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devices that alter perception

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SocialSense: A System For Social Environment Awareness

SocialSense is a system designed to provide additional social information about nearby people. SocialSense detects Bluetooth devices and uses them to infer the presence of particular people, pulling their profiles and status from online social networking sites. SocialSense differs from existing mobile social awareness systems by integrating live feeds from multiple sources. Information is shown to the user via a head-mounted display, and the user controls the system using buttons mounted on a ring input device or "Magic Ring". The aim is a system that can be used unobtrusively, allowing users to go about face-to-face interactions in a normal manner.

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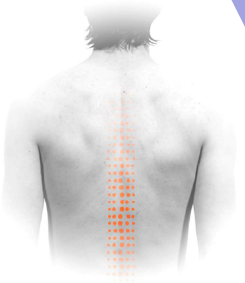
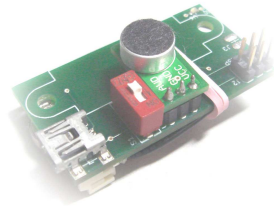


Fear tuners – Prostheses for instincts

This paper concerns "Fear Tuners", a critical design project that was initiated at the Royal College of Art in 2008. In this paper, I argue that our bodies are equipped with a sensory system that only allows us to detect immediate dangers, for example it helps us to decide where to tread and what to eat. This system though is not suitable to sense the abstract and global dangers that occur in our highly complicated world. Fear Tuners brings forward the arguments that people are in need of tools to help them sense global and abstract dangers. As a response to the problem, this project explores the potential use of wearable devices as prostheses for those missing instincts. The paper suggests using the skin as an interface to stimulate a physical sensation resulting into a mental state of increased awareness, whenever a deferred danger occurs.

Susanna HERTRICH
Royal College of Art



Aural Antennae

Aural Antennae are portable devices which translate sound impulses into vibrotactile stimulus. By swapping audio sensation for haptic sensation we illustrate one variety of artificial synesthesia. The compact devices can be worn to act as electronic travel aids for the hearing-impaired or used for augmented reality applications. Using a simple model of the audio scene's background noise, the device triggers when there is a large change in sound intensity from a specific direction.

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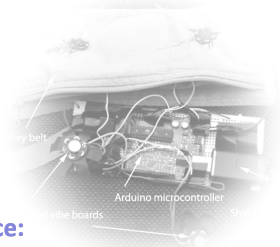

Feel the Force: Using Tactile Technologies to Investigate the Extended Mind

We describe the motivations behind the E-Sense project which will investigate augmented perception by building a range of novel tactile interfaces. As well as exploring the practical utility of these systems for real world tasks, we are particularly interested in the following question: how can we design tactile interfaces to mediate novel sensory information so that the user experiences the technology as an extension of themselves?

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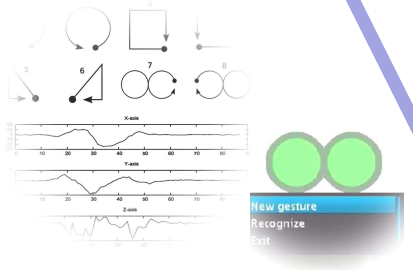

Gesture recognition as ubiquitous input for mobile phones

A ubiquitous input mechanism utilizing gesture recognition techniques on a mobile phone is presented. Possible applications using readily available hardware are suggested and the effects of a mobile gaming system on perception is discussed.

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Spatial coverage vs. sensorial fidelity in VR

With this paper we wish to promote a discussion about the different forms that an immersive VR system can take. This will be done by reflecting on a controversial concept: that of a totally immersive (understood as multimodal) but partial (understood as limited to a part of the body) virtual reality interface. The proposed concept of total/partial immersiveness may be seen as a new orthogonal dimension in the taxonomic classification of systems in the 'virtuality continuum' introduced in [2]. An interesting aspect of the proposed configuration is the possibility for it to be wearable. We will briefly describe the motivation for this new taxonomic dimension from a theoretical point of view, as well as explain the practical reasons that lead us to this concept. This will be done by discussing earlier work from one of the authors That illustrates the possibilities of a total immersive VR system but also pinpoints a number of inescapable limitations.

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Boxed Ego

Boxed Ego is a double trap for the Self. A peep-show box waiting in a corner of the exhibition space first captures the curiosity of the observer - and then the observer himself. Although of an artistic flavor, from the research perspective this work is a preliminary experiment on the cognitive (and possible practical) aspects of artificial autoscopy (AS). In order to understand how artificial autoscopy can generate an out-of-body experience (OBE), we embrace the enactive approach to perception and we further hypothesize that the sense of self, may be itself a second-order perceptual experience: that resulting not from the exploration of the world based on skillful mastery of the visual, tactile, proprioceptive or auditive sensorimotor contingencies (SMCs), but on exploring/acting on the world with skillful mastery of these SMC as well as the rules governing the relations (extended in time) between these SMCs. A first corollary of this hypothesis is that there may be different senses of self: at one extreme, those inextricably linked to each primal sense (and thus experientially ineffable), and at the other extreme, a more abstract sense of self that result from the knowledge of cross-modal contingencies. In between, there may be experiences rendering a more or less unified sense of self, which is precisely why this model seems to us ideal to explain OBEs. A second corollary of this view, is that attentional blindness may also pertain to the sense of self, a testable hypothesis.

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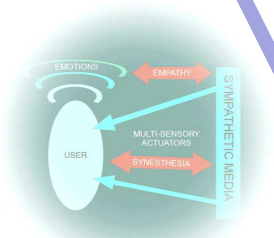
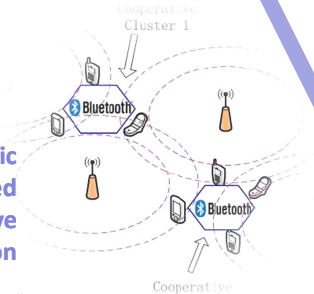


Creation of sympathetic media content

Taking ground in the enactive view, a recent trend in cognitive science, we propose a framework for the creation of sympathetic media content. The notion of sympathetic media content is based on two concepts: synesthetic media and empathic media transmission. Synesthetic media is media that make use of multiple and alternative senses. The approach is to reconsider traditional media content from a different perceptual point of view with the goal of creating more immersive and affective media content. Empathic media transmission will consist in encoding the emotional content of media into multi-sensory signals. The encoded emotions are then mediated to the audience through actuators that provide the physical manifestation of the multi-sensory information. The two points, synesthetic media and empathic transmission, are addressed through the study of the relation between senses and emotions and the development of suitable methods for encoding emotions into multiple senses, in the frame of an efficacious transmission of emotions to the audience. The extraction of emotional information from media and the conception of a wearable, unobtrusive device are considered too. It is claimed that such a framework will help the creation of a new type of media content, ease the access to more immersive and affective media, and find applications in numerous fields.

Stephane PERRIN(--), Giuseppe RIVA(Catholic Univ. of Milan) and **Alvaro CASSINELLI** (University of Tokyo)



Learn Traffic State Based on Cooperative Localization

A key problem of monitoring the traffic state is the localization and tracking of vehicles and passengers. In this paper, we present a new cooperative localization technique which makes use of collaboration of mobile phones for traffic monitoring. Instead of relying on the signal strength only, our cooperative localization approach utilizes additional connection information among mobile phones to improve the localization accuracy. It separates mobile phones into different clusters by some short-range links such as Bluetooth, then locates the members in a cluster simultaneously. We design a simulation experiment and the results show that our method is able to catch the main trace of all the members in a cluster. In this way, the traffic flows can be monitored.

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