
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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# A novel peer-to-peer contact tracking application for COVID-19 and future pandemics

Nolan J. Brown [1]

*School of Medicine, University of California, Irvine, Irvine, CA, USA*

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*To the editor*

We read with great interest the article by Vaishya et al. [1] regarding the utility of artificial intelligence (AI) in fighting COVID-19 (Coronavirus) and other pandemics. In adding to the discussion on AI's potential for "hot spot" identification and prediction of viral spread, we find it relevant to share an innovative application recently developed at the University of California, Irvine. This peer-to-peer contact tracking application is special because it possesses the capability to suppress disease transmission while preserving user anonymity (by not collecting user location/personal information) [2]. Because it spares this requirement, the application's adoption rate will not be hindered by privacy concerns, which could otherwise prevent a significant portion of the population from participating, thereby limiting its effectiveness [2]. What exactly is contact tracing? First, it is a process that has been used previously for tracking diseases including HIV and EBOLA [2,3]. In Yasaka et al.'s application for COVID-19, a data structure known as the transmission graph - which consists of contact points and transmission vectors between them - is employed [2]. Contact points can take on two possible states: status positive, which indicates a contact point that has been marked as associated with one or more individuals positive for infection, and contact unknown [2]. By linking transmission vectors between status positive contact points, potential transmission paths can be determined. Users can create contact points (ideally created for all public gathering locations), or "checkpoints" (of which existing points can be joined, and new ones hosted), check their risk level, and report positive status [2]. Users are assigned elevated risk levels if they have recently contacted transmission paths (and standard risk levels if they have not). The application allows for the adjustment of how "recent" contact is defined (a 14 day "safety period" for COVID-19) as well as transmission path maximum length (for example, a maximum length of 1 means that only direct interactions with an infected individual would be assigned an elevated risk level). Additionally, users can check their current risk level through the "exposures" tab, which informs them when a possible transmission route has been identified [2]. Amazingly, a QR "confirmation code" system - in which authorized personnel would hand out QR codes to confirm diagnoses - would prevent fraudulent reporting. Ultimately, this novel smartphone application is unique in its preservation of user privacy and potential for customization to the characteristics of a particular infection, and merits strong consideration for use during COVID-19 and future pandemics.

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## Declaration of competing interest

The author reports no conflicts of interest.

*E-mail address:* nolanb@uci.edu.
[1] School of Medicine, University of California, Irvine, 1001 Health Sciences Rd., Irvine, CA 92617.

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