

Coronavirus: Scientists from local universities to scale up crowd mapping system islandwide

by *Vanessa Liu*

SINGAPORE – When there is traffic congestion on the expressway, the density of vehicles on that stretch of road is reflected on the Google Maps app using various colours: blue for low density, orange for moderate density and red for high density.

Now, imagine a similar tool, but for human traffic.

The Singapore Spacer, when up and running, will be able to provide a bird's eye view of Singapore and show colour-coded crowd density levels in different places.

This allows users to identify places with the highest concentration of human traffic at a glance.

The tool is expected to complement safe distancing measures here, at a time where the country has just entered a one-month "circuit breaker" to curb community spread of Covid-19.

This crowd mapping technology was developed by scientists from the National University of Singapore (NUS) and Singapore Management University (SMU) to help indicate crowds across the country to stem transmission of the coronavirus.

The team is made up of researchers of different expertise, ranging from neuroscience to information systems.

So far, the system has been test-bedded on NUS campuses since last Friday (April 3). It was set up in three weeks following close collaboration between the two universities, and was supported by virtual reality solutions developer Aviation Virtual and geographic information system software supplier **ESRI**.

It aggregates real-time location information – such as where and when people gather – using

the Wi-Fi signal strength received from thousands of mobile devices across campus.

The next step is to work with Nanyang Technological University to put the same system to work on its campuses and concurrently scale it up to the whole of Singapore, said Professor Michael Chee from NUS.

For an effort of this scale, a different method of data collection is necessary, as not all venues have Wi-Fi and even those that do use a very wide range of Wi-Fi setups, said Associate Professor Rajesh Balan from SMU.

"This will require us to spend time for each venue to bring it online. For covering the entire country, we would need to leverage systems that are already deployed countrywide, such as the cellular networks."

The scientists are currently seeking the help of telecommunications companies here to obtain anonymised location data that will make the nationwide project possible.

The data, which shows how many mobile phones – and hence people – there are in a certain space, will help map crowd density in that area.

If successful, the Singapore Spacer will join a list of websites and apps that have been rolled out as part of coronavirus mitigation efforts.

This includes the SpaceOut website by the Urban Redevelopment Authority, which also maps crowd densities – but only in malls, and the TraceTogether app created by the Government Technology Agency and the Ministry of Health, which facilitates contact tracing efforts.

The app identifies people who have been in close proximity – within 2m for at least 30

minutes – with coronavirus patients using wireless Bluetooth technology.

The National Parks Board also recently launched a real-time map which tracks crowd levels at various green spaces in Singapore.

Unlike the Singapore Spacer, NParks' map collects information on the crowds via its officers on the ground and other visitor count systems.

Prof Chee pointed out that lockdowns have been imposed in several other countries but

they cannot be sustained for long periods without "significant damage to the economy and to collective psyches".

Hence there is a need for solutions which facilitate the intelligent management of people concentrations and flows, he added.

For more information on how the Singapore Spacer works, visit [this website](#).