

Paddle: Highly Deformable Mobile Devices with Physical Controls

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Abstract

Paddle is a highly deformable mobile device that leverages engineering principles from the design of the Rubik's Magic, a folding plate puzzle. The various transformations supported by Paddle bridges the gap between differently sized mobile devices available nowadays, such as phones, armbands, tablets and game controllers. Besides this, Paddle can be transformed to different physical controls in only a few steps, such as peeking options, a ring to scroll through lists and a book-like form factor to leaf through pages. These special-purpose physical controls have the advantage of providing clear physical affordances and exploiting people's innate abilities for manipulating objects in the real world. We investigated the

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benefits of these interaction techniques in detail in [1]. In contrast to traditional touch screens, physical controls are usually less flexible and therefore less suitable for mobile settings. Paddle, shows how mobile devices can be designed to bring physical controls to mobile devices and thus combine the flexibility of touch screens with the physical qualities that real world controls provide. Our current prototype is tracked with an optical tracking system and uses a projector to provide visual output. In the future, we envision devices similar to Paddle that are entirely self-contained, using tiny integrated displays.

Author Keywords

Deformable Interfaces; Tangible Interfaces; Mobile devices

ACM Classification Keywords

H.5.2 [Information interfaces and presentation]: User Interfaces: Input devices and strategies.

Reference

[1] Ramakers, R., Johannes, S. and Luyten, K. Paddle: Highly Deformable Mobile Devices with Physical Controls. In *Proc. CHI'14*

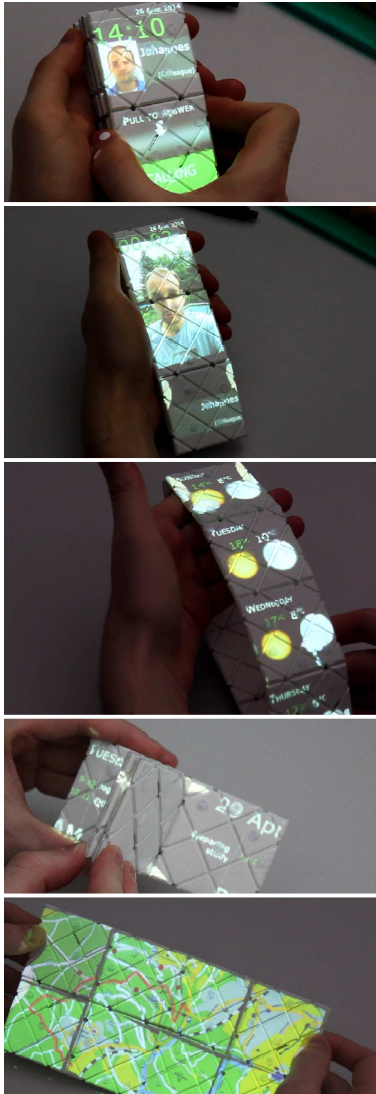


Figure 1: Paddle can be transformed to various form factors.