# Using Interaction as Nudge to Increase Installation Rate of COVID-19 Contact-Confirming Application


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## ABSTRACT

For the COVID-19 Contact Confirming Application (COCOA) to be fully effective, it is important that many people install COCOA on their smartphones. However, because the current COCOA implements only a minimum number of functions, it is difficult to motivate people to install it. Therefore, we focus on an extrinsic approach that motivates the installation of COCOA by adding fun functions through interaction with a ubiquitous system on the environment side. In this paper, we introduce an interactive system that nudges users to install COCOA by reframing the act of installing COCOA as getting a ticket to participate in fun experiences.



## CCS CONCEPTS

• **Human-centered computing** → **Interaction design**.

## KEYWORDS

Nudge; Gamification; COVID-19 Contact-Confirming Application

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## 1 INTRODUCTION

Contact tracing has become an important measure that can be used to minimize exposure during the COVID-19 pandemic [3]. Against this background, Google and Apple have jointly developed a contact notification system [2]. In Japan, the COVID-19 Contact-Confirming Application (COCOA) was released by the Ministry of Health, Labor and Welfare [4]. COCOA enables users to receive notifications about possible contact with positive COVID-19 cases by using Bluetooth communication. For COCOA to be fully effective, it must be installed by a large number of people. However, the current penetration rate of COCOA is insufficient for effectiveness. Unfortunately, COCOA has only minimal functionality, and it is presumably difficult to motivate users to install COCOA. In Japan, it is not possible to force people to install any particular

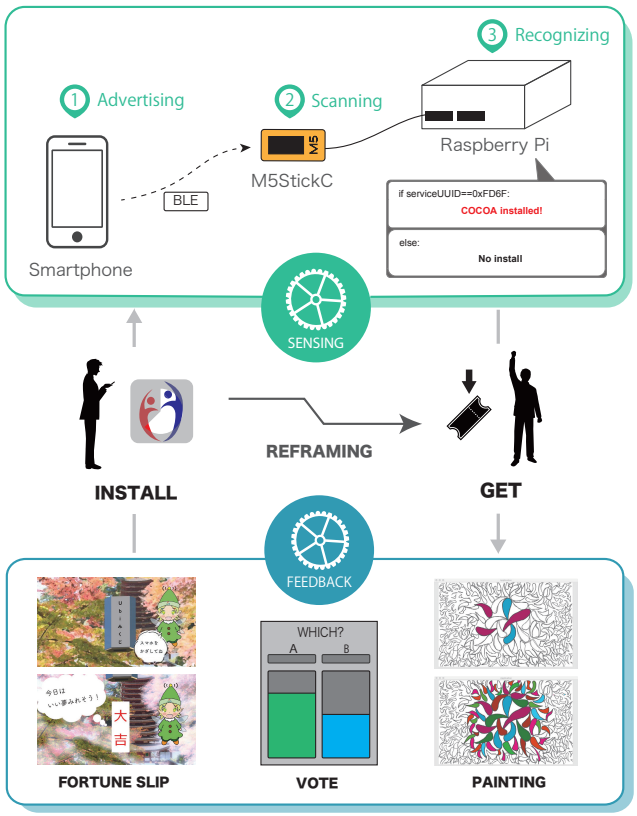


**Figure 1: System Overview**



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application. Because self-motivated installation is essential, we focus on technology-mediated nudge mechanisms [1]. Previously, we proposed a nudge using interactive systems with sensing and ambient feedback [5, 6]. In this paper, we focus on the question: how do we motivate people to install apps? We propose an interactive system that nudges users to install COCOA by reframing the act of installing COCOA as getting a ticket to participate in a fun experience. The key idea is to provide the motivation for installing COCOA by making it an enjoyable experience, through interaction with ubiquitous systems deployed in the daily environment side.

## 2 SYSTEM DESIGN

The proposed system consists of a sensing component that identifies the user's COCOA installation status, and a feedback component that provides a fun experience, as shown in Figure 1.

In the sensing component for recognizing the installation status, we use a M5StickC IoT board to sense the Bluetooth low-energy (BLE) signals emitted from the user's smartphone. The data broadcast from COCOA contains a 16-bit service universally unique identifier (UUID) (0xFD6F) specific to COCOA. Therefore, by checking whether a COCOA-specific service UUID is in the received broadcast, it is possible to detect the existence of a smartphone with COCOA installed. The sensed BLE signals are stored in a Rasberry Pi. The feedback component decides whether to initiate an event based on the recognition result for the sensing component.

When a user approaches the system, the installation status of the user's smartphone is recognized by the sensing component. In this system, only users who have installed COCOA can participate in the event. We aim to encourage the installation of COCOA by triggering the desire to participate in the interaction. The system provides two types of interaction: personal interaction and ambient interaction, as shown in figure 2.

An example of personal interaction is the digital fortune slip experience. When a COCOA installation is detected by the system as a user approaches the system, a fortune drawing will be performed as an animation on a screen connected to the system. A different example of ambient interaction is digital interactive art. Here, the system scans the smart phones with COCOA in the area and changes the representation of the art according to the number of COCOA installations. For example, as the installation rate in an area increases, the picture will become more beautiful.

## 3 CONCLUSION

We proposed an interactive system to extrinsically motivate people to install COCOA by treating the COCOA application as a ticket to a fun experience. In the future, the system will be installed in actual environments, such as cafes and restaurants, on a long-term basis to evaluate its effectiveness.

## ACKNOWLEDGMENT

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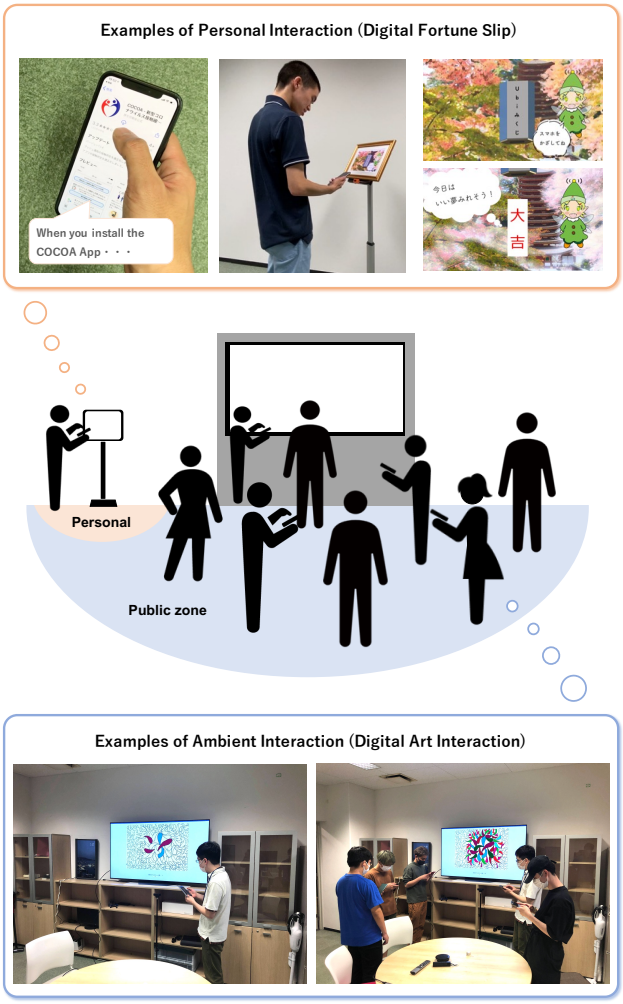


**Figure 2: Example of interaction using COCOA**

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