



Survey on Contact Tracing for COVID - 19

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Abstract: Many nations around the globe are contemplating how to transition back to the new normalcy of life as the infected cases of COVID-19 continues to decline. One option being considered is to perform contact tracking to maintain the infection transmission under control and prevent another wave of outbreak. Especially given the fact that there are various choices, contact tracing is accessible, but it still has difficulties with privacy protection of users which makes its widespread implementation challenging. Relying on this, a unique architecture for contact tracing is proposed, which employs blockchain as its technology. Personal privacy of users can indeed be preserved by also providing the general public of the nation and the governmental authorities with a detailed spotlight to the public showing all the confirmed cases by incorporating blockchain with contact tracking apps. Also we further look into how open spaces might help with contact tracking by calculating the potential of COVID-19 contamination in the wider public and publishing this on a blockchain. These places could efficiently disclose possible transmission threats whilst still ensuring the data confidentiality and integrity. Finally, statistical solutions in diverse circumstances are displayed, and conclusions are formed.

Index Terms–Covid 19, Contract Tracing, Blockchain.

I. INTRODUCTION

A variant of SARS COV2, COVID-19 has shown to be amongst the most genuine yet irresistible infection on the planet. The COVID-19 (novel coronavirus) expanded widely in Wuhan region of China around the end of 2019, infecting a countless individual. The domestic outbreak is currently under control, but the novel COVID-19 is rapidly spreading across different regions. At present, Europe has become the epicenter of the present virus outbreak. Because of its incredible transmitting ability and potential for disease outbreaks, the new coronavirus has posed a significant threat to people's well-being and also physical and mental health over the globe. COVID-19 being an extremely irresistible infection which is transmitted straightforwardly as well as by implication with the irresistible individual to a fit individual by contact across nose droplets and mouth fluids created while hacking or sniffing. The specific wellspring of the disease is unknown. Our study explores a new mechanism for tracing COVID-19 patients' contacts in a productive, powerful, and safety-conscious manner. Also, the reason of our article would be to familiarize other system that recognizes places having dense human population as well as mobility that are at risk of the coronavirus transmission. Thickly populated areas containing more transporting people (known as in high-risk zones), generally defenseless against virus transmission, especially if they include asymptomatic infected person alongside uninfected people. Advanced devices can assume a part in upgrading contact tracing exercises, when they are successfully coordinated into a current public health system. An important part of the people's wellbeing and health reaction against irresistible infection spreading is done by contact tracing. In performing the process of contact tracing, motivation would be to support local area involvement as well as cooperation

II. LITERATURE SURVEY:

In the past few decades, the world started facing different types of infectious illnesses like Severe Acute Syndrome (SARS), H1N1 and Ebola, led to the outbreaks which hampered the human life and caused the economic and health emergency. Such diseases spread from one person to another person, and even by through contact with the diseased person's respiratory droplets or bodily fluids. It becomes tedious to do contact and trace each people manually who have come in interaction with the diseased person. In paper [1], Thamer Altuwaiyan et al., introduced an Efficient Privacy-preserving Contact tracing for infection detection (EPIC) that allows people to upload their information safely in the server and later if any person is infected, the lets other users to know if they have come in contact with that diseased person in the earlier. The entire procedure is done privately and no unnecessary info is disclosed to the server.

In last two years we all know how as a human we all were affected by the corona virus pandemic which is a type of SARS disease. The manual contact tracing was very difficult and with limited manpower it hampered the world severely. Here the need for digital form of contact tracing (DCT) became more. In paper [2], Sean Han Sheng Lai et al., discuss the article on how Singapore, a densely populated country was prepared for this Covid-19 pandemic by introducing digital tracing techniques such as Safe Entry which is a cloud-based visitor registering system and TraceTogether which a mobile-phone app that performs by swapping anonymous identifiers between near phones through Bluetooth connection.

