Getting Users' Attention using LEDs

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ABSTRACT
In this paper, we briefly present a ring prototype that could draw users' attention in order to transmit notifications in a non intrusive way to its wearer.

Author Keywords
Light; notifications; LED; wearable computing; ring; digital jewelry; information; attention; mobile computing.

ACM Classification Keywords
H.5.2. [Information interfaces and presentation]: User Interfaces - Prototyping.

THE RING RING
We wanted to design a wearable device that users would easily see while doing everyday life tasks. According to [3], the best location on the body was on the wrist. Because we also aimed for simplicity and convenience, we decided that our wearable device should be a ring. We printed an adapted ring pattern on a 3D printer, on which we added two 5mm RGB LEDs on top and a small button on the bottom.

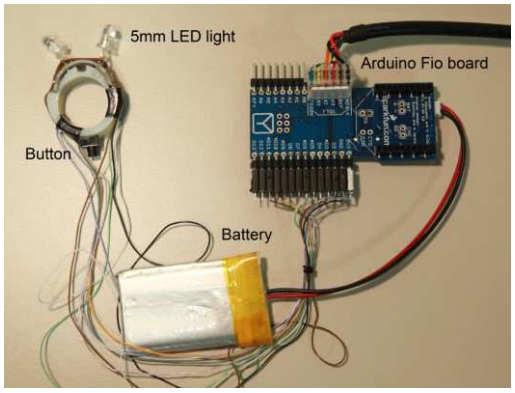

Figure 1. The Ring ring prototype.

Our prototype was then connected to an Arduino Fio board with a Bluetooth shield for communication and an external battery for power. For the purpose of the experiment, only one LED was used, the other being present as a back-up. Each 5mm LED can emit up to 8 cd in a 30° angle, corresponding to a luminous flux of 1.72 *lm*.

By focusing on the most important features, we managed to design a simple ring that could be easily produced as a real commercial product. We envision such a ring as a perfect companion and enhancement for a smartphone.

APPLICATIONS
We designed the Ring ring so that it could be simple yet useful in many scenarios. Drawing attention for important notifications was the main feature we envisioned, but there are many other: it could help users find their phone when they forget its location (in a crowded room), also as shown by previous works [1, 2, 4], a single LED can be used to carry very rich information. Finally, a ring could be paired to exchange information or even for lovers, since ring usually carry a strong emotional value.

FUTURE WORK
We would like to evaluate this prototype in real life situations. The factors of the experiment would be the task (and posture), along with the brightness of environnement. This study could help us determine under which conditions the user can quickly catch notifications from the ring.

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