Sensory Threads

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Sensory Threads is based on earlier and ongoing collaborative work between the creative arts organisation Proboscis and Birkbeck College, on developing participatory sensing projects: building and adapting platforms for environmental sensing by citizens that map and correlate the sensor data to other kinds of contextual knowledge [1, 2]. These projects have not only explored the nature of data collection but also issues of public engagement through playful and social activities such as street performance/carnival and hobbyist robotics. Sensory Threads continues in this vein, bringing in new partners to explore how sensor technologies increasingly mediate our perceptions of the world around us, and what happens when we extend the sensing of the 'environment' to include our own bodies.

Rationale

The environment around us is a mass of sensory information, some of it easy to detect - playing on our visual, aural, gustatory, olfactory and tactile senses, whilst others are less perceptible - electro-magnetic radiation, hi and lo sound frequencies, non-visible light spectrum. Yet these imperceptible streams interact with us regularly as we go about our everyday lives. Sensory Threads seeks to create opportunities to make perceptible these phenomena, some natural and some man-made, that increasingly pervade and affect our everyday lives, yet remain on the peripheries of our human senses.

Sensor technologies increasingly mediate our perceptions of the world around us, and we are interested in what happens when we extend the sensing of the 'environment' to include our own bodies, and do not just view the environment as something external to our own being. Sensory Threads is designed to stimulate questions about how we are part of our environments and how we can become more sensitised or attuned to their complex patterns and rhythms: how might this enable people to uncover evidence about their environment and its effect on their bodies; what kinds of playful and socially engaging activities might these activities further stimulate; and, what are the processes of knowledge exchange that flow between the participants in remote sites.

Moreover, Sensory Threads seeks to investigate what happens when wearables move beyond being technologies designed for individuals and are transformed into tools of 'collective sensing'. What happens when spatial annotation projects stimulate participants' behaviours through their own emergent and unpredictable movements through an environment, not through pre-defined choices determined in advance by the project's makers or by 'interesting' geographic sites.

Sensory Threads Experience

Sensory Threads enables a group of four people to become Explorers of their environment and conduct group Explorations wearing bio and environmental sensors and being fed an emergent, multi-layered and multi-dimensional soundscape generated in response to the sensors of their wearables. Variations in the soundscape will reflect changes in the Explorers interactions with each other, as well as in the environment around them. The sensors will be tuned to phenomena at the peripheries of human senses,

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aiming to provoke sensitivities to the unseen forces that we flow through in our daily activities. At ‘peak’ moments in the sensors data stream the Explorers will be prompted to take digital photos and snapshots of their conversation will also be recorded.

A second layer of interaction involves remote participants in a gallery installation setting who can interact with the Explorations (both ‘live’ and some recorded) via a sonic/visual/haptic interface. In the installation, participants will have the data stream from the Explorations transformed into a tactile, haptic sense - turning the data of phenomena beyond human senses into a physical sensation of touch, augmented with audio of the soundscape generated for the Explorers and map info of where the journeys took place and the images and conversation snippets recorded.

Technology

Sensory Threads has two main technical elements - the wearable sensor units and the installation interface. The project switches between ‘live’ (when Explorers are actually moving through an environment) and ‘recorded’ (playback of recorded Explorations for installation visitors to experience).

Wearables. The Explorers wearables are based on the Snout Sensing Platform [1] and enhanced with the Centre for Digital Music at Queen Mary, University of London. Each unit contains several sensors (low frequency sound, heart rate, sonar, light spectrum), the Snout sensing unit (built using the Gumstix Linux platform) which collects and records the sensor data and relays it over wireless to the co-ordinator unit. The co-ordinator unit receives the data and feeds it into a generative audio algorithm, which is then transmitted back to the Explorers via Bluetooth earpieces. The master unit also captures location data via GPS, and computes the shifting proximities of the Explorers to each other as they move through the environment.

Installation. The installation receives data from the wearable co-ordinator unit via an online connection to the server where data is uploaded and stored. It adds it to a local database and presents it in an exhibition/installation setting for remote participants to experience through haptic, sonic and visual interfaces. The main element is a ‘Resonator’ box with a built in screen. The Resonator translates the data from the Explorers’ sensors into a tactile ‘landscape’ which can be felt by touching it. Participants can navigate through the timeline of each ‘Exploration’ by tilting the Resonator box, which moves through a map interface of the Explorations, linking to images and other material collected by the Explorers at those locations. Parabolic Cones suspended around the Resonator create localised zones where the audio heard by the Explorers as they moved through the environment is played back.

Conclusion

Sensory Threads brings together practitioners from the creative industries with researchers from varied traditions that span ICT, the arts and humanities, the social sciences, and business studies, though a processes of knowledge transfer to form interdisciplinary teams and explore the creative opportunities of sensor technologies increasingly used to mediate our perceptions of the world around us.

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