INTETAIN 2009

PROGRAM

AND

Demonstration Papers of the third International Conference on Intelligent Technologies for Interactive Entertainment

Amsterdam, June 22-24, 2009

Anton Nijholt, Dennis Reidsma and Hendri Hondorp (eds)
INTETAIN 2009

The 3rd International Conference on Intelligent Technologies for Interactive Entertainment

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Anton Nijholt, Dennis Reidsma and Hendri Hondorp
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<td>VR</td>
<td>Rauterberg (Invited)</td>
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<tr>
<td>11:00</td>
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<td>Short</td>
<td>Rauterberg (Invited)</td>
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<tr>
<td>11:30</td>
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<td>Closing</td>
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<tr>
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<td>Hands-on activity / Dinner</td>
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<td>22:00</td>
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# Detailed program: Monday June 22

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Registration</td>
</tr>
<tr>
<td>09:00</td>
<td>Opening – Anton Nijholt, General Chair</td>
</tr>
<tr>
<td>09:30</td>
<td>Invited – Michael Mateas – Interactive Storytelling</td>
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<tr>
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<td>Break</td>
</tr>
<tr>
<td>11:00</td>
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<tr>
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<td>– A Design Approach to Decentralized Interactive Environments</td>
</tr>
<tr>
<td>11:30</td>
<td>Games – Anton Nijholt – Turning Shortcomings into Challenges: Brain-Computer Interfaces for Games</td>
</tr>
<tr>
<td>12:00</td>
<td>Games – Ronald Lenz – All the World’s a Stage</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:00</td>
<td>Lunch &amp; Demo and Poster session</td>
</tr>
<tr>
<td>13:30</td>
<td>Demo and Poster session</td>
</tr>
<tr>
<td>14:00</td>
<td>Demo and Poster session</td>
</tr>
<tr>
<td>14:30</td>
<td>Demo and Poster session</td>
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<tr>
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<td>Break</td>
</tr>
<tr>
<td>15:30</td>
<td>Games – Roan Boer Rookhuiszen, Mariët Theune – Generating Instructions in a 3D Game Environment: Efficiency or Entertainment?</td>
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<tr>
<td>16:00</td>
<td>Storytelling – Insook Choi – Interactive Documentary: A Production Model for Nonfiction Multimedia Narratives</td>
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<tr>
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</tr>
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</tr>
<tr>
<td>10:00</td>
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</tr>
<tr>
<td>10:30</td>
<td>Break</td>
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<tr>
<td>11:00</td>
<td>VR – Shilei Li, Bing Wu, Jiahong Liang, and Jiongming Su – Automatic and Interactive Key Posture Design by Combing the PIK with Parametric Posture Splicing</td>
</tr>
<tr>
<td>11:30</td>
<td>Short – Marijn van Vliet, Alena Neviarouskaya and Helmut Prendinger – Opinion Elicitation in Second Life</td>
</tr>
<tr>
<td>12:00</td>
<td>Design Contest</td>
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<tr>
<td>12:30</td>
<td>Lunch</td>
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<tr>
<td>13:00</td>
<td>Lunch &amp; Design Contest</td>
</tr>
<tr>
<td>13:30</td>
<td>Design Contest</td>
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<tr>
<td>14:00</td>
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</tr>
<tr>
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</tr>
<tr>
<td>15:00</td>
<td>Break</td>
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<tr>
<td>15:30</td>
<td>GATE session</td>
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<tr>
<td>16:00</td>
<td>GATE session</td>
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<tr>
<td>16:30</td>
<td>GATE session</td>
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<table>
<thead>
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<th>Time</th>
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<td>09:00</td>
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<td>09:30</td>
<td>Bodily interaction – Marco Pasch, Nadia Bianchi-Berthouze, Betsy van Dijk and Anton Nijholt</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>10:00</td>
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</tr>
<tr>
<td></td>
<td>– Swinxsbee: A Shared Interactive Play Object to Stimulate Children’s Social Play Behaviour and Physical Exercise</td>
</tr>
<tr>
<td>10:30</td>
<td>Break</td>
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<tr>
<td>11:00</td>
<td>Invited – Matthias Rauterberg</td>
</tr>
<tr>
<td></td>
<td>– Entertainment Computing, Social Transformation and the Quantum Field</td>
</tr>
<tr>
<td>12:00</td>
<td>Games – Eva Hopma, Tilde Bekker, and Janienke Sturm</td>
</tr>
<tr>
<td></td>
<td>– Interactive Play Objects: The Influence of Multimodal Output of Open-Ended Play</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30</td>
<td>Bodily interaction – Yasmin Aghajan, Joyca Lacroix, Jingyu Cui, Aart van Halteren, and Hamid Aghajan</td>
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<tr>
<td></td>
<td>– Home Exercise in a Social Context: Real-Time Experience Sharing Using Avatars</td>
</tr>
<tr>
<td>14:00</td>
<td>Invited – Antonio Camurri</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>15:00</td>
<td>Closing - Anton Nijholt, General Chair</td>
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Demonstration Papers

INTETAIN 2009
Emotions play a major role in judging (the use of) products [1]; for example, we can feel great using a product that is not user friendly, but pleasing to the eye. Hence, next to usability other factors also play a role in user experience. In the field of affective computing, systems are being designed that can recognize, interpret, and process emotions [2]. Picard states that computers need the ability to (at least) recognize and express affect to achieve natural and intelligent interaction with humans [2]. Interest shifts from intelligent to sensitive products.

