

That HAT really ties your outfit together: integrating wearables into an IoT ecosystem to augment device functionality and increase utility

Purpose

As of early 2017, wearable technology is in danger of becoming yesterday's fad. BBC News is questioning whether wearable tech has "had its day" [1] and Wallpaper* reports that wearables have "fallen below the cultural radar" [2]. This is unfortunate timing when pinpoints of interesting wearables design are, at last, glimmering on the horizon. A number of recent innovations [3][4][5] transcend the "black-slab incrementalism" [6] of the smartwatch while showing evidence of genuine utility for their wearers. But a disadvantage is that "users do not want to be walking around with fifteen devices measuring fifteen different things across multiple body parts" [7]. Consistency of data, and privacy, are two of the biggest identified barriers to adoption of wearable technology.

This investigation is motivated by the same frustration expressed by the smart textile designer ten Bhömer [8]: "With these devices here, there is still one question that is mainly unanswered: how can these close-to-the-body technologies create value for us as human beings? [...] I personally still have not found the compelling reason to keep using these systems [...] I cannot help but feel like an actor in a complex information system." Thus, the purpose of this investigation is to discover:

- *How can we create innovative wearable IoT devices that add value to everyday life?*

Methodology/Approach

This investigation is a research-through-design of wearable IoT devices for use by independent adults in routine, nonthreatening situations ("everyday wearables"). This will build upon previous work with the Hub-of-all-Things and extend it into the wearables domain [9][10]. The inspiration phase will be driven by participatory Design Fiction [11], eliciting stories of imaginary, fantastical and even impossible wearables from the users, and translating them into real device designs and prototypes. They will wear their devices in the wild, enabling us to discover the factors which lead to acceptance or rejection of wearable IoT devices.

We have chosen the HAT platform as our software infrastructure to enable the cross-device contextualization that will augment the functionality of individual devices while ensuring consistency of data and safeguarding users' privacy.

Findings

This is a work-in-progress, and the goal is to create wearable IoT devices that users will want to wear. We want to see if the HAT increases the perceived utility of the wearables.

Originality/Value

This is the first study of the participatory design of “everyday wearable” IoT devices to use Design Fiction to elicit concepts directly from independent adult users, build prototypes inspired by the Design Fictions, and evaluate the prototypes in the wild over the long term. We hope that our work will produce everyday wearables that are beautiful and useful. More than this, we hope that the HAT’s privacy-by-design, and the cross-device contextualization it enables, will address two of the major barriers to mainstream adoption of wearable technology, and thus become the foundation of a system that results in wearables that people really want to wear.

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