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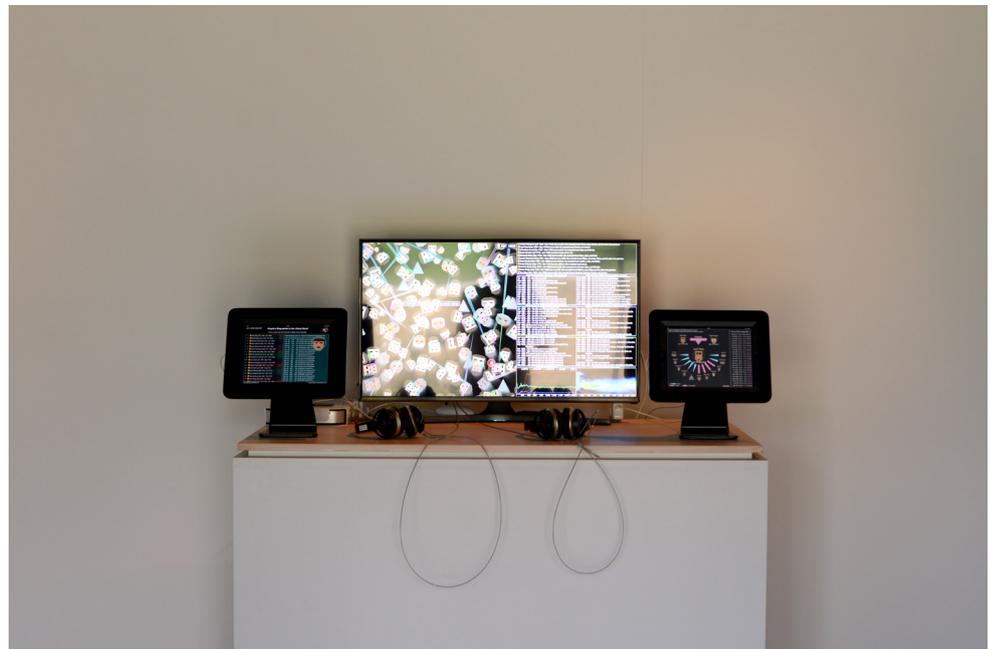
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Browsing the Biographies in an Evolutionary Artificial Society

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This is an audio visual installation utilizing an individual-based evolutionary ecological (or social) simulator of human lives. The visitors can watch, listen to, and browse the life events happened in the computer, such as birth, falling in love, proposing, having a child, separation, and death.

1. CONCEPTS

Appreciating a human story is one of the common pleasures for both entertainment and the arts, regardless of whether it is based on a biography of real person or on the events in imaginary world. Most of novels, plays, and films have been created in such style under the expectation to impress people. Along the scientific challenges of machine creativity, narratives have gathered a lot of attentions in these years. A typical approach is to build a type of expert system that imitates the intelligent works by human writers based on the theory of novel writings and / or analysis of mythology. We can find pioneering works by (Pérez y Pérez 1999) and (Bringsjord 1999). On the other hand, it is also true that machine creativity is not necessary to employ a similar method to what humans do. One of the advantages of the machine is that it is easy to generate huge number of variations of data structures by an exhaustive generative process. Evolutionary approaches in computational creativity, such as (Unemi 2014), are one of the strategies along this line. Especially, software approaches in Artificial Life have provided a variety of computational methods to generate large-scale complex phenomena in the form of digital data, as described in (Komosinski 2009). It is possible to observe massive episodes when we monitor the individual events in an evolutionary ecological simulator such as PolyWorld (Yaeger 1994). The authors developed a large scale multi-agent simulator for evolutionary human society (Unemi 2018) in order to seek the origin of beauty from a viewpoint of evolutionary psychology (Dutton 2010). Because the evolution of animals with sexual reproduction, including us, relies on the process of mating, a simulation of human society in a similar manner provides a source of huge number of episodes on imaginary human lives including meeting, love, birth, separation, and death. This is a side effect of the simulator, but will present us narratives by machine creativity. It is not real but a visitor can imagine how the virtual persons would feel through their lives made of the presented events.

One of the causes of the tragic violence happened in the human history could be lack of empathy for the victims, as some activists and psychologists said, such as (Baron-Cohen 2011). We hope this work will provide the visitor an occasion to expand his / her imagination for individuals in any style of world.

2. TECHNICAL FEATURES

This is a type of computer-based audio-visual installation with a hi-resolution display, stereo sound system, and tablet terminals that allows the visitors to browse what happens in the virtual world.

The environment of the society in the simulator is a square shape of two-dimensional Euclidean space with continuous Cartesian coordinates surrounded by four walls. Some hundreds of still objects are randomly placed, and some thousands of agents are roaming around inside of this virtual world. The movement of each agent is affected by both attraction forces toward the mother in childhood and toward the lover in adulthood, and repulsion forces to avoid the collision with the other objects and agents. Each agent may be killed in each step in a predefined probability following the nationwide real population statistics.

The characteristics of an individual agent are specified by its own genetic codes inherited from its parents with mutation, which includes appearance, preference, and other parameters for action selection. The degree of attractiveness is measured basically as a similarity between the agent's preference and the target's appearance, but an adult agent may choose the one who is at a position within a short physical distance depending on its characteristic of compromise. If two agents mutually chose each other as the best lover, or if the target agent accepts the proposal, the new relation between two agents is established. If the relation continues for enough time and the sexes of the agents are different, the female agent may become pregnant under the predefined probability depending on the age. A baby agent is born at the location adjacent to the mother's after ten months of pregnancy, and its sex type is determined at random.

A genome is composed of double genetic information because they are sex-influenced, that is, one side manifests when it is male, and the other side manifests when it is female. Because the correspondence between the sex type and inherent traits is not given a priori, half of the couples are homosexual in the early phase that starts with a randomly initialized population. However, as the evolutionary process continues, the traits are going separated between sex types and the rate of heterosexual couples increases due to the selection pressure.

The system shows 2D animation of the agents' movements and relations on the full HD screen dynamically alternating the zooming scale. It also displays short sentences to describe each life event of the sampled six agents in real time, some of which are read loud using speech synthesis by the computer. Baby cries, proposal whispers, sad sighs, and funeral bells are added as sound effects.

The installation provides the visitors two types of browsing interfaces on the tablet terminals for life events happened in the simulation. The first type is the individual story that is shown on the high resolution screen. The full name and the birth and death dates of the sampled agents are listed on the left column, and by touching one of the rows, it shows the series of life events on the right column. The second interface newly added for this installation after the previous exhibition (Unemi 2017) is for exhaustive exploration in a large database containing all life events in the previously finished processes. Approximately 210,000 life stories are recorded in the database in 3,000 simulated years. It has two different view modes. The first one shows an individual and its parents and lovers. The second one shows a couple and their children. The visitor can touch an individual symbol to switch the screen to the first mode, and can touch a line connecting a couple to switch to the second mode.

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