"Social Interaction Tracking and Patient Prediction System for Potential COVID-19 Patients "

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Abstract: The Coronavirus Disease 2019 (COVID-19) virus is an infectious disease that has been spreading over the world since 2019, resulting in a pandemic. Because it is a new virus, developing a vaccination against it will take some time. Until then, the best strategy to stop the virus from spreading quickly is to allow for sufficient social distancing and isolation or confinement of possible patients. For the time being, however, proper social interaction tracking systems and patient prediction algorithms based on this data are lacking. The goal of this article is to track users' social interactions and predict the COVID-19 cases and assemble the data to the people through this online system.

I.INTRODUCTION

Now days everything is digitizing. The current COVID-19 pandemic shows negative effects on health as well as social and economic life. The most critical and challenging task is to revive public life while minimizing the risk of an infection. Reducing interactions between people by means of social distancing is an effective and prevalent measure to reduce the risk of an infection and spread of the virus within a community. Current for Social Distancing and App Use as Complementary Measures to predict the data of COVID-19 virus. The main aim is that the to show data of COVID 19 recovered, confirm and tested cases Worldwide through this application so that the citizens across whole world may get the update about the current situation and identify the status. This application designed provides easy way to create such an awareness among the people as it provide the data among specific countries.

Manual contact tracing of a positive COVID19 case, on the other hand, necessitates the participation of a large number of people, including health workers, and can take up to three days per case. Moreover, the following issues are identified in existing system First, it is important to identify all social interactions during. Therefore, there is requirement to identify these social interactions. But there are many offline and not virtual based programs arranged for the people to create awareness among them. Such programs really helps the people to have a clear idea or knowledge about the virus. For eg: As the public health response to the COVID-19 pandemic continues to evolve, routine identification and dissemination of priority COVID-19 public health science questions can promote efforts by the Centres for Disease Control and Prevention (CDC) and public health partners to fill critical scientific gaps and inform evidence-based decision-making through public health surveillance and epidemiologic research. The priority questions outline the critical scientific gaps identified by the CDC COVID-19 Response, CDC programs, and other public health partners that, if addressed, could provide significant, timely, and measurable improvements in public health outcomes. But there is also need to have an online based application of COVID-19 virus i.e. the tracking system. Hence Finally, there is no proper   method to identify the true group of people that need to be tested for infection. The random or testing with less information will be a waste of time, energy as well as money Besides, some of the patients will not be Identified. However, none of these systems are capable of providing infection prediction based on social interaction to address the difficulties mentioned above. Based on the received signal strength, it records the proximity of other phones and interaction duration.

The virus is primarily spread between people during close contact, most often via small droplets produced by coughing, sneezing, and talking. The droplets usually fall to the ground or onto surfaces rather than travelling through air over long distances. Less commonly, people may become infected by touching a contaminated surface and then touching their face. It is most contagious during the first three days after the onset of symptoms, although spread is possible before symptoms appear, and from people who do not show symptoms.

We have developed a social interaction-based infection prediction system that analyses the uploaded data to the cloud to calculate the COVID-19 infection risk. An automatic warning system is used to signal significant occurrences, such as the identification of high-risk COVID-19 patients. The proposed solution's prototype is implemented, and the efficiency of the proposed prediction mechanism is compared to a COVID-19 patient data set.
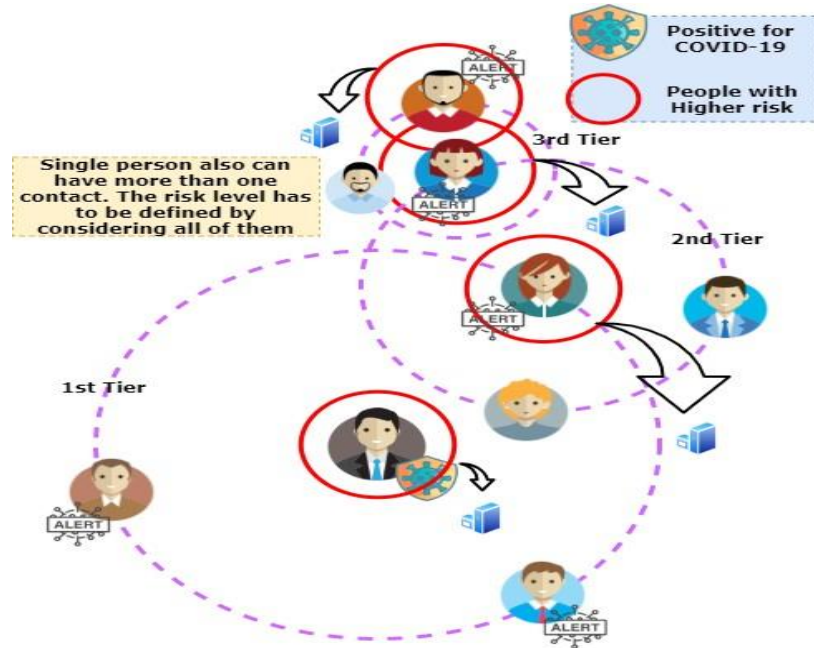
Fig.1 System Architecture

II.RELATED WORK

With the COVID-19 pandemic, a number of top technology businesses and government organisations have begun developing contact tracing systems to detect suspected COVID-19 patient interactions while maintaining their privacy. So, and also a social awareness from us we have created a social interaction tracking and prediction system for COVID-19 patients, so that can people can have identification and follow-up of contacts of a suspected and confirmed Covid-19 case.

