I Share, You Care: Private Status Sharing and Sender-Controlled Notifications in Mobile Instant Messaging

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ABSTRACT

While mobile instant messaging (MIM) facilitates ubiquitous interpersonal communication, its constant connectivity could build the expectation of an immediate response to messages, and its notifications flood could cause interruptions at inopportune moments. We demonstrate *MyButler*, an Android app prototype that instantiates two design concepts for MIM—*private status sharing* and *sender-controlled notifications*—that aim to lower the pressure for an immediate reply and reduce unnecessary interruptions by untimely notifications. Private status sharing reactively reveals a customized status

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with a selected partner(s) only when the partner has sent a message. Sender-controlled notifications give senders the control of choosing whether to send a notification for their own messages.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; *Empirical studies in collaborative and social computing*; *Ubiquitous and mobile computing systems and tools*.

KEYWORDS

Mobile Instant Messaging; Social Awareness; Notifications; Interruptions

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INTRODUCTION

Mobile instant messages and accompanying notifications are known to "significantly disrupt performance on an attention-demanding task" [7] and thus could distract user's attention [3] and cause interruptions at inopportune moments [2, 4]. In remote communications where the sender and the receiver are not physically co-located, it is difficult, if not impossible, for senders to know whether the receiver would be interrupted at the moment. Besides, in current MIM systems, there is a lack of option for senders to control notifications to not disturb the receiver.

MyButler instantiates two design concepts to improve MIM communication by enhancing social awareness and reducing interruptions: (1) private status sharing and (2) sender-controlled notifications. Private status sharing has three main characteristics: personal, custom, and reactive. A user configures a custom status to share personally with only allowed partner(s). Only when an allowed partner sends a message to the user, they see the configured status in reaction to the message. The concept of sender-controlled notifications aims to reduce unnecessary interruptions from untimely MIM notifications by including the message sender in the decision loop for the urgency of a message notification. Along with the status of the message receiver, the message sender is given two options, *Alert Now* and *Don't Alert*, to control the notification for their own message. The sender can decide whether to alert their message based on the given context of the receiver and the urgency of their message content.

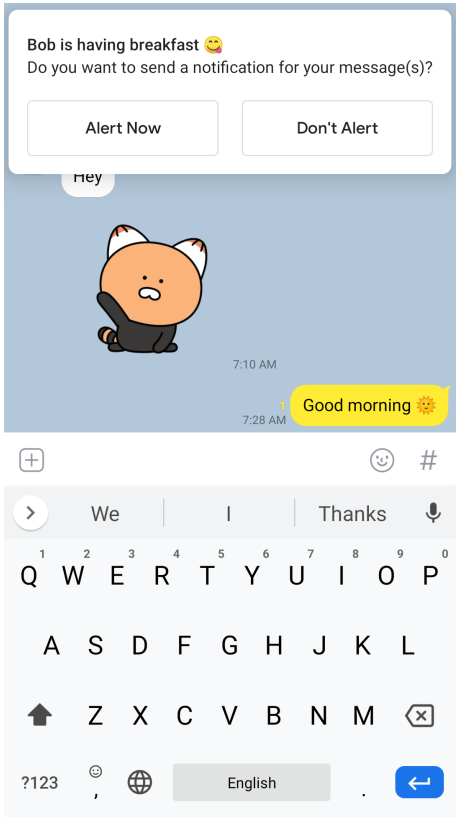

Figure 1: MyButler's push notification shows the privately shared status, "Bob is having breakfast", and two notification options, *Alert Now* and *Don't Alert*.

PRIVATE STATUS SHARING & SENDER-CONTROLLED NOTIFICATIONS

We present our two design concepts, private status sharing and sender-controlled notifications, with explanations on our design rationale and

The three characteristics of our private status sharing are personal, custom, and reactive status setting and sharing.

(1) **Personal** sharing allows users to select their own personal partner(s) to share the status with. This aims to overcome the concerns of privacy invasion in existing systems where anybody on the user's messenger friend list can see the user's status.
(2) **Custom** status setting supports high degrees of expressiveness of one's status through fullly customizable and manual selection of status. It also allows room for *plausible deniability* [1] and *Butler Lies* [6], which are crucial in alleviating social pressure [5]. The manual selection targets to mitigate the concerns related with automated availability indicators, e.g., feeling of being observed and patronized and false expectations due to wrong prediction [5].
(3) **Reactive** sharing reveals the configured status to the partner in a only when the partner sends a message to the user, as shown in Figure 1 (c). It is mainly intended to reduce the feeling of being observed in existing mechanisms that always keep the status in the user profile or on the contact/friend list. The status is disclosed only when the friend actually has the intention of talking to the person instead of spying on someone's status.

Sender-controlled notification is the concept of involving the message sender to decide how to process the notification for their own mobile instant messages. Two basic options are whether to generate the notification (*Alert Now*) or not (*Don't Alert*). *Alert Now* is the same as what an unmodified mobile instant message would generate. *Don't Alert* is sending the message without leaving any pop-up, sound, or vibration notification to the receiver.

MYBUTLER

We apply the design concepts of private status sharing and sender-controlled notifications to building an Android app prototype *MyButler* that works with KakaoTalk, a popular commercial MIM app in Korea. Our primary purpose of building the prototype is to observe the impact of our two design concepts on users' natural, personal messaging behavior. KakaoTalk-friendly implementation is therefore more advantageous over building a standalone MIM app or utilizing other more programming-friendly MIM apps such as Slack because switching the messaging environment would inevitably bring a new factor to the user's messaging experience. MyButler could be easily modified to work with other MIM apps as well.

We explain how MyButler works with a walkthrough of an example scenario. MIM communication is a bidirectional progress in which the two parties of a conversation take turns to send and receive

messages from the other. For the convenience of explanation, we take a look at one direction of the communication in this walkthrough: Alice is sending a message to Bob.

(1) Alice and Bob both install the MyButler app and add each other as the MyButler partner using their login email address.
(2) Bob opens the MyButler app or uses the Android notification bar *Shortcut*. *Shortcut* resides in the notification drawer and thus acts as a reminder for status update as well.
(3) Bob selects a status from his Favorite Status List or enters a new custom status in the status setting interface. In the figure, Bob updates his status from 'sleeping' to a new status 'having breakfast'. Selecting a new custom status and pressing the Confirm button triggers a dialog that asks for adding the new status to the Favorite Status List. If Bob chooses to add, the next time Bob updates the status, he will see 'having breakfast' in the selectable list without having to type it again.
(4) Alice sends a KakaoTalk message to Bob and receives a pop-up notification about Bob's status along with two sender-controlled notification options, *Alert Now* and *Don't Alert* (Figure 1).
(5) Before selecting an option, Alice sends all KakaoTalk messages that she intends. After sending the last message, Alice selects a notification option.
(6) If Alice chooses *Alert Now*, Bob gets a push notification for a group of messages that Alice sent in Steps (4) and (5). If Alice chooses *Don't Alert*, Bob gets no notification and can read the messages when he opens the KakaoTalk app later at his convenience.

In our demo at CSCW'20, we will show how MyButler's private status sharing and sender-controlled notifications work in mobile instant messaging between two smartphone users.

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