purifying robots) and coordination's (e.g., assignment and conveyance of individual defensive gear) are other promising spaces in which AI could be utilized to battle COVID-19. The adequacy of such associations can be quickened by financing openings that advance such joint efforts and distinguish key examination headings.

Third, we concur that in this pandemic, which knows no limits, open exploration and global coordinated effort will assume a significant job. It is conceivable to share approved techniques universally and adjust them to different settings and conditions, organizing those tending to nearby neglected requirements. Specifically given the cross-fringe activity of a few worldwide associations, private area organizations and AI coordinated efforts, they might be in a situation to advance the dispersal of data and limit working of public wellbeing frameworks. Worldwide cooperation will uphold districts with less limit and spotlight their energies on the most basic nearby difficulties. Computer based intelligence frameworks, strategies and models can fill in as a convenient type of sharing of data that can be utilized and adjusted to different settings on the off chance that they are planned to be generally deployable, requiring low energy and computational assets.

7. Internet of Medical Things for Smart Healthcare with a Primarily Focus on COVID-19

The Internet of Medical Stuff, or IoMT, is an adaptable and mechanized arrangement that comprises of numerous practical segments: information assortment, move, examination, and capacity that have seen dramatic development in e-medical services applications. Sensors mounted on smaller, end-client equipment, for example, tablets, robots, or wellbeing screens gather information. The portable information is then sent for examination and dynamic to the focal cloud worker, for example, if a PC requires persevering upkeep to keep away from a coincidental disappointment or whether a patient needs to come in for a registration. The assembly of science and innovation has gone through a colossal development and progression of all features of life in the twenty-first century [8]. One such supernatural blend of clinical gear and frameworks that can connection to

medical services alongside IT gadgets and contraptions utilizing amazing and significant systems administration strategies is the Internet of Medical Things. Around there, a portion of the broadly utilized and famously perceived applications remember basic screens for the type of wearables used to follow and keep up a protected and fit body, and so forth. Around there, refinement has truth be told gained the truly necessary thought simply because of its capacity to facilitate the weight on unremarkable medical care frameworks brought about by the expansion in persistent and intense sicknesses that are frequently even dangerous. The boldness to find some kind of harmony is one thing that everyday highlights have attempted to get - keeping up and shielding mother earth while flying high from a specialized perspective.

Accordingly, the upsetting and amazing worldwide pandemic we are presently seeing COVID'19, set off by minute infections that have taken existences of millions everywhere on the world and have come about because of any commendable goodness in an absolute halt of presence. IoMT analysts and other related representatives from everywhere the globe are effectively working amidst this strife to cause lighter and striking thoughts for denouncing this savage infection. For all its unfamiliar travellers who are probably going to have high danger profiles, Hong-Kong has given wrist groups. Singapore has been dealing with gadgets that would figure individuals' temperatures on a wide scale and report the temperature of every single one of them for constant examination to the ground station. Tampa General Hospital has been utilizing camera-inserted facial scanners in Florida that dissect facial attributes alongside warm output information to confirm whether the patient is hot. Israel utilized sensor innovation to follow the pulse, respiratory rate, body developments and different movements of a patient with the help of suitable sensors mounted under the bed of the patient with the information acquired and communicated to the generally found clinical staff.

To examine the direction/movement of the contaminated individual and estimate the example of the infection spread, China has been presenting large information following and investigating structures. Each time he/she strolls through it, Sharjah Police have concocted sterile entryways that consequently shower the vital disinfectants on the individual. KARMI-Bot, the first completely self-sufficient mechanical clinical colleague presented in Kerala, India by ASIMOV Robotics, has been doing clinical staff tasks with significant exactness and accuracy. The models recorded above are only a couple hand-picked ones from a large number of other IoMT executions. IoMT includes everything from dealing with a patient to checking the particulars of the tainted people. Also, IoMT innovations and frameworks that stay with patients are being acquainted worldwide with decrease the quantity of ordinary visits and to facilitate patients' lives. During quite a basic express, another serious step forward of IoMT was that of Linked Medicine, in which patients are reminded to take as much time as necessary and specialists and attendants would keep a full track of the patients by associating it to their significant clinical records. It must be focused on that when such awful circumstances win in the globe, the novel idea and musings that are kicked off are incredible and progressively advantageous to mankind.

8. Application of Artificial Intelligence and Internet of Things on COVID - 19

IoT can dismember an episode utilizing IoT; IoT can have significantly more uses during a plague with the different and assorted datasets got by cell phones. To follow the wellsprings of a flare-up, IoT can be utilized. An ongoing examination by MIT analysts utilized accumulated cell phone information to follow the spread of dengue infection in Singapore during 2013 and 2014, in granular subtleties of short separations and dates. Consequently, two things should be possible by overlaying geographic data framework (GIS) on IoT portable information from tainted patients. Upstream, as they continued looking for understanding zero, it can uphold disease transmission experts; downstream, it can help perceive all individuals that have come into contact with the tainted patients and can consequently be contaminated [27].

