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Poster: Improving Communication and Communicability with Smarter Use of Text-based Messages on Mobile and Wearable devices

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ABSTRACT

While smartphones have undoubtedly afforded many modern conveniences such as emails, instant messaging or web search, the notifications from smartphones conversely impact our lives through a deluge of information, or stress arising from expectations that we should turn our immediate attention to them (e.g., work emails). In my latest research, we find that the glanceability of smartwatches may provide an opportunity to reduce the perceived disruption from mobile notifications. Text is a common medium for communication in smart devices, the application of natural language processing on text, together with the physical affordances of smartwatches, present exciting opportunities for research to improve communication between people.

1. EXAMINING THE USABILITY OF SMARTWATCHES USING REVIEWS

Consumer smartwatches are rapidly being adopted by consumers, with ever more features added by manufacturers. However, it remains unclear what smartwatches are really for. Given that smartwatches are in their second/third iterations, product reviews provide an in-the-wild comprehensive and representative look into how users have been using their smartwatches. In this previous work, we examined Amazon product reviews from users across 29 different smartwatches, 13 different manufacturers and 5 different operating systems. We trained and optimized a support vector machine (SVM) classifier to identify review sentences related to topics such as *activity monitoring*, *battery energy consumption* and *notifications*. We use the counts of topically classified sentences (in each review) to rank reviews by their importance to each topic. We examined the top 30 reviews for each topic to obtain our insights.

Results. We find that the users from the top ranking reviews for *Notifications* all similarly opined that receiving notifications was the main reason for using a smartwatch. In addition, we found evidence (33%, likely an under-reported figure due to the in-the-wild nature of the data) that the glanceability of notifications was what supported notification access. 14 (46.7%) users opined similarly, that with a smartwatch, “I don’t need to pull my phone out of my pocket every time I receive a call or text... it is the perfect early warning system for notifications.”

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2. RESEARCH PROBLEMS

While smartphones and smartwatches have helped make our lives easier, they have also complicated it. Text is a natural medium which appears to present opportunities for further exploitation, for smarter and more interesting use in applications, to improve our understanding of messages and our focus on tasks at hand, thereby improving communication between people.

Communicability of Text Messages on Smartwatches. The average user receives a large number of notifications (63.5) each day. The glanceability of smartwatches affords a physical means to reduce the disturbance caused by notifications. Given the increasing popularity of smartwatches, limited screen estate, large number of notifications, and slower comprehension of information as compared to mobile phones, there presents an opportunity to improve the communicability of text-based messages (e.g., SMS, instant messaging or emails) on smartwatches. Visual, audio or haptic techniques that succinctly summarize textual information need to be studied to help users to more quickly understand text-based information, thereby reducing the disruption to tasks at hand. For instance, previous studies have looked to encoding emotions in a message with amoeba-like abstract forms on a smartphone.

Improving Communication by Understanding Text-based Messages. Communication is the process of 1) encoding a message, 2) transferring the message using a medium, and 3) decoding the message. Text-based messages are the medium by which much communication occurs in our smart mobile device world. Text-based messages are rich in contextual information such as events, locations, and emotions. Depending on the relationship that two communicating parties have with each other, the nuances of context can be decoded by the parties differently. This presents opportunities to disambiguate messages both on the encoding or decoding end of the message. For instance, a user could be presented with provenance information (i.e., historical trace information) while a message is being written to avoid confusion or conflict. A user decoding a message could be presented with an accurate nuance of the importance of a message based on the relationship with the other party and the content of the message, helping one to direct attention on particular messages.

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