

BIOSENSING AND NETWORKED PERFORMANCE WORKSHOP

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The Biosensing and Networked Performance workshops led by Anna Dumitriu and Tom Keene enable participants to build and calibrate their own iPhone compatible Galvanic Skin Response Sensors (GSR), which enable recording of subtle changes in the user's emotional arousal. Participants then collaborate to develop a networked performance that engages with the ethical implications of disclosing such personal information within the public realm.



"Biosensing and Networked Performance" by Anna Dumitriu & Tom Keene, materials: electrical components, smartphone. Photograph copyright Anna Dumitriu.

Participants learn to solder and connect their own GSR sensors, connect them to their iPhones and share their sensor data online. The workshops create a framework for debate around the implications of new social networking and pervasive computing technologies and the increasing issues of privacy as, increasingly, our most personal details can be recorded and shared. Finally participants work with the workshop leaders to improvise, plan and rehearse an intervention performance work that is performed at the end of the workshop. This performance may be very subtle and not immediately obvious to any (unwitting) audience members that may be around, playing with ideas of what we do and do not reveal to those around us both in the physical and digital sphere.

The project builds upon artistic research undertaken by Anna Dumitriu in her role as artist partner on an EPSRC funded project "Supporting Shy Users in Pervasive Computing" working with an interdisciplinary team of sociologists, computer scientists and human-computer interaction specialists at The University of Sussex. The project is investigating how pervasive computing is changing the ways social interactions occur, how we are becoming socially present in an increasing number of ways (sometimes without even realizing it), what our digital presences say about us through the data that is being recorded and how that data can be used.

Whilst in some ways technology may enable a reassuring sense of invisibility and anonymity (in terms of creating digital avatars and being able to use false names) it can also lead to obsession with self-image, fears about how one is perceived and confusion about how to present oneself or how to behave. This can lead to a feeling that there is a need to 'perform' and a sense of being laid bare, even provoking a form of 'stage fright' as described by sociologist Susie Scott an investigator on the project:

"...feelings of shyness arise when one perceives oneself as relatively incompetent at interaction, and fears being exposed as a poor team player. If we anticipate that we will say or do 'the wrong thing' and face embarrassment, surely it makes perfect sense to defend oneself emotionally by remaining quiet and avoiding the spotlight of a front-stage performance." (Scott, 2006)

Interactive digital art is a useful example of a piece of technology that is intended to promote high levels of engagement but can often evoke feelings of shyness in visitors, as the works presume that visitors are actively engaged and willing to 'find their own ways' through a work and explore how to playfully interact with it. Ironically sociologists' findings from this large-scale project show that the *majority* of visitors feel they lack the competence to actively engage with interactive art (and this includes artists and gallerists), especially in front of others that they perceive to be more confident performers. Intimidated, they tend to feel that there is a set of rules that others are aware of and that they do not have access to. So they prefer to fade in to the background rather than let the side down by failing to perform 'in the correct way'. Scott argues:

"Shyness is a normal, socially intelligible and communicatively rational (Crossley 2000) response to dramaturgically stressful situations. Shyness involves a feeling of relative social incompetence: of 'not knowing the rules' of social situations, as if there is a 'right' way to manage them. This is accompanied by a perception of 'Competent Others' around oneself who do appear to understand these rules and seem better equipped to perform appropriately. When faced with this risk of 'getting it wrong', being embarrassed, being scrutinized and judged by a critical audience, inhibition makes absolute sense as a dramaturgical response." (Scott, 2007)

In response to this research, the Biosensing and Networked Performance workshops seek to engage participants not only in the hands on building of the technology they are working with but, importantly, in the creation of a set of rules that will be used to generate new performance work of their own making.

The simple biosensor device used in the workshop is a Galvanic Skin Response sensor (made using easy to find components and a 'hardware hacker' approach) that measures the electrical conductance of the skin and can be attached to a wearer's finger to measure subtle changes in sweat levels. Sweat glands are controlled by the sympathetic nervous system so skin conductance is a useful indication of fluctuations in psychological or physiological arousal. The data produced by the device is then input into the iPhone via its headphone socket and uploaded to an online sensor data sharing facility using a method developed by Keene.

As arousal levels reach certain thresholds they can be used to trigger text messages and other outputs via a software interface written by Alex May (based on work done by ESKINDIR ASMARE as part of the wider research project). These text messages are part of a predetermined script for a generative performance written by the workshop participants. Based on the GSR data from one member of the group, the others can enact various 'flash mob' style behaviours. For example members of the group may drop their knees in unison on receiving a certain text message cue, others around them having no idea what the trigger for this was. However actions may be far subtler such as participants yawning in unison or even just touching the corners of their eyes, almost imperceptibly. The rules, the behaviours and the text messages are invented as part of the workshops.

In many ways the idea of sharing your emotional states online is a difficult issue. Technically GSR is not an ideal method. The only genuinely effective method for scientifically describing emotions is functional magnetic resonance imaging (fMRI) and this is not in any way portable. But the most problematic issue is already with us: pressure from others to subscribe. It is already the case that some employers insist that employees register with location tracking systems such as Google Latitude. Not only that but parents also use the same software to track children and partners to track loved ones. It is difficult to extricate oneself from being tracked if it is not desirable. How do you tell a loved one 'I no longer wish you to know where I am'? It would be even harder to say 'I no longer wish you to know how I feel' even if at the start of a new relationship you enjoyed sharing every inner secret, this may not always be the case.

Reflection on key issues around developments in pervasive computing is central to the development of the work and the workshops consider what the future possibilities and implications of ubiquitous biosensor data sharing might be; they look at what ethical issues need to be considered; how technologies impact users on a personal level? (This includes the impact on "shy users") and what the technical difficulties of implementing the automated sharing of emotions via ubiquitous technologies are.

This work was supported by the Engineering and Physical Sciences Research Council, grant EP/F064330/1.

References and Notes:

Susie Scott, *Shyness and Society: The Illusion of Competence*, (Basingstoke: Palgrave, 2007)

Supporting Shy Users in Pervasive Computing Official Project website, May 2008 <http://www.informatics.sussex.ac.uk/research/projects/shyness/Project+Overview> (accessed June 28, 2011)

Anna Dumitriu's project website "Shyness project", April 2011 http://web.mac.com/annadumitriu/AD/Shyness_Project.html (accessed June 28, 2011)