Project Description

“Smart Sculptures - Interactive Skin” is a set of interactive interfaces based on human skin and hair. Our own skin and hair is the largest organ of the human body: a tactile reactive interface with special metaphorical connotations with communication and sensitivity.

The main aims of our research team are:

- to create ergonomic objects which are sensitive to temperature, pressure and vibration and which provide tactile, acoustic and visual feedback including scientific visualisation.
- to simulate biological conditions and metaphors in relation to interactive learning
- to explore the spatial and social communication of human-artefact systems in human-computer-interfaces (HCI)

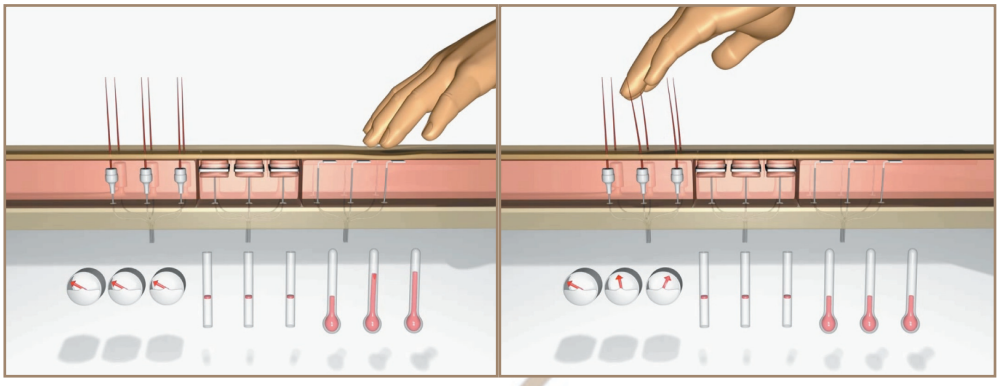
We hope that the final work will blur the boundaries between artificial and natural surfaces and create a new social level of visual and acoustic communication. Of particular interest is the collapsing of the gap between touch and the other senses (vision, hearing, proprioception). A set of prototypes with related environments have already been produced and tested with visually impaired and handicapped users. During these tests we found that particular needs of these users must be addressed in further developments. Currently, we are searching for more appropriate technical and conceptual solutions and revise our design ideas. We realise that a high degree of interdisciplinary collaboration is necessary to focuse on the following interlocking research components:

A) Interface research
    1) ergonomics 2) sensor systems 3) position tracking 4) social communication
B) User group evaluation for interactive learning
    1) handicapped users 2) scientific communities 3) art and design public
    4) evaluation on a clinical and a psychological level
C) Visualisation research
    1) scientific image acquisition 2) biological simulation 3) compositing and integration
    4) presentation techniques
D) Acoustics and Sound research
    1) acoustic spatialisation 2) sound recognition in relation to user navigation
    3) realtime feedback 4) smart communication

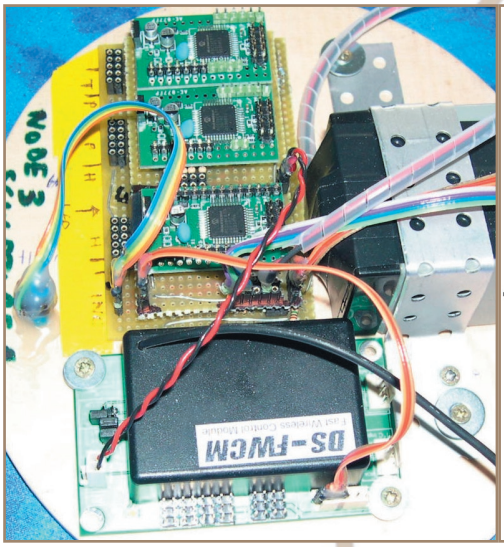
We are hoping that our research might help to increase our understanding about the social and spatial roles of the skin as the ultimate interface by focusing on the character of the meeting point between the users body and each Smart Sculpture.

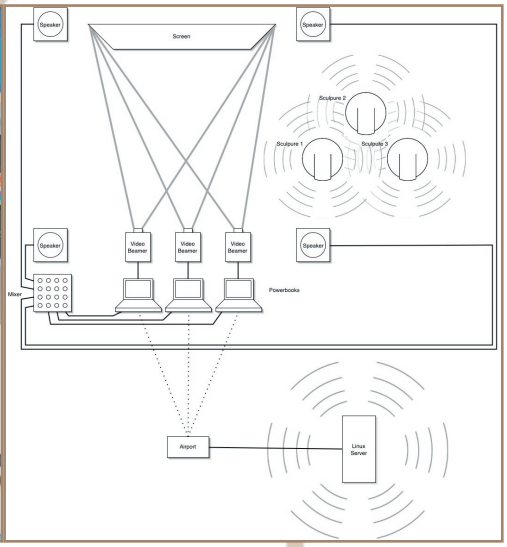
Installation consisting of three Smart Sculptures which control a multimodal environment

Gallery



Two still frames from a computer animation depicting the interaction pinciples with an artificial skin





Left: Electronic components within a Smart Sculpture

Right: Schematic setup of a multimodal environment

Two visually impaired women participating in the interface evaluation

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