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Mobile App Programming II

28 February 2022

Covid Contact Tracing Using Smartphones

Contact tracing is more important than ever during these times with global surges in 2020, 2021 and 2022. We need to reduce transmissions as quickly as possible and understand relevant contacts of the virus. Smartphone based contact tracing was quickly deployable.

Reliable contact tracing requires appropriate contact duration and distance estimation which can be hard to do using smartphones. Smartphone based tracking solutions can help to control the spread of coronavirus but they cannot reliably track all covid contacts.

Apple already has exposure notifications installed on their smartphones which use bluetooth and random numbers to track the phones you may come into contact with. This does not track your location and protects each individual's privacy. You can not uninstall the software but it shouldn't harm you. I tried it out on my phone and it is interesting to see how the notification is immediate. My peers agreed saying it is fairly accurate and a good resource though it is not 100% accurate.

We can determine if it is reliable based on contact duration and proximity. The model of spread of infections can be determined by R , which is the effective reproduction rate. Each person is estimated to infect R other people. We can reduce the value of R using contact tracing. There's two factors that affect this reduction. The first is adoption rate which is the percentage of the population that uses a smartphone based contact tracing app. The second factor is the probability by which a smartphone can accurately detect and classify a contact.

A high percentage of the population must install the app. There needs to also be a minimum duration of which two devices need to be near each other in order to detect each other. Also there is the possibility that when multiple smartphones are near each other, their emitted signals might interfere with each other. The accuracy of the estimation of the distance between smartphones is also another factor in correct contact tracing. Contact tracing will be reliable even after coronavirus goes away.

Bibliography:

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