- a) Utilization of IoT to guarantee consistence with isolate: IoT can likewise be utilized once the possibly polluted people arrive at isolate to guarantee tolerant consistence. General wellbeing laborers will screen which patients stay in isolate and which patients have disregarded the isolate. Additionally, the IoT information would assist them with following who else could be uncovered due to the penetrate.
- b) Utilizing IoT to deal with quiet Treatment: The versatility of IoT additionally proves to be useful for observing all the patients that are high-hazard enough to warrant isolate yet not basic enough to warrant in-emergency clinic care. At the present time, patients are physically minded a regular routine by medical services laborers who go way to-entryway. A medical care labourer had patients remaining on their condo galleries in one recorded case, so he could fly a robot up to take their temperatures with an infrared thermometer. With IoT, patients can take their temperatures for investigation and transfer the information to the cloud with their cell phones. Thusly, medical services staff cannot just utilize less assets to accumulate more information, yet in addition diminish the danger of cross-disease with patients. Moreover, IoT will give the exhausted staff at the medical clinic with unwinding. For at-home patients with ongoing conditions, for example, hypertension or diabetes, IoT has likewise been utilized in far off checking. Telemetry, the exchange of biometric measures, for example, heartbeat and pulse from convenient remote patient instruments to focal control in medical clinics, has been utilized to

screen an enormous number of patients with restricted staffing. IoT can be utilized here to diminish the outstanding burden and improve the efficiency of clinical experts, at the same time decreasing medical care laborers' weakness to contamination.

- c) **Early Disease Location and Finding:** AI can quickly assess unusual indications and other warnings, alarming patients and wellbeing specialists [14, 15]. It helps, and is financially savvy, to have snappier dynamic. It assists with working, through helpful calculations, another conclusion and the executive's system for the COVID 19 cases. With the guide of clinical imaging advances, for example, figured tomography (CT), attractive reverberation imaging (MRI) examining of human body parts, AI is helpful in the analysis of tainted cases.
- d) **Treatment Checking:** AI will make a keen organization to consequently track and conjecture the spread of this infection. To remove the visual highlights of this problem, a neural organization may likewise be assembled and this will assist with bettering track and deal with the influenced people [16, 17, and 18]. It has the ability to furnish patients with everyday updates and furthermore to give answers for the pandemic of COVID-19.
- e) **Contact following of the people:** AI can help examine the degree of contamination by distinguishing the groups and 'problem areas' by this infection and can precisely follow the people's contact following and furthermore screen them. It can conjecture the future course and conceivable return of this infection.
- f) **Case and Mortality Projection:** This innovation can control and anticipate the presence of the infection from accessible information, online media and media stages, just as the dangers of the disease and it's probably spread. What's more, the quantity of positive cases and mortality in any zone can be assessed. Simulated intelligence will help perceive and make strides appropriately for the weakest domains, people and nations.
- g) **Medication and Antibody Advancement:** AI are utilized for drug testing through the investigation of accessible information on COVID-19. It's helpful for the plan and creation of medication conveyance. This innovation is utilized to accelerate ongoing medication testing, where typical testing takes a ton of time and along these lines serves to significantly accelerate this cycle, which probably won't be achievable for a person [19 and 20]. It can assist with distinguishing valuable medications to treat patients with COVID-19. It has become a significant instrument in the creation of analytic test plans and immunizations [21, 22, and 23]. Computer based intelligence assists with creating antibodies and drugs a lot faster than typical and is additionally helpful for clinical preliminaries during immunization advancement.
- h) **Lessening the outstanding burden of wellbeing laborers:** Healthcare experts have an exceptionally high remaining task at hand because of an unexpected and huge ascent in the quantity of patients during the COVID-19 pandemic. Man-made intelligence is utilized here to diminish the remaining burden of wellbeing laborers [23, 24, 25, 26, 27, and 28]. It assists with giving early analysis and care utilizing advanced strategies and choice science at a beginning phase, giving understudies and specialists the best preparing in this new illness [29, 30]. Artificial intelligence will affect future patient consideration and tackle more potential issues that limit specialists' outstanding task at hand.
- i) **Illness avoidance:** AI can give refreshed data that is useful in the counteraction of this infection with the guide of ongoing information examination. It tends to be utilized during this emergency to gauge the potential destinations of transmission, the convergence of the infection, the requirement for beds and medical care experts. With the advantage of earlier coached information on information common at different occasions, AI is useful for the possible anticipation of infections and illnesses. It perceives highlights, causes and explanations behind contamination to spread. This will end up being a significant innovation for battling different plagues and pandemics later on. It can give a preventive measure to numerous different infections and fight them. Later on, in contribution more prescient and preventive medical care, AI can assume a pivotal job.

