



Sound for A-Life Agents

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What

We are building an interactive A-life sculpture:

- A ring of four speakers will surround the circular form of the sculpture itself.
- An overhead camera will track the movement of people around the sculpture.
- The expression (behaviour) of the artwork depends on the behaviours and choices of those engaged with it.
- The observer becomes an interactant, and the interactant becomes a co-creator: the process of engaging with the installation results in a co-construction of the artwork (and of the artwork's meaning).
- The experience of the work is different for each participant, and many facets of the work are not immediately available, but appear during the time spent with it.



Rodots, stage1: projection of interactants from overhead camera

Prototype

We have twice presented a prototype installation that we call Rodots at the Ontario Science Centre in Toronto, Canada, in May and July 2007. A broad spectrum of the public interacted with the projection, which began with a phase of "pixel-dust" gathering followed by a brief interlude in which a cluster of pixels followed one tagged participant, and finally transformation into a graphic that enabled the tagged interactant to participate in a herding task. The interactant-representative agent had to collaborate with two virtual agents to herd a target dot into a red circle. The sound for the prototype is based on a bank of oscillators that respond to the position of participants tracked by the overhead camera.

How

The sculpture displays a heterogeneous agent population:

- The agents' embodiments are characterized by minimal "articulators", in the form of clusters of LEDs and abstract electroacoustic sound – what we term low-fidelity embodiments.
- Human interactants acquire a presence in a population as human-representative agents, i.e. a cluster of LEDs that behaves under the interactant's control.
- Artificial agents are instantiations of a Java-implemented architecture and have autonomous behaviours.
- Human interactants are colour-coded to differentiate them from virtual agents.
- All of these agents engage in "conversations" with free exchange of turns.
- There are two kinds of sound identifiers: ambient sounds prior to interaction are unpitched, i.e. percussive; the sound, or "voice", of both the human-representative agent and of the artificial agents is pitched, i.e. tonal, as musical notes are.
- The ambient sound is based on samples taken from the natural world or from the media world; some are identifiable, others are processed abstractions.



Rodots, stage2: one interactant has been tagged

Why

In order to investigate, both artistically and scientifically, human interactions with artificial "others".

A scientific goal of this work is to investigate our hypotheses that humans attribute agency to artificial agents, even those with "low-fidelity" embodiments (as opposed to those with "character" personas), and that turn-taking behaviours can be elicited in humans when interacting with such agents.

The artistic goal is to expand both the concept of the interface and established methods of interactivity.

The sound dynamic establishes the affective realm of the interactive experience as a whole.



Rodots, stage3: tagged interactant is represented by cyan dot in the herding task

Collaborators

Niknaz Tavakolian, Visual Arts MFA program
 Michael Kaftarian, MSc program in Computer Science
 Eng Chuen Chuah, Heather Phillips, and Miki Rubin, fourth year studio students in the Visual Arts Department
 Daria Smirnova and Tae Eun Han, Department of Design
 Dr. Kim Sawchuk, Concordia University, Montreal, Canada