Trace Together was the very first nationwide operation of a Bluetooth-based interaction tracing method in the worldwide. It was established by Singapore's Government Technology Agency and the Ministry of Health to respond quickly to the pandemic by flattening the curve. On the same line of DCT, in paper [3] Jason Bay et al., introduced another technique called BlueTrace which is a privacy-preserving protocol wherein logging Bluetooth encounters among participating devices is facilitated for contact tracing, while protecting the users' privacy and personal information.

With no vaccines, the non-pharmaceutical interventions (NPIs) in flattening the curve targeted the Covid-19 appropriate guidelines on social distancing and a more efficient contact tracing solutions through mobile phone applications. Here in paper [4], Hao Xu et al., developed a blockchain based EPIC process called the Beep Trace, in which they adopt a blockchain bridging the users and authorized solvers to not to worry of the user identification and location data which by providing more security and safety and also extended battery life and worldwide availability. It also fastens the digital contact tracing in order to reduce the pandemic cases. This blockchain-enabled solution solves the important privacy-preserving problems in digital interaction tracing for the Covid-19 pandemic.

In paper [5], Eun-A Kim's study shows how the response to Covid-19 was in the work and public places of Korean system. The intensive guidelines of following social distancing and early detection in the public places were the key to Korea's most successful principal measure in combating the pandemic. Even though with the ongoing work outbreaks in areas that were unwatched work like karaoke, nightlife clubs and transfer jobs, the country has still flatten the curve of infection rates without severe casualties to date. It is only because of the infection switch followed in the country by taking the traditional public well-being events such as isolation, physical distancing and community containment to reduce the spread of disease from human to human.

In paper [6], Shu-Wan Jian et al., report shows how Taiwan country faced the Covid-19 pandemic. It illustrates how the support of digital tools and relational database helped in contact tracing. The Taiwan Centre for Disease Control developed a nationwide contact tracing model called TRACE in 2017, which had the information linked to other databases, used in monitoring well-being status of contacts, and helped in managing of contact through day-to-day descriptive study and related performance indicators. All asymptomatic and pre-symptomatic infection was able to be prevented using the TRACE approach. The contact tracing was done step by step done in the following way: case examination, contact list generation, well-being monitoring via telephone and self-reporting through web-app, and quarantine of close contacts.

In paper [7], Paige Koetter et al., illustrates the study on how the United State faced the covid-19 pandemic where in they had to perform aggressive contact tracing which was done manually. They formed a team of medical, nursing and public health students, led by clinicians and epidemiologists. The trained students called the infected person via telephones and helped tracing the ones they have come in contact with and made sure they followed the quarantine and isolation strictly, this prevented in detecting asymptomatic and pre-symptomatic cases. However, they faced some challenges that would hamper the success of the Covid-19 management in US through contact tracing. They had to form a coordinated team of many trained students where in the operation would be in a systematic manner. This was quite tedious and exhausting when the workload extended and the need for trained ones increased to form teams to help in contact tracing.

With the existing contact tracing system being centralized it is easy to hamper the info which leads to less privacy protection. In paper [8], Can Zhang et al., developed a Privacy-preserving model for interaction in edification using 5G technology and BC-based health application called the PTBM. It is a decentralized contact tracing technique based on BC technology and safe encryption and decryption. Here 5G networks enables faster communication and low latency and blockchain enables a safer location privacy of public and safe data storage increasing the privacy protection of both users and patients.

The Covid-19 disease has destructed various parts of life where the need for contact tracing is very high, in paper [9] Anshuman Kalla et al., depict how the role of blockchain has helped in the contact tracing of the infection. Blockchain being recognized as one of top ten digital method in combating the COVID-19 virus. This method is a decentralized contact tracing system, wherein each block is stored with a set of information and is being connected with the earlier block to form a cryptographical chain of blocks. The important features blockchain method helps in dealing with the disaster management, patient data safety, e-government, contactless delivery, migration and manufacturing management, automated study, online education.

