



Ali Alkhatib

01 MAY 2020

We Need to Talk About Digital Contact Tracing

Over the past few weeks, Apple & Google have floated the idea of developing and distributing a digital contact-tracing app that will inform people when they've been exposed to someone who's contracted COVID-19, and communicate to people that they've been exposed to *you* if you later test positive yourself (edit: since writing this, Apple has released a beta of iOS 13 that includes the SDK necessary to begin using this system). Writing this in late April and early May, it feels like we're desperate for information and weary from not knowing who's caught COVID-19, who's still vulnerable, who gets it worse or why, or even how to treat it. We're desperate for any information we can get our hands on. This



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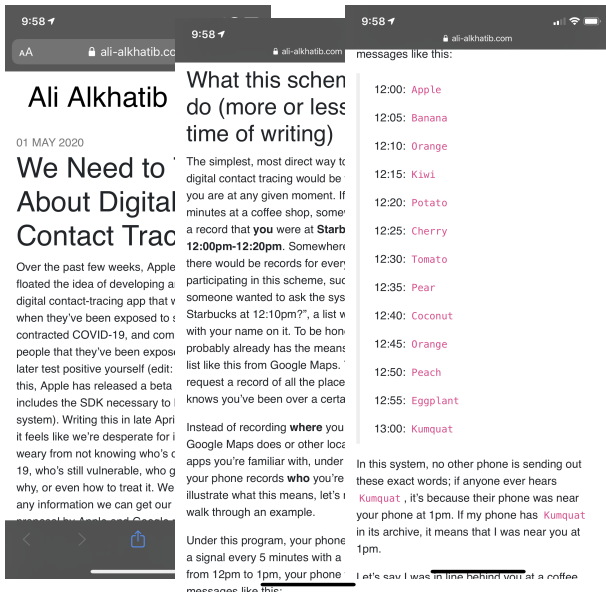
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What this scheme will
do (more or less, at the
time of writing)

The simplest, most direct way to implement digital contact tracing would be to track where you are at any given moment. If you spend 20 minutes at a coffee shop, somewhere there'll be a record that **you** were at **Starbucks** from **12:00pm-12:20pm**. Somewhere, theoretically, there would be records for everyone participating in this scheme, such that if someone wanted to ask the system "who was at Starbucks at 12:10pm?", a list would come back with your name on it. To be honest, Google probably already has the means to produce a list like this from Google Maps. You can even request a record of all the places Google Maps knows you've been over a certain timeline.

Instead of recording **where** you are the way Google Maps does or other location-tracking apps you're familiar with, under this scheme your phone records **who** you're near. To illustrate what this means, let's make up and walk through an example.

Under this program, your phone would send out a signal every 5 minutes with a unique word. So from 12pm to 1pm, your phone would send out messages like this:



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messages like this:

12:00: Apple

12:05: Banana

12:10: Orange

12:15: Kiwi

12:20: Potato

12:25: Cherry

12:30: Tomato

12:35: Pear

12:40: Coconut

12:45: Orange

12:50: Peach

12:55: Eggplant

13:00: Kumquat

In this system, no other phone i these exact words; if anyone ev **Kumquat**, it's because their phc your phone at 1pm. If my phone in its archive, it means that I wa 1pm.

I let's say I was in line behind vo

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Quoting Arundhati Roy, "If we were sleepwalking into a surveillance state, now we are running toward it because of the fear that is being cultivated". We're gearing up to sacrifice substantial amounts of our privacy and anonymity in the world in exchange for a woefully dubious solution to our uncertainty. Let's talk about why: first, this system isn't going to give us a better sense of the world in the most crucial places; and second, this system is going to undermine our privacy and dignity in ways that we can only begin to imagine right now.

Let's start with why this system won't work.

Digital contact tracing will exclude the poor, children, and myriad other uncounted groups

In the description I made earlier, I pointed out that Apple & Google's plan calls for some sort of proximity detection, probably involving Bluetooth and some of the fancier, newer technology that your smartphone may have if it was introduced in the last few years. Some of the technical requirements of this system preclude older devices from working, meaning the people with older smartphones won't be able to benefit from alerts to this system unless they upgrade to newer phones - something they almost certainly can't afford to do, nor should they be obligated

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The spaces and the people we should be most concerned for, and paying the most attention to, won't show up in a digital contact tracing system like any of the ones proposed so far.

Digital contact tracing staggeringly misses the point of care that we should be most concerned with.

This system's exclusions will decisively undermine its accuracy and endanger everyone

The risks of acting on bad data - the result of excluding the poor, excluding children, and excluding other high-risk groups - are unspeakably high. This is different from working with a small sample size or even from working with no data. Building a dataset that excludes entire categories of people - as [we're beginning to do with Native American COVID-19 patients](#) - skews our vision of the world in ways we won't be able to account for, and with confidence that's unearned, ultimately steamrolling the groups that we leave out. This is why the CDC employs "[sentinel surveillance](#)" to track the flu - because acting only on the data we get from people who are wealthy enough to go to a doctor for the flu would give them a *dangerously* misleading picture of its spread every year. Everyone needs access to the same level of care, with no omissions, or we risk killing

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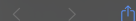
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fix the damage it does in its false positives and false negatives, all in this hopeless chase to automate what essentially needs humans.

Digital contact tracing systems that render the world as normally distributed space with spheres of influence and contact characterized by radio waves will consistently leave us with dangerously wrong pictures of our exposure.

Proximal tracing doesn't maintain privacy the way advocates seem to think it does

We also need to talk about what proximal contact tracing offers and what it doesn't, especially since we're adopting this contrived system to avoid "absolute" locations. I said earlier how absolute location tracking might say that we were both at some GPS coordinates. Or it might offer a street address. In either case, it would reveal that we were both at some semantically meaningful place from 8pm to 10pm, which could potentially be embarrassing or even damaging. Proximal tracking promises instead to reveal only that we were *together* between 8pm and 10pm.

The problem is that neither of these approaches is particularly helpful to me when I'm trying to maintain privacy about where I *meaningfully* am. While there are unique risks associated with my absolute location being revealed (for instance

STUDYING WHAT WE MISS