In (interactive) art, affective technologies can also be applied. Expanding research on this topic is interesting in order to acquire more insights in affective computing in different contexts. Therefore Mood Swings, an interactive light installation, was created. The installation consists of eight luminous orbs that react to movement and take on certain colors with distinct movements. In this way users are challenged to express their emotion. Figure 1 depicts a person interacting with Mood Swings.

Figure 1: Mood Swings’ luminous orbs in action

The relationship between emotion and movement had been studied in many different ways, e.g. by looking at specific movements of certain body parts, or by studying qualities of body movement (e.g., speed and fluidity of movement).

In general, affect can be labeled in two manners; in discrete or dimensional emotions. Discrete
emotions describe the affective state using basic emotions (e.g., fear, joy, sadness). A widely accepted approach of classifying emotions in a dimensional fashion is described by Russell [3]. He developed a circumplex model of affect that describes emotions in the two dimensions: valence (pleasure-displeasure) and arousal. In [4], this model is transformed to be applicable to affective movements. They applied certain movement characteristics to the circumplex model by Russel, which led to the affective dimensions: velocity (related to arousal) and smoothness (the regularity of a movement, related to valence).

In the design of Mood Swings, the model by Lee, Park, and Nam [4] was incorporated. Arousal is related to the velocity of a movement, with slow movements linked to low arousal and fast movements linked to high arousal. Valence is related to the smoothness of a movement, with smooth movements being pleasant and jerky movements being unpleasant. Users interact with Mood Swings through moving the orbs. The orb’s movement patterns are registered through an accelerometer placed inside the orb. Consequently, the orb is used to derive users’ emotions. Mood Swings’ feedback exists of colored light. Color is chosen because of the strong relation it can have with emotion, as illustrated by well-known expressions such as feeling blue, becoming red with anger, or green with envy.

In [5], Itten’s circular color model [6] is adjusted to fit Russell’s circumplex model of affect. This transformed color circle is applied in Mood Swings, using six colors in combination with the emotion-movement relation framework of [4]. Six colors are used because results from a user test that investigated the functioning of Mood Swings showed that using more colors made the installation’s feedback harder to understand. The actual colors Mood Swings expresses are generated by six LEDs that are placed inside each orb. They react on the accelerometer inside the orb, displaying the color that reflects the emotional state of the user, based on the user’s movements; see also Table 1.

<table>
<thead>
<tr>
<th>Velocity / Arousal</th>
<th>Smoothness / Valence</th>
<th>Color</th>
</tr>
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<tbody>
<tr>
<td>Fast / High</td>
<td>Jerky / Negative</td>
<td>Red</td>
</tr>
<tr>
<td>Fast / High</td>
<td>Smooth / Positive</td>
<td>Orange</td>
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<tr>
<td>Intermediate / Neutral</td>
<td>Jerky / Negative</td>
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<tr>
<td>Intermediate / Neutral</td>
<td>Smooth / Positive</td>
<td>White</td>
</tr>
<tr>
<td>Slow / Low</td>
<td>Jerky / Negative</td>
<td>Blue</td>
</tr>
<tr>
<td>Slow / Low</td>
<td>Smooth / Positive</td>
<td>Green</td>
</tr>
</tbody>
</table>

Table 1: Mood Swings interprets movements in terms of valence and arousal, and subsequently, provides feedback through colors. Mood Swings’ translation of these dimensions of emotion to colors is denoted in this table.

Acknowledgments

The authors thank Jos Bax, Rene Verberne, Albert Geven, Frank Vossen, Tom Bergman, Albert Hoevenaars, Martin Ouwerkerk, and Paul-Christiaan Spruijtenburg for their contribution in the development of Mood Swings.

References


Live Distributed Objects for Service Oriented Collaboration

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Qi Huang Petko Nikolov Krzysztof Ostrowski

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Extended Abstract

Advanced internet collaboration tools are often promoted as crucial to reducing healthcare costs, improving productivity, facilitating disaster response, enabling a more nimble information-aware military, and allowing more immersive professional remote collaboration. We term such tools service oriented collaboration (SOC) applications. SOC systems have garnered increasing appeal to developers and users because of the growing body of rich service hosted content, such as electronic medical health records, geographic information systems, image repositories, weather prediction systems, social networks, and a diversity of other databases. These systems may also interface with sensors, medical devices, video cameras, microphones, and other realworld data sources.