In paper [10], Dinh C Nguyen et al., discuss on how the innovative technologies like Blockchain and Artificial Intelligence is used as a digital tool to fight against COVID-19 outbreak. By combination the Blockchain and AI technologies, they build a system that combats this COVID-19 outbreak. The Blockchain technology is enabled in many case studies, such as early detection of the infection, in the faster delivery and ordering of medicines in the pandemic tracing, patients and users privacy protection. The AI enables in outbreak assessment, infection detection, infection analytics, vaccine manufacturing, and prediction of future outbreak like COVID-19.

In paper [11], Wei Yan Ng et al., provides a systematic review on how Blockchain technology is used in COVID-19 and non-COVID-19 associated app in the healthcare. The BC technology is used in COVID-19 related applications such as contact tracing, pandemic control and vaccine monitoring. The non-COVID-19 related issues are managing the digital healthcare data, IOT like remote checking and mobile health, and supply chain supervising. The Blockchain technology has vivid potential in the Outbreak of corona virus and non-corona virus related applications in the healthcare industry.

In paper [12], Rajesh Kumar et al., propose a system that collects data of small quantity from dissimilar hospitals and trains a global deep learning system using Blockchain-based joined knowledge and use up-to-date data that enhances the identification of CT scanned images. A data normalization technique is proposed that deals with authenticity of the data from different medical hospitals and various kinds of CT (Computed Tomography) scanners. Then a capsule network-based segmentation and

classification is done to detect the infected patients which gave highest accuracy results. Finally, a method is designed that can train the global model using blockchain method with federated learning while preserving the data. It is a smart model as it can study from the common data of several hospitals.

In paper [13], Santhosh Nandi et al., proposed a model that Redesign the supply chain that are sustainable, and resilient by means of Blockchain-based Circular economy for COVID-19 outbreak. The supply chain must implement the following features: localization, agility, and digitization (LAD). Then LAD is linked to a potential solution that uses Blockchain method and circular economy key competencies. The circular economy(CE) is aimed at removing the waste and over utilization of resources by doing a looped system of recycling, repairing and reusing that reduces the carbon footprints. The Block chain Technology (BCT) performs on a decentralized system that contains of participants who want to share information and alongside agree to validate the real state of the information shared. Researchers should consider the role of administrations to use BCT-CE-LAD replicas for supportable supply chains.

In paper [14], Vinay Chamola et al., provides a complete review counting its medical features, analysis, handling, and its influence outbreak on the worldwide economy and how the various technologies like AI, Blockchain, IoT, 5G and Unmanned Aerial Vehicles like Drones play a role in aggressive against COVID-19 pandemic. These technologies help in preventing the adverse effects of the disease and speed up the revival procedure. The worldwide effect of the outbreak on dissimilar major industries around the globe and how different technological institutes, research administrations, and industries are trying to use dissimilar modern technologies to succeed and prevent the community spread of the outbreak is discussed.

The COVID-19 virus has been increasing at a fast pace each day and a large quantity of information from this illness has also been collected in a quicker way. Hence the need has occurred in storing, managing and analyzing this large-scale data in an effective way to get significant information from these data that will further help the healthcare professionals to combat this outbreak. In paper [15], Het Shah et al., provide a review on Blockchain technology in fighting against COVID-19 pandemic. The large-scale data has to be passed via the Internet, where malicious attacks can occur. That's when Blockchain technology emerges that can achieve the data efficiently in a see-through way and also provide the privacy for the users and immutability. It also authenticates the user transaction and validates the payments or supply chain, and analyze digital vaccine passport, in order to fight against COVID-19 pandemic.

Numerous republics across the district are scrambling to go to lengths, for example, border terminations to cover the disease while considering steps to moderate the all-around profound monetary effects. In this paper [16], DaborResiere et al., another way to deal with global clinical and logical cooperation ought to arise to share information, limit structure and assets. An aggressive arrangement of synchronized actions zeroed in on handling the instant necessities of non-industrial nations, yet additionally on reasoning long-standing and worldwide. COVID19 has exhibited both the worth that multilateralism suggestions all at once of emergency and the degree to which worldwidesupport have dissolved. Fighting a disease requires the distribution of solid info on the idea of the illness.

