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Meet Your Heartbeat Twin

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ABSTRACT

Meet Your Heartbeat Twin (MYHT) is a multi-player pervasive game which incorporates tracking of the participants' heartbeats and geographic positions. Using this live data, a dynamic emotional map of the game area is created. The unwinding of the game depends on the physical and emotional states of the participants: by controlling their positions and their heart rates, the participants will eventually encounter their heartbeat twin.

Keywords

Pervasive game, heartbeat, heart rate, emotional mapping

INTRODUCTION

The emergence of position-tagged information and the supply of people's physical and emotional data into public and private networks are two crucial practices that will, in the near future, fundamentally impact contemporary society. These practices will change not only our understanding of public space, but also our social exchanges and the status of our bodies.

Until now, our bodies participate in the electronic network exchange mainly through our cerebral activities . In the future, the whole body as the interface between physical and electronic space will become an integral part of the new social space. Streams of online corporal data will pierce the envelopes enclosing our bodies, which currently represent the interface between the private and the public. Now still private bio-data will be shared and become publicly available and accessible to everyone on the internet.

Access to the identity of a person will not only be mediated through semiotics (text etc.), but include direct access as online body data.

MYHT investigates this novel territory by making these practices tangible to game players as well as to game spectators. MYHT invites participants to experience and to reflect on the construction of the future public space, where network and physical space meet, and where the virtual and the real will be entwined even more densely.

„The killer apps' of tomorrow's mobile infocom industry won't be hardware devices or software programs but social practices." Rheingold 2002 [5]

In this urban game, the city becomes an experimental territory, a playing field and a playground. The perception of the city will be altered; the encounter of the other becomes a novel experience. The project MYHT is not only a concrete implementation of hands-on technology and practices, but also a platform for discussion concerning its potential and its limits.

EXISTING BODY DATA GAMES

There are other games that use body data of the participants. All applications we found are single-player games, typically used for health [1, 7] or fitness applications.

"'Ere be dragon" [1] is a single-player game aimed to increase the participant's health consciousness by using feedback from their live heart rate on a walk in real physical world. The player's heart rate impacts the visual and audio atmosphere, which is experienced by the participants on-line on their portable terminals.

In fitness games, feedback of the participant's heart rate increases the participant's body awareness and by this allows more effective training sessions [2,3].

A personal and emotional city map was created by Christian Nold [4]. The participants' individual journeys through the city are tracked, not only by geographical position but also by emotional state measured by Galvanic Skin Response (GSR). The participant's physical and emotional journeys are collected and visualized on internet.

It should be noted that GSR use and other "biofeedback" systems have also a long history in psychotherapy [4].

SCENARIO OF MYHT

About 20 players start at different points within the game area: typically one district in a big city. Every participant has a handheld terminal: a Personal Digital Assistant (PDA) or a mobile phone. This includes a GPS position localization and is connected to the player's heart rate monitor. Every participant sees a geographical map of the game area on his or her PDA, which indicates the positions of other participants with the same heart rate as the holder of the PDA. The participants with different heart rates than the holder are invisible. The aim of the game is to physically meet a person with the same heart rate. The challenge is that by approaching a twin, one's heartbeat might change either due to physical effort or to emotional arousal.

On the players' PDAs thus emerges a physio-geographical game map, a map that changes in real-time with the participants' physical efforts and the participants' emotional statuses.

So far, for practical reasons, the number of active game participants is restricted to 20 per round. Those waiting for the next round and other interested persons can participate as spectators. For the spectators, a large video screen is set up, showing the totality of the players' data. The spectators have full and live access to the emotional and geographical dynamics of the game.

TECHNICAL IMPLEMENTATION

MYHT has not been implemented yet, its development is ongoing, and its first realization is planned for autumn 2007.

Heart beat rate is measured using a chest belt worn by each participant. The chest belt is linked to the player's handheld terminal. The link is done by wireless connection or USB cable interface. Player position is measured by GPS, targeting a spatial resolution of ±20m. The synchronization between the player terminals (PDA's) and the game server is done over the GPRS data network. Synchronization occurs approximately every 30 seconds. Both signals from the player (heart rate and position) are recorded by the game server, which then distributes the other players' positions with the same heart rate back to the player. The client architecture, seen in Figure 2, is responsible for detecting the heart rate and position of the user, and for sending this information to the MYHT server. The client side is also receiving the positions of

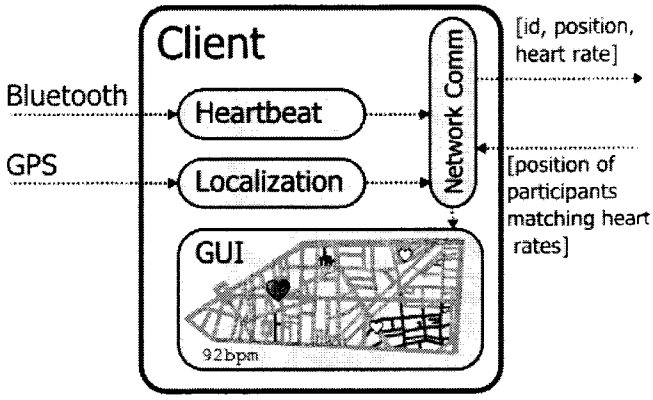

Figure 2. System architecture client side.

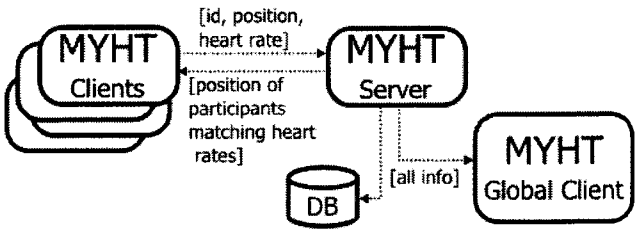

Figure 3. System architecture server side.

matching participants and displaying the data on a graphical user interface. The server side, seen in Figure 3. is responsible for managing and distributing the participants' static and dynamic parameters among the MYHT clients, as well as supporting the global client that displays the game for non-participants.

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