
HELLO

ENTER

1
Paper Generator harvests energy from rubbing and activates the e-paper display, revealing the word *hello*.

UIST is a premier forum for innovations in the software and hardware of human-computer interfaces. The UIST demo program enables attendees to experience first-hand the most interesting next-generation user interface technologies. The UIST 2013 demo program featured technologies ranging from energy-harvesting interactive paper to pneumatically actuated materials, providing attendees a vivid preview of some of the interactive systems that might shape our daily lives in the future.

Per Ola Kristensson and T. Scott Saponas, UIST 2013 Demo Chairs

DEMO HOUR

1. Paper Generator

The Paper Generator is a new energy-harvesting technology that generates electrical energy from user interactions with paper-like materials. These energy harvesters are flexible, lightweight, and inexpensive. They utilize a user's gestures such as tapping, touching, rubbing, and sliding to generate energy.

The harvested energy is used to actuate LEDs, e-paper displays, buzzers, and other devices to create interactive applications for books, postcards, posters, and other printed media.

http://www.disneyresearch.com/project/paper-generators/
https://www.youtube.com/watch?v=4WaUcXSfPTg
Karagozler, M.E., Poupyrev, I., Fedder, G.K., and Suzuki, Y. Paper Generators: Harvesting energy from touching, rubbing and sliding. *Proc. of UIST'13.* ACM, New York, 2013.

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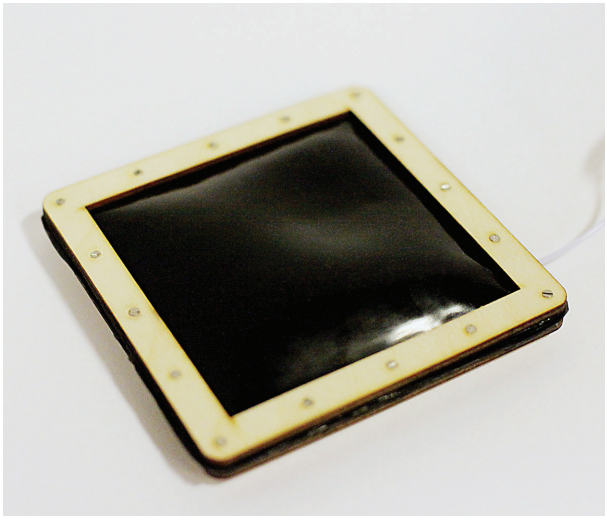

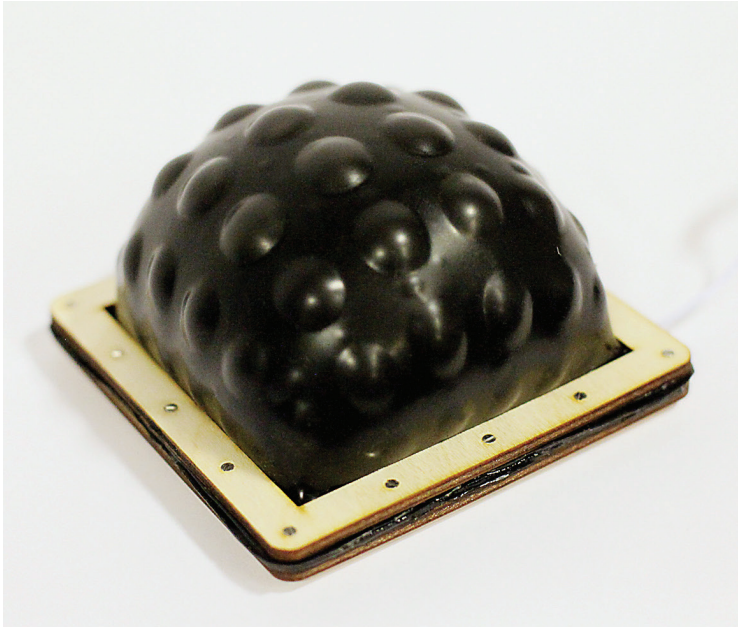

2
By increasing air pressure, the surface of PneUI's elastic fabric deforms.

2. PneUI

Inspired by ocean organisms that morph and move bodies without rigid skeletons, PneUI (p'newee) is an enabling technology to build shape-changing interfaces through pneumatically actuated soft composite materials. The composite materials integrate the capabilities of both input sensing and active shape output. This is enabled by the composites' multilayer structures with different mechanical or electrical properties. The shape-changing states are computationally controllable through pneumatics and predefined structure. The design space of PneUI is explored through four applications: height-changing tangible phicons, a shape-changing mobile device, a transformable tablet case, and a shape-shifting lamp.

http://tangible.media.mit.edu/project/pneui-pneumatically-driven-soft-composite-material/
https://vimeo.com/63591283
Yao, L., Niiyama, R., Ou, J., Follmer, S., Della Silva, C., and Ishii, H. PneUI: Pneumatically actuated soft composite materials for shape changing interfaces. *Proc. of UIST'13.* ACM, New York, 13–22.

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3. Transmogrification

A transmogrifier is a novel interface that enables quick, on-the-fly graphic transformations. An image region can be specified by a shape and transformed into a destination shape with real-time visual feedback. Both origin and destination shapes can be circles, quadrilaterals, or arbitrary shapes defined through touch. Transmogrifiers are flexible, fast, and simple to create and invite use in casual InfoVis scenarios, opening the door to alternative ways of exploring and displaying existing visualizations (e.g., rectifying routes or rivers in maps), and enabling free-form prototyping of new visualizations (e.g., lenses).

http://www.transmogrifiers.org/
https://www.youtube.com/watch?v=S1Roi2NOmx8
Brosz, J., Nacenta, M.A., Pusch, R., Carpendale, S., and Christophe Hurter, C. Transmogrification: Casual manipulation of visualizations. *Proc. of UIST'13.* ACM, New York, 2013, 97–106.