In this paper [17], Bakhtawar Aslam et al., suggests a BC-based system that safeguards patients' obscurity though tracing their interactions with the assistance of Bluetooth-empowered cell phones. We utilize a cell phone app to associate with the planned BC system for contact tracing of the overall population utilizing Bluetooth and to supply the acquired information over the cloud, which is nearby to health departments and administration offices to achieve important and ideal activities (e.g., like isolation the contaminated individuals affecting around). Hence, the proposed system assists individuals with playing out their normal business and everydaydoings with a measured instrument that guards them from tainted and uncovered individuals. The cell phone app is sufficiently able to actually look at their COVID position subsequent to dissecting the indications rapidly and notices (in view of given symptoms) either this individual is tainted or not.

In this paper [18],Wenzhe Lv et al., we planned and executed a decentralized BC framework to address the safety, confidentiality and convey effectiveness problems for computerized interaction tracing to in contradiction of the COVID-19 disease. In the planned convention, data security of contact tracing and area resistant is tended to by a mix of cryptographical methods and a distributed BC framework without dependence on confided in outsiders. The uniqueness confidentiality issue is safeguarded by suggesting a mix method of zero-knowledge verification and key escrow. The association of special cryptographical individuality and on-chain evidence of-area responsibility is decoupled to such an extent that it is remarkably difficult to track and recognize the proprietor of straightforward on-chain data.

Hence, a few cell phone apps have been created by governments, global associations, and different gatherings to alleviate the virus spread. Be that as it may, there is an expanding concern in regards to the gathering and utilization of information and its security. In this paper [19], B. Sowmiya et al.,broke down a tremendous arrangement of interaction-tracing apps executing different security and protection actions. Specifically, we broke down interaction-tracing apps for protection, data storing, and data safety. From our overview, we finish up upon the AES encryption standard and arbitrary cloud storing for safeguarding the gathered info.

The latest methodology, the COVID19 contact tracing, uses cell phone based and remote organization helped applications. In this paper[20],Mohammad Javed et al., we basically dissected the basic advancements, procedures and applications of those applications planned for this disease. The aim of the appraisal was to recognize their inadequacies against a bunch of issues and different lattices got from our examination and conceivable ideal functionalities that procedures might actually suggestion, together introduced as a scientific classification toward the start of the object. We then, at that point, gave three far reaching reviews to the fundamental technology, protocols and the interaction tracing applications.

III. LITERATURE SURVEY DETAILS:

Table 1 I. Literature Survey Details:

