

COMET: Collaboration in Mobile Environments by Twisting

Nitesh Goyal

RWTH University, Aachen

nitesh.goyal.84@gmail.com

Abstract. This paper describes a novel interaction style and vocabulary of physical deformation based gestures for collocated collaboration with deformable mobile devices. These gestures include bending and twisting to improve user experience while collaborating with limited screen estate and device footprint.

Details

Commercial handheld devices often adapt the traditional WIMP interaction paradigm. Icons and widgets occupy precious screen estate and external input devices, such as pens, occupy a second hand and are easily misplaced (Schwesig, C., 2004). (Bergquist J., 1999 & Gellersen H., 2005) further show the necessity of CSCW in mobility. There have been several ideas on how to physically deform computers, e.g. (Schwesig, C., 2004; Harrison, B., 1998; Teh, J., 2008; Michelitsch, G., 2004; Murakami, T., 1994; Sheng, J., 2006; Herkenrath, G., 2008). However, there is no prior work that refers to using these deformations for collaboration. Also, the suggested deformations and haptic feedback in the mentioned works have restricted functionality and cannot model a collaborative environment adequately. As further mentioned in (Schwesig, C., 2004; Harrison, B., 1998), WIMP interfaces are not the best-suited interfaces for such devices. We show how deformation based gestures could be extended to be used in a collaborative environment to perform tasks like sharing files, contacts, making

appointments. They do not obstruct existing gestures. Instead, they complement the existing or previously proposed gestures for text entry, selecting, deselecting, zooming in/out, and scrolling for standalone devices. These three naturally mapped gestures are shown in the Table 1 below.

BREAK		The user bends the handheld across the two diagonals to “break” the environment and choose the desired environment.
WAVE		The user pulls one part towards self and pushes the other away to split the screen. The part closer to him shows his own display, while the other part shows the collaborator’s view.
PULSE		The user creates a WAVE and passes it from one end to the other end in the direction of the receiver to send the data.

Table 1. The three gestures by physically deforming the handheld device. As shown, the user does not have to change the grip for performing the tasks. He just has to hold the device in two hands.

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