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The Emerging Need for Touchless Interaction Technologies



Touchless ID scanning system introduced for trials by Etihad Airways



Concept of Touchless kiosk, ATM

laws like the Health Insurance Portability and Accountability Act (HIPAA) as well as Europe's General Data Protection Regulation (GDPR).

To address privacy and data-protection concerns, a mobile tracking initiative has been launched in Europe, consisting of 130 members across eight countries. Pan-European Privacy-Preserving Proximity Tracing (PEPP-PT) [5] aims to create an app that takes advantage of Bluetooth signals to detect within certain limits if users may be close enough to infect each other (e.g., closer than 2 meters for more than 15 minutes). Unlike the invasive surveillance technology now being used by governments, the initiative adheres to European privacy and data-protection laws by encrypting and anonymizing personal information.

Mobile-tracking apps could provide more accurate data during a pandemic in order to reduce transmission. They are, however, not without challenges. For instance, enough people must install mobile-tracking apps for them to be useful. Even if 30 to 50 percent of a population installs a mobile-tracking app, it could have a long-term impact. Continuous use of contact tracing through mobile tracking, together with physical distancing, may need to be combined with scaled-up testing and hygiene measures to avoid a resurgence of the disease.

The global HCI community has united to work passionately on initiatives that make use of our devices to combat this pandemic. Across the world, HCI has played an essential role in a series of virtual

hackathons in which novel tools are being designed to address the challenges with Covid-19 (HackTheCrisis in Sweden, the MIT Covid-19 Challenge in the U.S., and the pan-EU EUvsVirus). In the end, defeating the disease requires collective efforts to protect ourselves and our loved ones.

ENDNOTES

1. COVID-19 Dashboard by the Center for Systems Science

- and Engineering (CSSE) at Johns Hopkins University; <https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>
2. <https://www.ctvnews.ca/video?clipId=1930561>
3. <https://gov.sg/article/help-speed-up-contact-tracing-with-tracetogogether>
4. Google COVID-19 Community Mobility Reports; <https://www.google.com/covid19/mobility/>
5. Pan-European Privacy-

Preserving Proximity Tracing; <https://pepp-pt.org>

➊ **Montathar Faraon** is an interaction design researcher with an interest in co-creation, participatory processes, ICTs for democracy, and concept-driven design. He is an assistant professor in the Department of Design at Kristianstad University, Sweden.
→ montathar.faraon@hkr.se

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The Emerging Need for Touchless Interaction Technologies

Muhammad Zahid Iqbal and Abraham Campbell, University College Dublin

The Covid-19 pandemic has created a demand for technologies that allow us to avoid touching devices. Before the pandemic, the world had a difficult time understanding the importance of touchless technology, and even then, it was not imagined in this context. The gesture-based technologies that have been adopted in research have thus far not been popular outside of research labs. The global pandemic, however, has changed that view; today, the average person can certainly appreciate the need for touchless interaction. This technology is important not only for healthcare workers interacting with medical equipment, but also in the use of ATMs, vending machines, and learning devices. There are several issues in the design, development, and adoption of such technologies that should be addressed in the near future.

Touchless interaction is possible with augmented reality technology, which uses gesture and interaction controller sensors to create a bridge between virtual and real environments. Touchless interaction technology has also been explored in the following research areas: touchless technology in surgery using gesture-based technology [1], use of inertial sensors for gesture-based interaction with medical images [2],

and touchless interaction in surgery using Kinect and Leap Motion devices [3]. It has been explored in education as motion-based touchless games for learning using Kinect [4], and in medical education [5] and anatomy-learning applications using Leap Motion controllers [6]. Mainly in education, these technologies were developed to allow interaction with virtual objects, but they are also viable for avoiding



■ A RESPONSIVE KIND OF DESIGN

physical interaction with digital devices.

When taking an elevator, you should not have to worry if the buttons have recently been pressed by someone with Covid-19. Replacing this button-based interaction with a gesture or interactive hand controller could handle such cases and move the world forward. This particular case proposed using a gesture-based sensing system that receives the gesture data to help the user interact with the elevator's operating system and avoid the hand touch.

The rapid adoption of biometric systems as official identification to monitor workplace attendance, to control the security of digital devices, and now in the use of ATM machines has created a need for touchless fingerprint detection systems in these areas. Touchless ATM

machines are an idea whose time has come. A touchless fingerprint payment system [7] has addressed this issue in a mobile device as touchless biometric payment.

Currently, tracking devices like Kinect, Leap Motion, and the recent development of MediaPipe by Google and Manomotion are some great resources for integrating touchless interactions in digital devices. By considering the design challenges, issues about their stability and accuracy will be addressed, which can help the world move toward the development of better touchless interfaces.

ENDNOTES

1. O'Hara, K. et al. Touchless interaction in surgery. *Communications of the ACM* 57, 1 (2014), 70–77.
2. Jalaliniya, S., Smith, J., Sousa, M., Bütthe, L., and Pederson, T. Touch-less interaction with medical images using hand & foot gestures. *Proc. of the 2013 ACM Conference on Pervasive and Ubiquitous Computing Adjunct Publication*. 2013, 1265–1274.
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7. <https://patents.google.com/patent/US20180307886A1/en>

🔗 **Muhammad Zahid Iqbal** is a Ph.D. researcher in the School of Computer Science, University College Dublin, Ireland. His research interests are human-computer interaction, augmented reality in education, touchless interactions technologies, artificial intelligence, and e-learning. He is an alumnus of the Heidelberg Laureate Forum. → Muhammad-Zahid.iqbal@ucdconnect.ie

🔗 **Abraham Campbell** is an assistant professor at University College Dublin (UCD), Ireland, who is currently teaching as part of Beijing-Dublin International College (BJUT), a joint initiative between UCD and BJUT. → abey.campbell@ucd.ie

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Workshops Are Now Required to Be Conducted Remotely—Is This a Bad Thing?

Vikram Singh, Lightful

There's a palpable sense of anxiety in the recent global shift to home working.

Both managers and workers are feeling the loss of the benefits of in-person gatherings, such as meetings, workshops, and casual chats. In the user experience (UX) industry, the loss seems all the more urgent. Some have argued that design and research workshops are irreparably hobbled by

the requirement to conduct them remotely. Workshop facilitators are forced to use

Participants who may be shy about drawing may find that the constraints imposed by the tools are beneficial.

“whiteboarding” tools such as Miro or Figma, which provide online collaboration with real-time edits.

As a UX practitioner who runs weekly workshops, this is what I've been doing. Miro has replaced both the space and materials within my workshops. But *replaced* isn't quite the right word. What I've noticed happening is different from the phased, turn-taking workshops that require a great deal of thought and preparation of tangible

materials. Instead, a new form of collaborative activity is taking place. This different activity sees new dimensions in how participants relate to one another, as well as to workshop materials. These new dimensions are brought about fully because workshops are now conducted via computers, which intrinsically bring with them computer-mediated benefits.

It is true, however, that online workshops have lost out on much of the *paralanguage* from participants—the emotive and gestural communication we take for granted in person. I have found that the benefits brought about by computer-mediated workshops do not *fill in* for paralanguage; rather, they *enhance* remote workshops in ways that are lacking in in-person