**Contact Tracing**

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**1) What is the current proposed protocol by government (you can choose between local, state and federal) for the implementation of contact tracing?**

Maryland government has implemented contact tracing protocol to control the spread of corona virus in the state. It includes people to test themselves as soon as they feel that they have symptoms of covid. If people found their result positive they should inform it to their health care provider and also should notify to their contacts.

People will get call from “MD COVID” or (240) 466-4488 where the contact tracers ask covid related information. They won’t ask won’t ask any thing unrelated to covid like bank information, photographs or video graphs or any passwords, instead they just ask for address, contact information and information related to contacts[1].

Since this way need more human strength and consumes more time, it is not an effective way for contact tracing. Health authorities come up with the strategy of using the mobile applications for contact tracing. This includes the use of Bluetooth technology.

Since the pandemic evolving day to day, the big bulls of the current business (Apple and Google) have come with a strategy to help the government in contact tracing of covid victims. Their plan is tapping the bluetooth of other short range devices. If, a person belong to one of those devices diagnosed with covid then the devices which were recently nearby the device will get alerts to make sure isolated themselves and get tested. The main reason is to help the government in contact tracing of covid victims. Google and apple provided the technical framework to the government and asked them to create an application to use the frame work. Unfortunately the government didn’t succeed in building an application for the frame work. So the both companies apple and the google have made changes to their proposals and took control of the situation. Apple created a new version which includes their strategy of contact tracing and google had built an application to implement their strategy. Here the states have a responsibility of providing the basic information like where to get tested if a person gets an alert and which health authorities to reach once a person got tested positive. Unfortunately only three stated and the district of columbia opted for the system so far. This is completely not expected from the state governments which are not opted for the strategy which would definitely work. When we look at this under the social contrast theory government should take care of preserving the rights of people and also maintaining a piece in the society. But here the government didn’t opted for the strategy which can help the people to maintain the social piece. I feel it is not a good move by the government. Though they are following any other strategies like building their own applications they would have opted for this for not to miss any opportunity to save people lives[2].

1. **What is the scope of this program?**

I feel this will definitely help people from spreading the dangerous corona virus to others in the society. Social contrast theory says that people live together in society in accordance an agreement that establishes moral and political rules of behavior. Some people believe that if we live according to a social contrast, we can live morally by our own choice and because a divine being requires it. With respect to Social contrast theory government who indirectly provided the rules and regulations to the people to have hustle free lives, has complete rights to ask people about information related social health. As the contact tracers take information from the people who got positive results government can have a trace of people who got positive and can warn people who got in contact with them. This can help the future by reducing the corona cases.

**(3) What are the benefits?**

The program will benefit many people in the society in view of corona virus. It make sure that people won’t effected by the corona virus. When the people who got their positive result give information regarding their contacts the contact tracers make sure that the contacts let know that they should be in isolation and shouldn’t get contact with any other people till they get their covid test result negative. As this helps government to stop spread of covid to other people in the society so that many lives can be saved from early deaths. If the covid spreads, it will show a major effect on the economy towards the decline state. So indirectly this program saving the country’s economy not going in to decline. This will also benefit many people doing their works with no interruption so that they won’t be get into below poverty line to look after their families.

This can be examined with the Principle of Utility theory. Principle of Utility uses utilities of a situation which gets effected because of the action and can help to get a conclusion on the scenario. By utility is meant that property in any object, whereby it tends to produce benefit, advantage, pleasure, good, or happiness or to prevent the happening of mischief, pain, evil, or unhappiness to the party whose interest is considered: if that party be the community in general, then the happiness of the community: if a particular individual, then the happiness of that individual. So the action benefit to the larger community or individual then it is correct to do according to principle of utility. So with respect to the principle of utility the program has more benefits than the drawbacks or loss, it is clearly ethical to perform the program since it has more benefits to the society.

**(4) What are the privacy issues?**

As the covid-19 pandemic gave us a unpleasant surprise and have changed every individual lives to a unplanned journey which disturbed their day to life. There is a mandate need of contact tracing strategies. Initially there is a manual contact tracing strategy has followed in which tracers contact the people with covid positive and collect information regarding their recent contacts so that they can alert those people also. But this process is time consuming so the health authorities come up with the strategy to use mobile applications in contact tracing. Mobile applications use blutooth in tracing the contacts of covid diagnosed people. This is how the applications work. When two mobiles come into contact of a specified zone they make a communication and stores this information on the devices. This includes the device information, location etc. When a person is diagnosed with corona virus then the applications send alert notification to the people who recently in contact with the infected one. But here the privacy concern is that, as the devices store the other device information, device storage access, location access there is most possibility to easily hack the user device and get the personal information get disclosed. The other concern is as the location has to be turned on always so the application always knows where the user is going[3].

