



Piezo4Haptic

Automated feedback from piezoelectric actuators

What is it

A haptic interface is a new type of man-machine interface, which allows the user to interact with the environment using his/her sense of touch. Integrated piezoelectric actuators make the demonstrator screen vibrate imperceptibly based on a vibration mode of several tens of kHz. The vibration allows the user to feel complex haptic effects such as texturing or relief. An innovative "piezo-in-flex" technology enables the collective integration of commercial piezo ceramics, for flexible, conformable haptic interfaces.

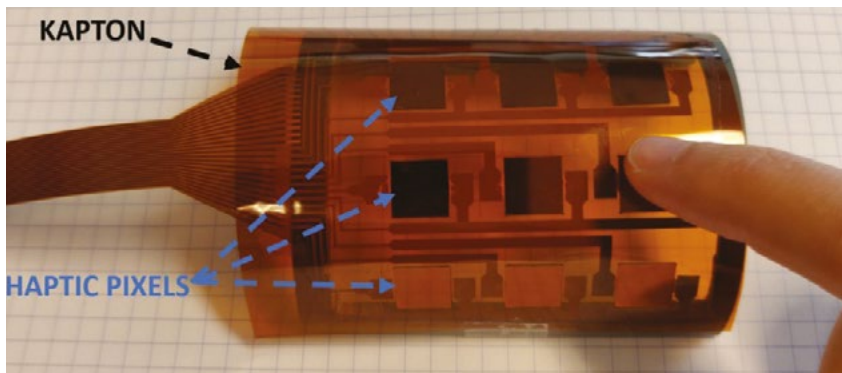
Applications

All human-machine interfaces can be potentially enhanced by introducing a haptic effect. For example:

- Haptic smartphones
- Guidance or access to digital information for the visually impaired
- Automotive dashboards with integrated haptic buttons

What makes it unique

Most haptic demonstrators use piezoelectric ceramics, which need to be glued individually and manually to the interface. CEA-Leti is leveraging its 200 mm technology platform to integrate piezoelectric actuators collectively and cost-effectively on a polymer using an innovative “piezo-in-flex” technology. This process enables flexible and conformable piezoelectric patches that can be used to functionalize any surface and to obtain flexible haptic interfaces.



What's next

CEA-Leti is working to improve the flexible haptic demonstrator to enable a new application for the visually impaired. In parallel, the institute is also working on the development of a technology to make piezoelectric actuators completely transparent.

Interested in this technology?

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