

Nimio: An Ambient Awareness Device

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Abstract. CSCW research highlights the importance of awareness of coworkers' activity. We present a desktop device that by combining a tangible interface with an ambient display, supports fluid sharing of awareness amongst a closely collaborative workgroup.

Introduction

CSCW research argues the importance of the social and physical contexts in which work is embedded. Studies of people working together in physical and virtual spaces suggest that one resource in collaborative work is the ability to maintain an informal understanding of presence, availability, and activities, typically glossed as "awareness." Peripheral displays have been developed to provide co-workers with this type of presence information [3, 4]. These displays tend to reflect the desktop paradigm, whether on the computer screen or a 2D extension into the physical workspace. The use of tangible artifacts in the workplace has also been studied [2], but the focus tends to be on paper and other text displays. Many computationally enhanced tangible interfaces seek to foster awareness for interpersonal communication [1], but are typically designed to enhance already present intimacy among two people.

Tangible interaction is a rich means for communication, but often requires users' active participation, which may be inconvenient at work. Ambient displays are less distracting, but they often allow only passive participation. This demo seeks to allow users to move fluidly between passive and active interaction by combining the benefits of tangible interaction and ambient displays.

Design Motivation

Nimio was designed to support a group of ten administrators at a technology institute. They reside in two separate suites, having recently moved from a cramped hallway where, according to them, they were more aware of each other's activities. They report walking to the other suite to see colleagues up to two dozen times daily. Every interview we conducted was interrupted by a colleague checking the availability of the interviewee. Two interviewees reported calling first to see if the other is available, though when this happened during the interview, the colleague appeared in person despite lack of response to the phone. Interviewees made a point of telling us how closely they work, and it is notable that they like to present themselves as a close-knit group. At our first visit on site, most group members had jasmine blossoms in their offices. We were told later that they were all from the same bush. We intend Nimio to provide the group with a means to maintain peripheral awareness of each other, and also to allow them to demonstrate the close relationship that they all believe they have.

How Nimio Works

Nimio leverages the casual use of desktop toys to support group interaction. Made of touchable translucent white silicone (see Fig. 1), they will come in four shapes (pyramid, cube, triangular prism and square prism) and three colors (red, green and blue). Using embedded microphones and accelerometers as input and LEDs as output, they will reflect activity level around the other Nimios.

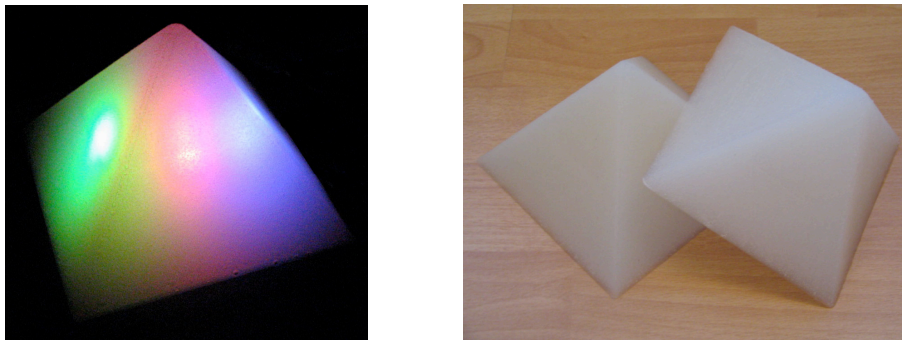


Figure 1. Nimio in full display (left) and two Nimios (right).

Sound in the vicinity of one of the “red” Nimios will be displayed on all other Nimios as a pulsing of the red light in rhythm with the sound. If sound is present near multiple “red” Nimios, the rhythms of the pulses will be overlaid.

The Nimios will respond to fidgeting. Though this activity will only affect Nimios of the same group (defined by having the same color or shape), users may propagate the display. For example, if a red cube is moved, all cubes and red

objects will slowly pulse red. If a red prism is then moved, all prisms will see the display. If this fidgeting propagates and a member from each group (one of each shape, and one of each color) participates simultaneously, then each participating Nimio will use a fourth orange light to display a phase through the rainbow. The pulsing will be timed such that, if the toys are collocated, a rainbow wave will propagate through them. This bonus will at first be a surprise, and hopefully will spark group exploration.

Finally, when Nimio is actively shaken, toys in the same group will be lit with the color of the shaken Nimio for 5 seconds. The Nimio that has been shaken will also display its own color as feedback. Group members may respond by shaking within 30 seconds, causing other members of the original group to light up in the respondent's color. Each Nimio is uniquely identifiable by shape and color. If, for example, the blue pyramid is shaken, the owners of other pyramids will be able to identify the shaker while the owners of other blue shapes will have a more nebulous awareness of the action.

We will bring a full complement of Nimios for conference attendees to play with and explore. As they are a self-sustained group of small toys, they do not require much space or equipment. A table and a nearby power outlet will suffice.

Conclusions and Future Work

By combining tangible and peripheral interaction, Nimio becomes an engaging and pleasant extension of people's typical activities. Nimio presents itself as a toy rather than tool which must be used in a prescribed way; thus it can be explored or ignored according to preference.

We will evaluate Nimio by observing how it figures into the work practices of the group, and subsequently alter its behavior if necessary. Nimio is part of a larger initiative to enhance connectivity among all members of the institute, and may serve as a probe to increase our understanding of how presence awareness can be achieved and factored into the work practices of this multidisciplinary institute.

References

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