9. Future Works

In the course of recent months, barely any examinations identifying with COVID 19 have been distributed, which are restricted in this battle with applications and commitments from AI, IoT. Here in COVID 19 for Smart Age, a portion of the principle research subjects are raised.

- a) We need a long time to secure against COVID-19, and PCs containing a higher processor and information, for example, clinical pictures and COVID 19 natural successions.
- b) In request to learn and pick up data, AI strategies normally require enormous amounts of information for computational models.
- c) It is significant for future work on the turn of events, facilitating and benchmarking of COVID-19-related datasets in light of the fact that it will assist with accelerating discoveries valuable for handling

the infection. Vaults should be delivered by normalized conventions for this target and permit specialists and researchers worldwide to add to and use them unreservedly for research purposes.

- d) In request to investigate and analyse current methodologies, there is a requirement for future work on making a benchmark framework. A similar PC equipment framework, (widespread) datasets speaking to a similar patient associate, a similar information pre-handling methods and appraisal prerequisites should be upheld by this framework in the assessment of AI draws near.
- e) In request to guarantee the legitimacy of utilization and insurance, applications focusing on touchy applications, for example, clinical ones should consider existing administrative and quality components just as relieve potential dangers and damages.
- f) To encourage the interpretation of examination into worldwide arrangements that can be redone and adjusted to neighbourhood settings, global AI participation dependent on multidisciplinary exploration and open science is required.
- g) Preservation of the security of COVID 19 patients (an enormous test)
- h) Subsequently, this work has given an overview of AI applications so far in the writing identified with the reactions and control methodologies of the COVID-19 emergency. These applications range from clinical determination dependent on chest radiology pictures, displaying and estimating of infection transmission dependent on the quantity of time arrangement and IoT information occasions, text mining and NLP to catch public information on measures to dodge infections, to investigating organic information for drug disclosure.

10. Conclusion

We find in this investigation how computerized reasoning or AI can help shield residents from this pandemic of COVID 19. Shrewd gadgets, for example, Bluetooth and client area give valuable data to ensure against the COVID-19. With savvy gadgets or innovation, one regular test is to make it productive, individuals need to utilize it for it to be powerful. In the number of inhabitants in 130 crore, for example, just 30 crore individuals have introduced the ArogyaSetu application. Notice that it must have a high level of the country utilizing it for any specialized contact-following instrument to work. In this work, we discover that computerized contact following is one of the key way's innovation can help stop the spread of the COVID-19. The strategy for distinguishing people who may have come into contact with the infection is computerized contact following. In this, we additionally investigate AI's capacity, as IoT, and lift their abilities and force in the battle to clean open spots/read positive instances of COVID 19. We additionally have a gauge of how COVID-19 effects infections universally on Internet of Things (IoT) applications or organizations." Finally, the requirement for global cooperation is underlined to abuse the capability of AI in this and future pandemics. We accept that our work will give a wide picture of AI analysts and other established researchers and conceivable AI applications soon, and will move scientists in the fight against this COVID-19 pandemic to abuse AI potential. At last, ensuring the security of shoppers or desired 19 influenced patients as possible work to safeguard the online protection of people and retaliate against government reconnaissance. We will attempt to ensure client security/COVID 19 patients.

Executive Summary of this work

There are a wide range of possible applications of COVID 19 pandemic in AI that covers medical and social challenges; however, few of them are sufficiently mature to have an operational impact. From a molecular perspective, SARSCoV-2 protein structure can be estimated by AI, which can be promising for the production of drugs to identify possible targets for vaccine, enhancing diagnosis for understanding the severity of virus. From a clinical perspective, AI can help in Diagnosing COVID-19 from medical imaging and provide alternatives to track disease and to predict patient results based on input data. Epidemiological research points that AI can be employed to model empirical evidence, including predicting the number of cases based on public policy choices. Moreover, AI helps to recognise similarities and discrepancies between regions in the history of the pandemic. It also helps to analyse the size and dissemination of the knowledge emic in order to counter misinformation and disinformation propagation. So, the development and operationalization of AI is necessary to support the response to the COVID-19 pandemic.

Available Data sets

This section summarises available data sources relevant to COVID-19, ranging from numerical data of infectious cases, radiology images, Twitter, text, natural languages to biological data (at given links below). These data are helpful for research purposes to exploit the potentials and power of AI technologies in the difficult battle against the deadly coronavirus disease.

Web links for data-sets:

- a) kaggle.com
- b) data.europa.eu
- c) <https://ieee-dataport.org/datasets>
- d) ourworldindata.org

Conflict of Interest

The authors declare that they have no conflict with publication of this article.

Author Contributions

All Authors have contributed equally in writing and finalizing this work.

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