**(5) What are the ethical concerns in developing applications ... including data gathering, possession and use?**

Technologies can be designed in such a way that values, ethical norms, and legal principles are built. As such, design decisions can act as powerful limitations for possible excesses in times of crisis, and getting the relevant technical design of contact-tracing apps right is key. Whether these apps will collect geo-location data via GPS, communicate via Wi-Fi or Bluetooth signals, whether the data will be stored locally on users’ devices or exported to centralized databases run by governments or health authorities, whether these data can also be used for research, whether users have any control over who can access their data, and whether data are automatically deleted once the pandemic is over: these are all decisions that translate ethical and legal concerns including consent, purpose limitation, data minimization, and data protection into technical design. They require careful deliberation that includes the expertise and voices not just of technology developers but also privacy and human rights advocates, ethicists, and affected groups, to consider the trade-offs of different technical approaches. Importantly, value-based decisions are not solely concerned with the app as a technical object but also with the design of the institutional, legal, and organizational measures that will be created around these apps[4].

**(6) What are the pros and cons to contact tracing?**

The contact tracing has many pros to the people of all over the world. The main advantage with contact tracing is it is possible to stop further spread of the covid from the infected person. As the contact tracing strategy works and no further spread happens people can live their normal life. Governments won’t need to take extra stress on this and can take care of other issues in the country so it won’t affect the economy of the country. As the infections were less there will be declination in deaths of the people. No need of curfews. So that people can live their lives on their own without depending on others such as government. As the less effect of covid on society there will be no effect to the children schooling.

The main disadvantage of contact tracing is the privacy. As the applications are run by a third party it is not sure how safe the data of a customer[5].

**(7) What suggestions do you have to provide ethical decision-making guidance to data science engineers involved in developing applications for contact tracing?**

As the data science engineers are responsible for the development of contact tracing applications I feel they need to take many special cares in development. Applications are going to use many people all over country so there is a high risk on privacy of people. When developing the applications the data science engineers should include many security features to safeguard the customer information from theft. It should be capable of overcome the hacking techniques save information it has. once it has taken the information after communicating with other device and if came to know that the device holder has covid positive it should be able to give information of who recently nearby it. They should make sure that the application sends information to the government and health authorities once it found the device holder get positive and no one else.

**(8) What ethical issues are present in the scenario above?**

**(a) What are the ethical issues involving the contact tracers and the use of data (if any)?**

**Relativism:**

Relativism is an ethical theory which claims that there are no universally acceptable rules or princples. People will have different prospective for a situation due to their individual characterization. When we consider this issue with people health prospective it is very important to have such technology so that it can save many people lives and can control the spread of corona virus to others. This can help government to take decisions like where to undergo curfews and where to take special care for respective regions. When we see the other side of the coin, there are difficulties and ethical issues using the contact tracers and the data of the people. There are many questions arises to use those applications. Who handles this application, where the data stored, how secure is the application storing the user data, what if the data stolen by someone else. What if a hacker hacks the application. If these things went wrong, then the user data is at high risk.

**Social Contract Theory and Rawls’s Theory of justice Perspective:**

Social contract theory says that there should be some rules incorporated by a governance to maintain social piece, preserve people rights and give them freedom. With respect the social contrast theory it is also responsibility of the government to save the people lives as a supreme authority made by the people itself. I feel government has full authority when it comes to the health of people. So it is completely ethical to use such a technology by the government.

**(b) What are the ethical issues involving Jane's conduct (if any)?**

**Principle of Utility Perspective:**

Principle of Utility uses utilities of a situation which gets effected because of the action and can help to get a conclusion on the scenario. By utility is meant that property in any object, whereby it tends to produce benefit, advantage, pleasure, good, or happiness  or to prevent the happening of mischief, pain, evil, or unhappiness to the party whose interest is considered: if that party be the community in general, then the happiness of the community: if a particular individual, then the happiness of that individual. So the action benefit to the larger community or individual then it correct to do according to principle of utility. So let’s get into the current topic Jane Doe has got the alert jane doe, he thought that alerting others can help many lives. If jane is correct it can benefit many people. Since it has more benefits than the loss jane action is completely ethical.

**Conclusion:**

Contact tracing is an extraordinary technology but the person it is handling and the secure features it has makes a huge differences. Once a contact tracing application makes mistake like data leak it leads serious issues like changing life’s of a normal people. So I feel while developing the application the data science engineers should take all the safety features.

The application should only take the information related to the covid and its contact and no other information like any personal information. Finally the government and its authority should only be the person’s who takes care of the application transactions.

References:

[1] <https://www.norc.org/Research/Projects/Pages/maryland-covid-contact-tracing-.aspx>

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[5] <https://internetpolicy.mit.edu/what-are-the-advantages-and-disadvantages-of-contact-tracing-a>