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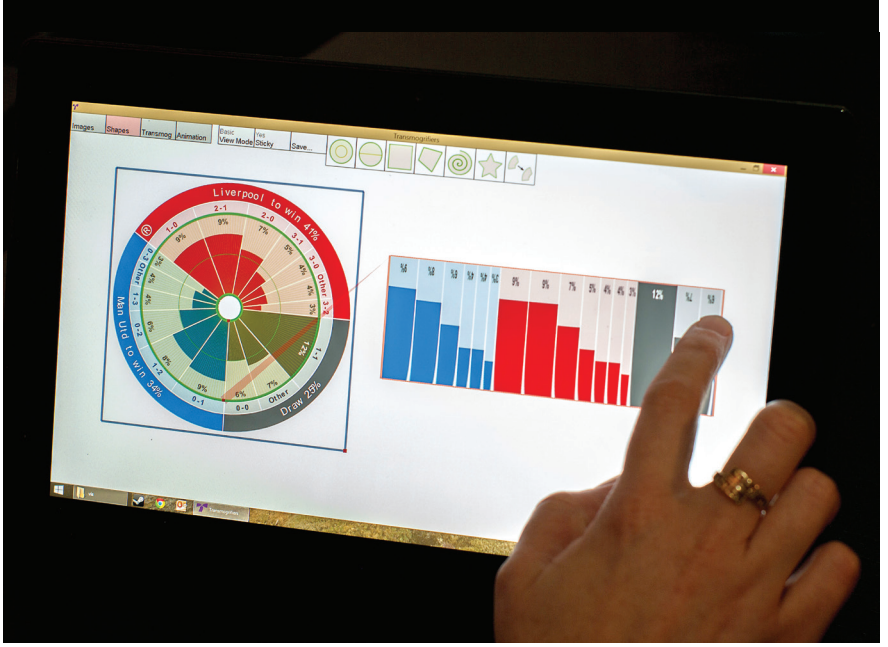
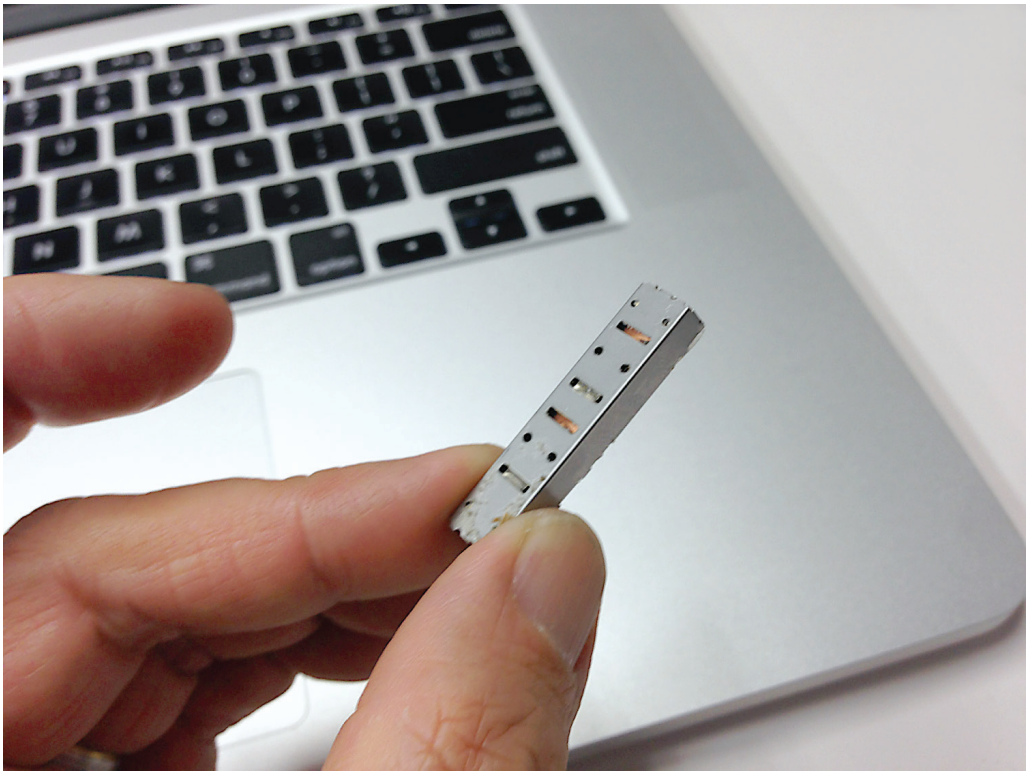


3
Transmogrification of a Nightingale chart (left) into a bar chart (right).



4
Traxion is a virtual force-inducing device based on asymmetric acceleration.

4. Traxion

This research introduces a mechanism to induce a virtual force based on human illusory sensations. An asymmetric signal is applied to a tactile actuator such that the user feels the device is being pulled or pushed in a particular direction, although it is not supported by any mechanical connection to other objects or the ground. The proposed device is smaller and lighter than any previous force-feedback devices. This small form factor allows the device to be implemented in several interactive applications, such as a pedestrian navigation or an untethered input device with virtual force.

http://lab.rekimoto.org/projects/traxion
https://vimeo.com/84665437
Rekimoto, J. Traxion: A tactile interaction device with virtual force sensation. *Proc of UIST'13.* ACM, New York, 2013, 427–432.

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DOI: 10.1145/2596630