Hi

My name is Alfred Brown and I am a final year engineering student at the University of Bristol.

I am writing because I have an idea that might help us all get out of this coronavirus crisis safer, and help minimize the likelihood of such a virus causing so much death, economic disaster and misery in the future. I am not sure if this is a new idea, but I can't find any articles or discussions on the internet, so I thought I might as well propose it here, in the hope that it might lead to discussion, public interest and hopefully action.

We are all well aware of the problems coronavirus is causing. Not only are people dying prematurely, but the number of excess deaths is increasing, and the economy is failing.

If we don't get out of this nightmare soon we could face even more problems. We need to get the economy started again, and we need to do it in a safe manner. We also need to ensure that the risk of the virus spreading again is minimal.

The specific issue that I feel is preventing most people from getting back to work, is that we do not know WHERE people who have had coronavirus have been prior to getting ill. In other words, where did Covid-19 cases go shopping, take the underground tube, go jogging, etc..., before contracting the virus?

If we can answer this question, we could immediately notify people who are about to enter a potentially infectious area, and let them know if they should avoid it entirely. If you knew no infected person has been near your workplace or near your journey to and from work, you would feel safer going back to work right? I would.

So how could we implement a system that can get people back to work safely?

I think so-called 'Geofences' could be a viable solution. `Geofences' are like virtual fences that mark out a certain region of space. They are a subset of GPS coordinates in the set of all GPS coordinates for the world. For example, one could set up a geofence around your local Tesco, which would mean that if anyone entered that exact Tesco/geofence with their phone, one could compute how much time they spent there. If you have ever received a notification from Google asking whether you enjoyed your stay at a certain restaurant etc., that’s geofencing.

The governments in Hong Kong and Taiwan have been using the technology, but, in my opinion, for the wrong reasons. Their aim was to control their citizens' exact whereabouts to make sure no one was breaking the rules. Although perhaps effective for slowing the spread, I don't think this would have gone down too well in a democratic country like England. And more relevantly, it did not address the problem of getting the economy back up and running in a safe manner.

So what if we simply set up geofences (if they are not set-up already) around public spaces, e.g. supermarkets, tube entrances and exits, parks, etc…? One could then tell how long an infected individual has spent in a public area.

We could create an app whereby users allow the app to access their GPS location (this might not go down too well for some people, but if it means helping everyone deal with the coronavirus crisis better, perhaps people will cooperate). The app would then track a person's phone, but ONLY stores information of the phone's whereabouts IF it enters one of the geofences. If a user contracts coronavirus, they simply let the app know, and the app can then work out in which geofences that person has been spending time in and for how long, and notify any user that has:

1.) Been in the same geofences as the infected person, or

2.) If that user is about to enter one of the `infected geofences' for the first time.

Users for which option 1.) applies could actively seek out to be tested, and users for which option 2.) applies could receive a notification on their phone saying something like: 'You are now entering an area where 50 infected people have been in the last 2 days, if possible, give it another two or three days, before entering' – or whatever the latest scientific research is on how long the virus is able to linger around.

The app could also contain a map so a user could see where it's safe to go, even before leaving their house. Different areas on the map could have different shades indicating the risk of entering such an area.

On a technical level, all the information the app needs from a user is 1.) The user's GPS location, 2.) An IP address or some kind of encrypted number that allows the app to recognise the users phone, and 3.) Cooperation of the user to notify the app if they are feeling unwell. Besides these three things, I can't see the need for any other information that the app would need. A user would thus remain entirely anonymous.

So my question to you is, do you think an app like this could be beneficial to you? Are there any flaws you can see? (I am sure there will be quite a few.) Would you be interested in working on something like this, or know people who have the facilities and resources to make this happen?

Google and Apple have been cooperating to create a Bluetooth based system that computes whether you've been close to an infected person. They are hoping they can get their system up and running by the end of May at the earliest – which would be great. However, I think their solution does not really address the issue of WHERE an infected person has been - where that person may have touched or coughed on food items, handrails, etc… If we are going to tackle the issue of getting people back to work safely, we need a location based system, and I think geofences could be a viable solution.

Let me know what you think, if you have any ideas, comments, advice, etc… I am sure there are many engineering students, or students generally, out there who would love to help in the fight against coronavirus, but, like me, just haven't got the resources or connections. If you think creating an app like this could help us all, feel free to steal or share this idea with people who do have the resources. The main thing is that we create safe environments for people to get back to work and get the economy running again AND that we reduce the risk of this virus (or another) spreading again in the future.