ELECTROMECHANICAL CLOTHING

Computers, as we currently use them, are typically connected to us by way of a keyboard, monitor, loudspeaker, mouse and printer. In the case of computer gaming stations, such as the Sony Playstation, the keyboard and mouse are replaced with a hand-held games console. In recent years the games console has begun to be replaced by other devices. For example, the game *Time Crisis* uses a gun for input, the *Eye Toy* game uses a video camera for input, and *Dancing Stage MegaMix* uses a dance mat for input.

However, computers and play stations generally supply all the feedback through a monitor and a loudspeaker (and/or a printer). To be truly connected to a computer, all forms of feedback, not just auditory and visual, should be employed. In particular, **tactile feedback** would be advantageous for enhanced virtual reality.

The invention described here relates to articles of clothing worn next to the skin which supply tactile sensations all over the body as dictated by computer signals.

In its simplest form the invention can be made from an array of miniature loudspeakers fastened to the inside of a tight-fitting vest with the cones or plates of each loudspeaker being pressed directly onto the skin. When specific signals are sent to each loudspeaker, a sensation (rather than a sound) can be produced at any particular location on the body, or spread over an area of skin, or supplied in such a way as to give the impression of something moving over the skin.

In a more sophisticated form, the invention may be constructed as an array of (stacks of) piezoelectric crystals attached to the inside of a Lycra suit. The wires from one side of each crystal might all be connected together and grounded. The wires from the other side of each crystal receive signals from a computer. There are, as a result, potentially many direct wire connections to the computer. This can be greatly simplified by incorporating scanning techniques leading to far fewer direct connections. This is not relevant to the basic principle as described here.

Given signals of sufficient strength and crystals of sufficient size, a "*feely suit*" will allow programmable tactile sensations to be transmitted to a body in order to enhance (or replace) visual and auditory feedback from computer systems.

The invention could be applied in a number of ways. For example, it could be incorporated in the Playstation game *Time Crisis*, or used at LASERQUEST, to give a sharp sensation at the place where your body has been "hit" by a bullet. It could be applied in a horror movie to give the impression of a cold wind blowing past. It could be used to transmit recognisable Braille-like letters onto the fingers, hand or forehead of a blind person to allow them to read better.

Given corresponding input devices, the "*feely face mask*" could be used to transmit a smack in the face over the Internet, or the "*feely gloves*" could be used to shake hands over the Internet. The potential areas of application of this simple invention are abundant. Essentially the invention extends the variety of human senses available for virtual reality applications.

CLAIM

A garment of clothing or headwear fitted with electromechanical devices to transmit tactile impressions to the wearer’s skin from computer-generated signals.

ABSTRACT

FEELY OUTFITS OF ELECTROMECHANICAL CLOTHING

The invention relates to articles of clothing worn next to the skin which supply tactile sensations to the body as dictated by computer signals.

The invention may be demonstrated using a large array of miniature loudspeakers fastened to the inside of a vest with the cones of each loudspeaker being pressed directly onto the skin. A given loudspeaker can produce a programmable sensation at that location.

The invention may be better constructed as an array of piezoelectric crystals attached to the inside of a tight vest. Wires to each crystal receive signals from a computer. Given signals of sufficient strength and crystals of sufficient size, the "*feely garment*" will allow programmable tactile sensations to be transmitted to a body in order to supplement the usual visual and auditory feedback from computers with touch.