Hence the work provides better options and flexibility over many proposed solutions and simulation results helped to obtain insights about how the system would function in real scenario Android Based Corona Virus tracking App:

• To Design an easy way to use android mobile application which helps to provide awareness of Corona Virus among the people.

• To show the exact data of affected people which are been trapped by this Corona virus disease.COVID-19 caused large-scale, long-lasting lockdowns in many parts of the world, which resulted in many people in need for financial or other aids. Governments, charities, and communities rushed to provide help. To complement these efforts and to provide direct assistance to individuals who may not get sufficient and/or timely assistance otherwise, we designed a privacy-preserving and overhead-free protocol named "Fireside Help" for matching donors and people-in-need

III. ARCHITECTURE PROPOSED

An over view of the proposed system architecture is shown inFig.1. There are three key entities, as shown in the architecture diagram: (i)users using cell phones, (ii) cloud servers, and (iii) authorities and medical officers. Each user must install a special app on their cell phones and register with the system in order to connect with the system. In Furthermore, with the permission of the user, the mobile application keeps track of the GPS location of the mobile relay on a periodic basis, according to the user's preferences. Based on the above-mentioned personal parameters, the mobile app can also make initial risk level estimations for each interaction.

IV. IMPLEMENTATION (Analysis)

In Fig.3 to track user interactions and it is the path way for users to connect with the system. The mobile app was developed for Android mobile using AndroidStudio3.4. There are no such login and registration issues with the application.
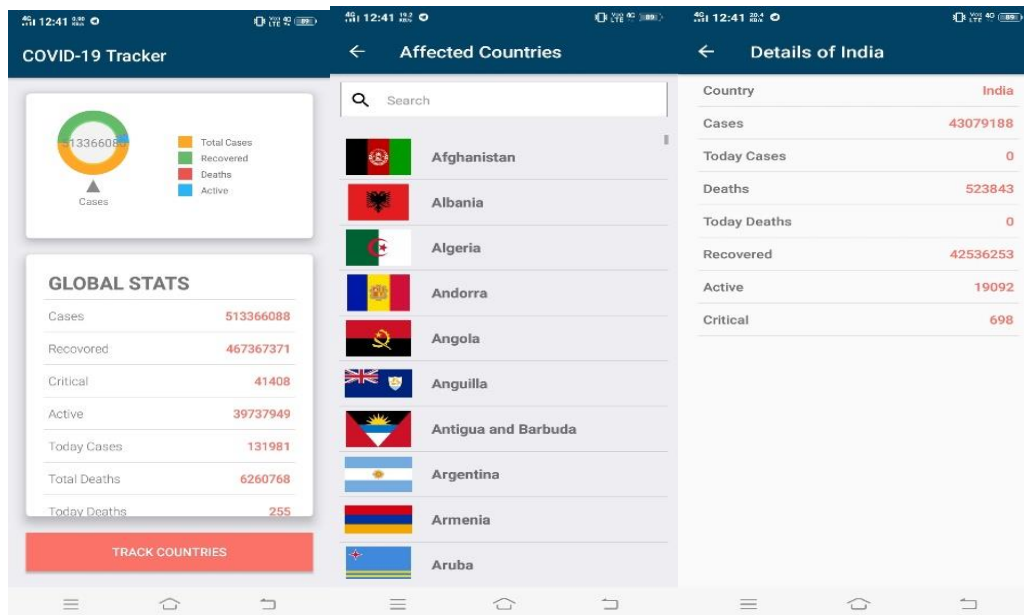
Fig.2   Fig.3   Fig.4

The Angular framework is used to create a front-end web application that allows authorised administrators to examine data from mobile users.

This application shows data of covid-19 recovered , confirm and tested cases respectively in their specific countries , such as identification and follow-up of contacts of a suspected and confirmed Covid-19 case. • List of modules/Functionalities: Front End: Front End will be developed using JSP and XML technology. JSP use HTML for designing purpose, JavaScript of validation purpose and CSS for providing style to the webpages. XML is used to develop activity in android Back End: Back will be developed using Java classes and servlets. Back end contains Rest Api , MVVM etc. Database: Database used will be Rest Api Database will Show the information of patients affected by covid-19

COMPARISION ANALYSIS:

WHO has been working with governments and partners around the world, across many areas of activity: conducting needs assessments, providing hand sanitizers and masks for health professionals, providing training on the clinical management of patients with COVID-19, collaborating with local media outlets and conducting awareness raising activities, delivering test kits, conducting simulation exercises, and shipping personal protective equipment through WHO logistical hubs. Our understanding of the transmission of COVID-19 virus continues to improve with the evolution of the outbreak.
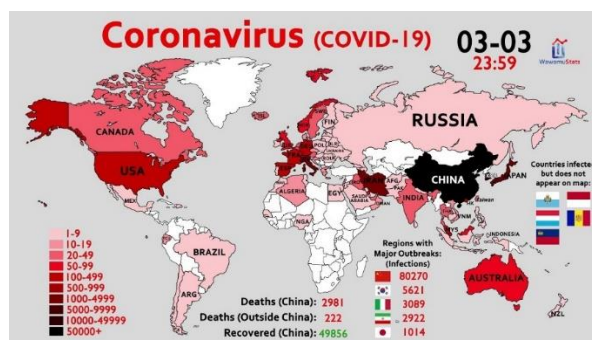

Fig.5

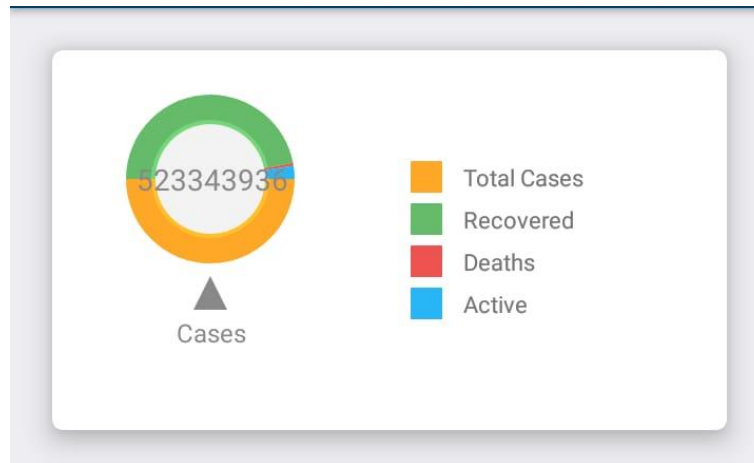So this was the situation in Whole Globe during the first wave of COVID-19:

Fig.6

And this is the current situation of the Whole Globe at current state of COVID-19. Since it shows the Total Cases, Recovered Cases, Deaths and Active Cases.

Below Shows the following chart of the assemble tracked data(CASES).
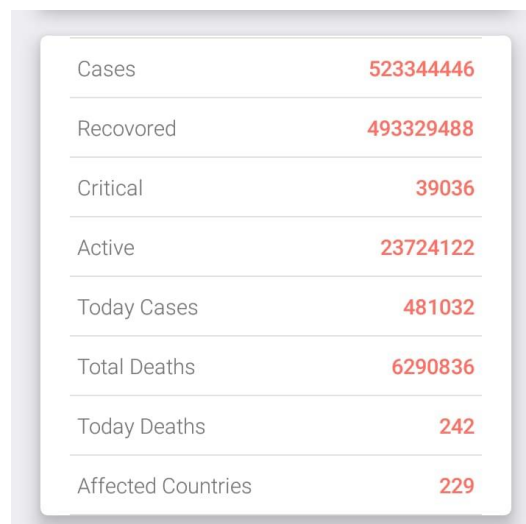

Fig.7

V. EXPERIMENTS AND RESULTS

We simulated the system to see the impacts and validate the validity of the suggested approach. Individuals were represented as nodes, while connections between users were represented as edges, using a graph-based method. A node holds the user's personal information, such as chronic illness conditions, gender, and age, as well as the likelihood of the user contracting the virus. The gender is chosen at random and is dispersed evenly throughout the graph. Chronic disease conditions are predicted to worsen with age, with a maximum chance of two diseases per individual, twice or more than the national norm. The duration of contact and the average distance between two nodes within the time make up an edge. However, to date, there has been no in-depth examination of the functions and features of these tools, and no sufficient empirical evidence about the accessibility and usability of these tools for the general public, whose daily lives have been threatened by the virus.

The main goal of this study is to investigate the primary functions, features, and data display characteristics of COVID-19 tracking systems and through this application we have tracked, predicted as well as assemble and distributed the data in form of confirm and tested cases respectively in their specific countries ,and also daily update of the application so that the following data will be updated as monitorized.

VI.CONCLUSION AND FUTURE WORKS

Using the developed algorithm, we were able to assess and generate infectious probabilities for users, and ultimately, the algorithm is capable of generating all of the essential alerts to highlight critical occurrences and tell users about their related risk levels. Our approach offers more alternatives and flexibility than many other proposed solutions, and simulation results helped us learn more about how the system might work in a real-world situation.

We intend to improve privacy while collecting data in the future by incorporating strong anonymity and unlikability qualities. In addition, we intend to use machine learning-based probability forecasts to improve the accuracy of prediction findings even further, to Design an easy way to use android mobile application which helps to provide awareness of Corona Virus among the people, to show the exact data of affected people which are been trapped by this Corona virus disease, to provide secure information about Corona Virus among the people, to Specify the data among the specific countries.Hence the work provides better options and flexibility over many proposed solutions and simulation results helped to obtain insights about how the system would function in real scenario.

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