Paper no.	Short notes	Advantages	Disadvantages
[1]	EPIC is an effective privacy-preserving contact tracing for infection detection (EPIC) system that allows users to safely post their information to the cloud and then verify if they have ever interacted with the infected user in the past. Such procedure is carried out in privacy, without giving any unnecessary data to the server. This system uses a weight-based comparison process to improve the accuracy of the score and uses a matching score to indicate the output of the contact tracing. It was developed as an adaptive scanning approach to reduce the energy usage of the wireless scanning procedure.	Capable of generating the contact tracing score and detecting the contact with 93 percent accuracy.	To enhance the accuracy of our contact tracking score, additional features should be included as weight.
[2]	A preliminary literature review for research assessing technology approaches and solutions to COVID-19 was conducted in EMBASE, PubMed, and MEDLINE. Records from public bodies was also examined in order to determine how innovation techniques has been used in contact tracing.	For the present and potential epidemics, digital contact tracing(DCT) is anticipated to grow and expand to support human-based contact tracking.	Furthermore, technology is not yet ready to take the place of the laborious, precise job which only contact tracers can accomplish.
[3]	Blue Trace is a standard for recording Bluetooth interactions across registered gadgets in order to enable contact tracing while respecting users' private confidentiality.	Bluetooth-based contact tracker will eventually cohabit with and complement the general medical associations' epidemic countermeasures and protocols, helping us through these challenging circumstances.	Since Bluetooth is the basis of this protocol, it is not that effective.
[4]	A privacy-preserving contact tracing technique new decentralized: Beep Trace, a blockchain connecting application, is used to avoid exposing the user ID and physical address for the user/patient and authorized responders.	It offers increased safety and confidentiality, as well as the benefits of extending battery life and worldwide available.	The Beep Trace application's plug-in security functionality is not implemented
[5]	It constitutes a danger to occupational health and safety practices in Korea by providing a one-of-a-kind, robust, and effective technique for evaluating deep learning properties. Medical centers, service companies, sports teams, coin operas, and entertainment establishments accounted for 15.7 percent of the total cases.	This slowed the spread of infection without intensive containment, shut down, or mitigation interventions. After entering the public health blue alert level, a business continuity plan was distributed. After entering the orange level, the Ministry of Employment and Labor developed workplace guidelines for COVID-19 consisting of social distancing, flexible working schedules, early identification of workers with suspected infections, and disinfection of workplaces.	COVID-19 outbreaks are indeed occurring on a periodic basis, and risk assessments in high-risk organizations must be conducted.
[6]	To assist linkage of data, cross-jurisdictional synchronization, and following up on users' health condition, a centralized contact tracing service was introduced. The method for using software technology to enable contact tracing and monitoring	The percentage of medical status notifications from self-reporting grew from 22.5 percent to 61.5 percent after applying the strategy of self-reporting via automated text messages and a webservice. The large percentage of subsequent cases	The accurateness is still less and needs improvement for contact tracing.

	of COVID-19 incidents was demonstrated, and the responsiveness from disease surveillance to contact monitoring was examined to measure system efficiency.	found via interaction tracking (88%) reduced the R0 to less than one, lessening the effects of local spreading in the society.	
[7]	A actual paradigm for launching a contact tracking program with doctor, nurses, and health care graduates who are not obligated to practice medicine was presented. Coursework points were used to encourage students to join. Educational health organizations, institutes, and community-based practices with a working population can use the structure presented.	This paradigm may be useful in preventing COVID-19 from resurfacing in local communities. Lesser period from appearance of symptoms to quarantine, faster case recognition through contact tracing, and reduced spread prior symptom onset are all predicted to lower this value even more.	This model has helped for local communities but not for global effectively.
[8]	To mitigate issues, the PTBM model is a Privacy-preserving contact Tracing technique in 5G incorporated with Blockchain-based clinical application. The 5G-integrated networking is used as the runtime environment in PTBM, allowing anyone to verify their position using their cell phones or fitness bands connected to the 5G network to see if they have interacted with a infected person without invading their confidentiality.	A reputable health system can successfully track down patients and their top aides. The suggested PTBM technique achieves confidentiality, tracing, trustworthiness, and authenticity with maximum calculation and communication quality and reduced latency, according to a detailed security and reliability assessment	It's tough to integrate the new 5G technology into other healthcare applications that require high connectivity stability and low bandwidth.
[9]	The basic issues that have developed throughout the COVID-19 epidemic have been highlighted. Discover possible use cases for blockchain as a significant determining platform to satisfy present demands. A greater insight as to how blockchain is utilized and the predicted throughput is also provided for every case study..	Many use cases, including such as contact tracking, emergency aid, patient data exchange, e-government, supply chain maintenance, virtual classrooms, passport management, industrial management, computerized monitoring, and contact-less delivery, benefit from the key properties of blockchain.	Nevertheless, it is difficult to resolve a multitude of concerns before implementing blockchain, such as legality, safety, secrecy, latency, congestion, durability, and consumption of resources issues
[10]	A comprehensive study of the application of blockchain and artificial intelligence to control COVID-19 outbreaks has been conducted. First, presented a novel basic framework for combating COVID-19 that combines blockchain and artificial intelligence. Then, look into the most recent studies on using blockchain and AI to combat COVID-19 in multiple applications. AI systems that assist.	Outbreak tracing, data confidentiality, secure day-to-day activities, pharmacy chain supply, and donor reporting are some of the essential responsibilities of blockchain in combating the pandemic.	COVID-19-like medical coverage, such as predictive modelling, monitoring patients, and urgent care logistics, do not assist COVID-19-like medical services
[11]	A detailed investigation of COVID-19-related and non-COVID-19-related blockchain applications in medical services was conducted. It was found pertinent reports that had been released. A record of 85 375 articles identified, with 415 complete articles ultimately making the cut. Epidemic management and monitoring, vaccine passport tracking, and contact tracking were the most common COVID-19-related services mentioned. The majority of the studies go into great detail about the design quality of the blockchain experimental activities. Ethereum and Hyperledger were the popular ones.	Many of these COVID-19-specific use cases, such as vaccine / drug logistics, contact tracing, and tele-health recording, are expected to have long-term significance in the post-pandemic environment. Our research examined in this comprehensive study provides a solid basis supporting blockchain as a foundation for a broad range of medical applications, during and after the COVID-19 epidemic.	The lack of systematic survey coverage for technological aspects like blockchain based methods and systems, limits the generalizability of such a comprehensive study, potentially contributing to a dissonance among initial blockchain promoting and affirmed, legitimate research advancement.

