Encapsulated transducer for haptic intarfaces

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Invention

The invention falls into the technical sector inherent in piezoelectric transducers, used in utility applications in different areas, for example in the biomedical, manufacturing and interactive video game fields. Of particular interest is the "haptic bracelet" version of the technology for the uptake of an environmental signal and its conversion into compliant mode, useful for an operator who carries out a task in a production line.

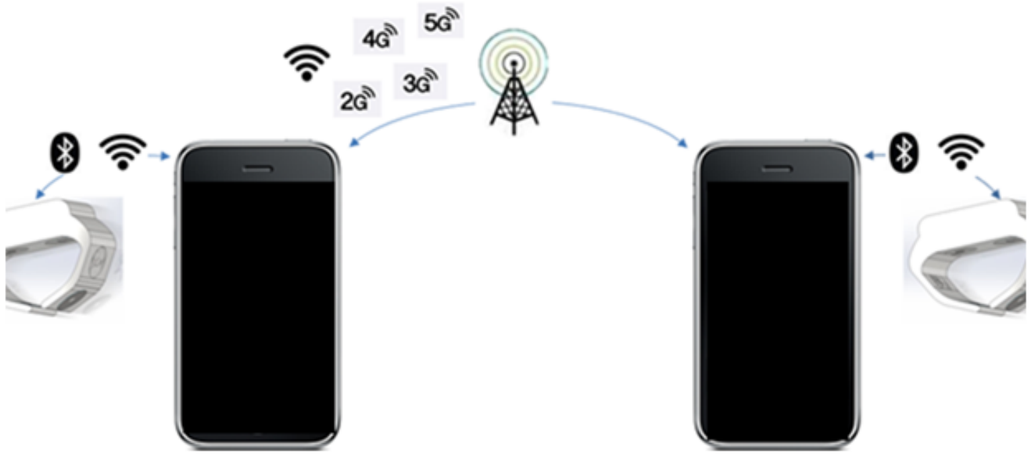
The invention describes the methods of production of encapsulated piezoelectric transducers, having optimal characteristics for use in the construction of haptic interfaces. Such transducer can be incorporate into a printed polymeric material, such as a bracelet, allowing the conversion of ultrasound signals into an electrical and viceversa, for tactile feedback to the operator. The rigidity of the interface, together with the new geometry, has generated an effective transmission of vibrotactile stimulation and has made the encapsulated transducer a performing component for the development of wearable touch displays. Psychophysical results in all sensory conditions tested, confirmed that the integrated tactile system was effective in providing vibrotactile information when the frequency applied to the skin is in the range 200-700 Hz and the variation of the stimulus is greater than 100 Hz.

The main advantages are:

- Captures and transforms an environmental signal into another type of haptic signal perceptible by people;
- An operator wearing the bracelet, will be hands-free hence available to carry out other tasks;
- The piezoelectric signal does not disturb or damage the operator.

CNR – Consiglio Nazionale delle Ricerche is a co-owner of the patent.

Drawings
& pictures



Industrial applications

The fields of application are:

- Communication at long distance between people;
- Urban navigation;
- Gestural remote control of drones or other radio-controlled objects;
- Transmission of tactile alarm signals to prevent collisions or dangerous situations;
- In the clinical-surgical field.

Possible developments

The research group is interested in obtaining industrial collaborations aimed at increasing the technological maturity of the present invention or industrial partners interested in taking the license of the technology object of this patent.

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