Stretch & Squeeze

A computer mouse is a generic interaction tool designed for navigating graphical elements on a two dimensional plane. It is developed in a context of technology and formed to serve the ergonomics of the desktop work situation. A textile mouse, on the other hand, engages a different context. The textile alone evokes the traditions of clothes and home décor that will inevitably influence how it is perceived and consequently used.

We have in this proposal focused on the generic character of the mouse rather than its specific actions. Our textile mouse affords continuous opportunities for stretches and squeezes. Where a soft knob invites a squeeze the slender area in-between two knobs invites a stretch. We all have a familiarity with knitted textiles and know them to be elastic soft objects that tempt us to touch and feel. And as such interactions with our Stretch & Squeeze mouse builds on how we generally interact with textiles. The interpretations of the actions are, however, dependent upon where and how the mouse is applied.

We see the Stretch & Squeeze mouse used in a range of different ways and contexts. It is wireless, and it is therefore possible to move around as an independent object, for instance, interacting with other mobile devices or with systems in the urban environment. There may be several of them at play at once serving different purposes or, for instance, two both controlling the same game console. The color and/or the type of yarn can be used to indicate the specific purpose. A Stretch & Squeeze mouse in a kitchen may, for instance, be knitted with a cotton yarn where a version that is wearable and double as a scarf may be made of wool.

The "Stretch" is made of lines of conductive yarn, which through stretching will change its conductive resistance—a change detected by the LilyPad. The "Squeeze" is made by knitting areas of conductive yarn on the inside of a knob which then constitutes a full circuit when they touch. Each line of stretch and each knob is given an ID number for more minute control, but especially the stretch will most likely be a continuous and less precise interaction.

See illustrations below.

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Delia Dumitrescu is a PhD student at The Swedish School of Textiles, University of Borås and the Department of Computer Science and Engineering, Chalmers University of Technology, Gothenburg. Her research explores ways to design textile materials that join together aesthetics and computation as a way to create interactive architectural environments.

Anna Persson is a PhD-student at the Swedish School of Textiles and Department of Computer Science and Engineering at Chalmers University of Technology. Her research focuses on contributing to the exploration of expressional possibilities for interactive knitted textiles with focus on visual and tactile interactive expressions. She is working within a design research program where experimental design examples and experimental design techniques are introduced and explored.

Anna Vallgårda, PhD, is a Post Doc at the Swedish School of Textiles, University of Borås. Her research evolves around exploring the computer as a design material through theoretical and practical experiments with computational composites. Currently, she is investigating the structures of knitted textiles as means to develop dynamic reversible and irreversible expressions controlled by computers.
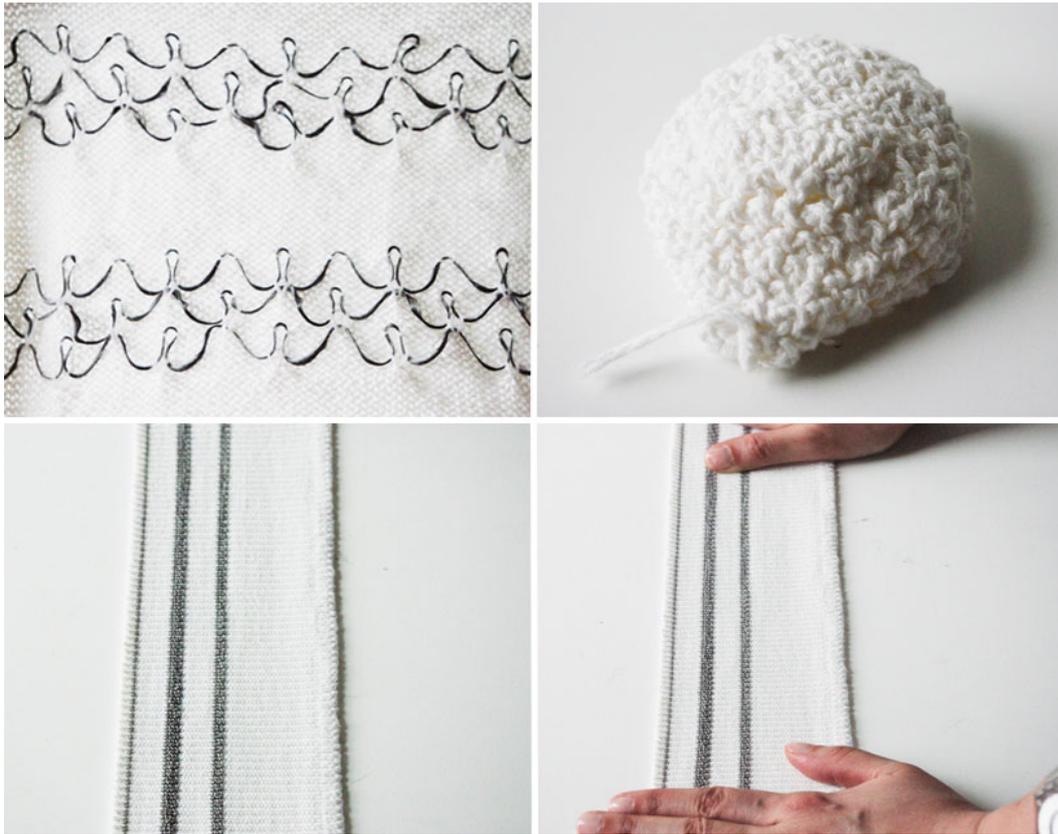
Figure 1 Textile samples and forms studying possible ways of constructing Stretch & Squeeze. Top left: knitted inlay pattern of conductive thread to be inside the knob. Top right: study of a knitted knot. Bottom: Knitted stretch with conductive thread.

Figure 2 Proposal for use of the Stretch & Squeeze. Left: S&S is hanging from the ceiling, for example, in the living room controlling a gaming consol or the general electronics in the room. Right: S&S is used as a scarf either interacting with other mobile devices or with electronics in the urban environment.