[12]	Presents a system which gathers a minimal quantity of data from varied sources (hospitals) and uses blockchain-based federated learning (FL) to train a global deep learning model. The input is authenticated using blockchain technology, and FL trains the model internationally whilst maintaining the institution's anonymity.	A data normalization strategy that tackles with data diversity resulting from data collected from several hospitals using various types of computed tomography (CT) scans. COVID-19 patients were identified using Capsule Network-based segmentation and classification. A approach for training a global model cooperatively utilizing blockchain technology and FL while maintaining anonymity.	Because of the faster communication demand, the operating cost rises also with number of health care facility or transactions
[13]	The COVID-19 outbreak gave lessons in creating supply chain operations more robust, open, and ecological. Supply chains which have to exhibit localization, agility, and digitalization (LAD) features are among such concepts. LAD was related to a reasonable option based on blockchain technology (BCT) and circular economy (CE) characteristics. BCT-CE techniques can help with supply management monitoring, tracking, and availability.	For optimum reuse, resource supply cycles should be shortened, narrowed, and/or closed. Enhanced product layouts and supply - chain reduce environmental damage by letting people to use things for longer periods of time and simply replace products at the end of their useful lives. Creating jobs and ensuring economic stability for society, as well as Assisting in catastrophe recovery.	Sustainability is less than the expected outcome.
[14]	The COVID-19 pandemic had been thoroughly investigated. Having addressed practically all of the many facets of the pandemic and epidemic. The many phases the COVID-19 travels into during its propagation inside a zone were discussed. In attempt to provide a quick comparison, the COVID-19 epidemic was compared to other past epidemics in the twentieth decade in light of various metrics. It was explored the clinical aspects, misconceptions, diagnosing technique, and vaccine efforts.	Its effect on the world economy is highlighted. Finally, looked into how technologies like the IoT, Blockchain, AI,5G, and drones could be used to assist lessen the effect of the COVID-19 epidemic.	Managing 5G technology with AI and Blockchain is difficult when the population is more to cover.
[15]	Blockchain (BC) arises as a solution which could efficiently and transparently deal with data while also ensuring confidentiality of all parties. It could also help with distribution chain or fund transfer authorization and validation.	BC to address COVID-19 issues such as contact traceability, that's critical during an easily transmissible infection such COVID-19 which also requires high authenticity and precision, which BC can provide; an effective and privacy-preserving patient shared data prototype in BC; banking transactions; and the security of the information flowing through its network.	Since it is difficult to deploy, it is not being utilized to combat the COVID-19 spread over the globe.
[16]	Described the utilization of distributed ledger technique throughout the Caribbean to fight Covid-19 and enhance international wellbeing through facilitating open coverage to funding sources and smart contracts, safeguarding patient's privacy, constructing fresh amenities for inpatient admissions across the area, and forming new billing and insurance coverage standards.	At the same time, it provides a central database of patient records for medical staffs, and perhaps other professionals.	Applicable to all Caribbean countries only.
[17]	The suggested platform provides the public with a regulated system that makes them secure from sick and infected persons while they're on their daily lives. The mobile app can assess their COVID state following	When comparing to modern findings, the suggested Adaptive Neuro-Fuzzy Interference System (ANFIS) method estimates COVID condition, and K-Nearest Neighbor (KNN) improves the rate of accurateness to 95.9%.	The proposed model is successful if only patient is having symptoms and not if he/she is asymptomatic.

