Puff, Puff, Play: The Peripipe Remote Control

Tommy Feldt, Sarah Freilich, Shaun Mendonsa, Daniel Molin, Andreas Rau
School of Computer Science and Communication, KTH Stockholm, Sweden
{tfeldt, sarfre, mendonsa, dmol, arau}@kth.se

ABSTRACT

We introduce the Peripipe, a pipe-shaped tangible remote control using breath as input, and demonstrate how it can be used to control a music player. The pipe works by sensing changes in the air pressure and determining whether the user has performed a puff, double-puff, sip, double-sip or a continuous suck or blow action. Additionally, inspired by ephemeral user interfaces [1], the Peripipe provides fumeovisual feedback, using color-illuminated smoke to display the system status. The pipe makes use of an rFlea, a hardware prototyping platform based on Arduino with built-in wireless communication, to send commands to an Android phone over the ANT+ protocol [2].

1. DESIGN MOTIVATIONS

With the Peripipe, we wish to challenge the expectations of the traditional tangible interface as the most obvious and appropriate implementation of a remote control. Current remote controls are often just tools to operate appliances at home or in a mobile setting, designed without much thought of the emotion or attachment they instill in the user. Moreover, physical knobs and switches, though precise and natural-feeling in their interaction, often rely on highly abstracted representations of the system status. They also have strong connotations of machinery, industry and automation, giving little room for personality and self-expression.

We argue that conventional controls for music players, while functional, remain detached from the emotional experience that is listening to music. Designing a remote control for a music playlist, we wanted the method of interaction to correspond with the qualities of the action performed. As the use of breath is both natural (used since your birth), emotionally loaded (blowing out candles on a birthday cake) and connected to music (wind instruments), we feel that it is an appropriate metaphor for controlling music playback.

Previous implementations of breath-controlled interfaces for accessibility applications have also demonstrated that it is possible to achieve a very high level of control by changing the air pressure using one's mouth [3, 4].

Figure 1. The Peripipe remote control uses illuminated smoke for feedback

Constructing the remote control as an artifact that users actually want to touch and feel for its own sake also helps to build up a relationship between user and technology. The Peripipe is lovingly handcrafted from Swedish cherry wood and makes use of the unique aesthetics and qualities that organic materials bring [2]. Additionally, the form factor of the pipe carries cultural value in itself, as smoking pipes have been around for a long time and are connected to meditation and relaxation. Unlike more traditional remote controls, you will want to hold the Peripipe in your hands. Therefore, using a pipe for controlling music with your breath seems like the perfect amalgamation of interaction, physicality and emotion.

2. LIVE DEMO

At the live demo, conference attendees will be able to try the pipe themselves and control a music playlist with sips and puffs. A short video demonstration of the Peripipe can be found at https://vimeo.com/109721625.

3. KEYWORDS

Tangible interfaces; natural materials; remote control; sip-and-puff

Acknowledgments

We would like to thank our teachers in the course DH2400 Physical Interaction Design and Realization at KTH: Cristian Bogdan, Vasiliki Tsaknaki and Jordi Solsona Belenguer, without whom we would never have come this far.

4. REFERENCES

[1] A. Sylvester, T. Döring, and A. Schmidt, "Liquids, smoke, and soap bubbles: reflections on materials for ephemeral user interfaces," in *Proceedings of the fourth international conference on Tangible, embedded, and embodied interaction*. ACM, 2010, pp. 269–270.

[2] Y. Fernaeus, M. Murer, V. Tsaknaki, and J. S. Belenguer, "Handcrafting electronic accessories using'raw'materials," in *Proceedings of the 8th International Conference on Tangible, Embedded and Embodied Interaction*. ACM, 2014, pp. 369–372.

[3] J. F. Filho, T. Valle, and W. Prata, "Pufftext: A voiceless and touchless text entry solution for mobile phones," in *Proceedings of the 15th International ACM SIGACCESS Conference on Computers and Accessibility*, ser. ASSETS '13. New York, NY, USA: ACM, 2013, pp. 63:1–63:2. [Online]. Available: http://doi.acm.org/10.1145/2513383.2513424

[4] C. Gerdtman and M. Lindén, "Six-button click interface for a disabled user by an adjustable multi-level sip-and-puff switch," *Proceedings of: Content aggregation and visualization (SIGRAD 2010)*, pp. 25–26, 2010.