	by swiftly assessing the indications and determining whether or not, they are affected (depending on the stated indications).		
[18]	Bychain is a distributed and permissionless blockchain system. By linking an engaging zero-knowledge verification mechanism and the key escrow exchange technique, is employed as a privacy-preserving short range communicative protocol for task tracking and a matching generalized block layout is built. As a consequence, the possession of on-chain location details and private data are no longer linked.	By not relying on third - party providers, contact tracking and destination data is secured using a combo of cryptographic algorithms and a decentralized BC architecture. The identification confidentiality issue is solved by combining zero-knowledge evidence and key escrow techniques. It's nearly hard to monitor and recognize the owner of visible on-chain info since the relationship between unique cryptographic identity and on-chain solid evidence of location commitment is disrupted.	While witnesses have been widely distributed, storing data on user devices can be completed quickly;nevertheless, witnesses may not always be moderately honest when there is a financial benefit in practice.
[19]	Contact tracing applications collected data from those who had screened positive for the infection and then used wireless technology like Bluetooth, GPS to identify and alert anyone that were in close contact with the infected person. Each user's data is utilized and gathered, and the data created was anonymous, protected, and encrypted before being sent on-line and retained only in encoded form. To operate with the user's data, the apps employed a decentralized or centralized technique.	There are a slew of contact-tracking apps available, each with its own set of protocols. Confidentiality, management and protection of data were all examined in these applications. Based on the results of the poll, the AES encryption technique and random cloud server were chosen to safeguard the gathered information.	The smart phone app was not user-oriented, and was less secure from unwanted interventions for use.
[20]	The core technologies, methods, and services of those applications suggested in this virus-outbreak were thoroughly examined. The goal of the evaluation was just to find their flaws in light of a collection of vulnerabilities as well as other indices created through research, and also prospective optimal capabilities that methods may provide, which were all represented collectively.	Lastly, the inadequacies in the suggested technique were explained, as well as how they may be enhanced to fight potential deadly diseases. To preserve the anonymity of persons, a great variety of mechanisms have adopted pseudo-identifiers. The personally identifiable information (PII) is kept in a database that only healthcare professionals have accessibility to.	It was smartphone based and not effective protocol.

IV. CONCLUSION:

Since SARS COVID-19 transmits along close friendly cooperation, contact tracing will play essential role in preventing its spread. Cell phones provide optimal stage in acquainting contact tracing programming with the usability, boundless possession, and customized use. Consequently, a few cell phone apps have been created by governments, worldwide associations, and different gatherings to mitigate the virus spread. To confine the quick spreading of COVID-19, a couple of progressed cell phone applications are in creation. The huge piece of the current investigations revolves in contact tracking the people who are in close contact with the infected-distressed individual. Regardless, the present circumstances where most nations around the globe continue lockdowns which conveys the economies pretty much of each nation around the globe. Here prerequisite is needed for researching particular ways to deal with support of both social and physical segregation as well as monetary activities for check-ins.

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