The framework we demonstrate herein definitely addresses many of these applications; however, it also encourages many other uses, oriented more explicitly to entertainment and better aligned with the global theme of the Intetain 2009 Conference: "Playful interaction: with others and with the environment." Our work provides the basis for a modern incarnation of a Second Life environment, one that is constructed atop a more principled and more scalable foundation.

A number of difficulties exist with many current implementations of SOC applications. Media streams generate high, bursty update rates and often require low latencies and tight synchronization between collaborating users. Some applications also require client-to-client security and many, especially medical and military scenarios, cannot extend trust relationships to web service platforms or any third parties. These requirements represent serious impediments to implementation with existing web service standards, which involve the relay of data between clients via a hosted service. Typically, this relay is accomplished through some form of an enterprise service bus (ESB), using publish/subscribe models, Really Simple Syndication (RSS) feeds, Representative State Transfer (REST) or Simple Object Access Protocol (SOAP) transfers, messagequeuing middleware products like the Java Messaging Service, or other methods. However, relaying data through a central server introduces latencies (based both upon roundtrip travel times and processing overhead) and poses obvious scalability issues (explaining, for example, the necessity for such a low density of primitives, 117 per 512 square meters, in Second Life). Moreover, web service security models assure client-to-server security, although this offers no benefit to applications that cannot trust any central server.

Something new is needed: a way to create SOC applications that seamlessly integrates hosted content with the kinds of peer-to-peer (P2P) protocols capable of responding to these needs. Here, we demonstrate how Cornell's Live Distributed Objects platform solves this problem, enabling a powerful style of collaboration.

We first must look more closely at the way today's developers build SOC applications. Obviously, web services offer rich options for programmatic interfaces to services. Service platforms usually export some form of minibrowser component: namely, an interactive web page with em-
bedded scripts, commonly developed using AJAX, Flex, Silverlight, Caja, or similar technologies and optimized for a specific type of content (for example, interactive maps from Google Earth or Virtual Earth). This embedded script is often tightly integrated with backend services in the data center services that may not even be directly accessible at a programmatic level. As a result, the only way that new content can be mashed into the data available from the service is to have the data center itself compute the mashup.

For example, Google’s minibrowsers expose composite images that draw on multiple data sources. If the client pans or zooms the minibrowser window, the data associated with the mashup is also zoomed or panned. Google also offers tools to help end users define new kinds of mashups, but the kinds of data that can be mashed together are limited.

With our Live Distributed Objects platform (as seen in the screenshot below), content from different sources is overlaid in the same window and synchronized so that each source displays data that is geographically and temporally aligned. We designed this demonstration to highlight the contributions of different data sources, but there are no visual or conceptual frame boundaries between the contributed data: elements of this mashup (including maps, 3D terrain features, images of buildings or points of interest, icons representing severe weather reports, vehicles or individuals, etc.) coexist as layers within which the end user can easily navigate. Data can be drawn from many kinds of data centers. Our example actually overlays weather from Google on terrain maps from Microsoft Virtual Earth, extracts census data from the US Census Bureau and flight information from the US Federal Aviation Administration, and also embeds additional reference points from a local shared data store.

Importantly, Live Objects treats every kind of content as an object. Thus, our SOC application is not limited to hosted content: it includes components that use direct P2P communication protocols. We can support any sort of protocol, including client-server, but also overlay multicast, peer-to-peer replication, or even custom protocols designed by the content provider. This makes it possible to achieve extremely high levels of throughput and low latency. It also enhances security as the data center servers need not observe data exchanged directly between peers; we can take advantage of P2P key management protocols that offer provably secure ways to create and share cryptographic keys so that only endpoint hosts can access them.

In conclusion, our work on Live Distributed Objects forms the basis of a new platform for constructing Service Oriented Computing (SOC) applications, while revealing unexpected difficulties in building high-performance SOC systems using current web services standards. These problems are particularly acute with clientside mashups, where scalability and performance problems with enterprise service bus (ESB) components are central limitations. Live Objects solve these problems, allowing a combination of hosted content with P2P protocols in a single object-oriented framework. This enables both enterprise functionality for health care, finance, and military uses, as well as entertainment capabilities in virtual worlds. For those to experience it firsthand, our platform can be freely downloaded from http://liveobjects.cs.cornell.edu.

The screenshot at right shows a specific instance of the Live Distributed Objects framework. A more substantial video capture (in AVI format) that shows the manipulation of the framework and better parallels our eventual live conference demonstration can be viewed at: http://liveobjects.cs.cornell.edu/Intetain2009.avi
Motion2Sound

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Programming

Abstract

Keywords: Motion, Sound, Video Art, Music, Composition, Dance.

Motion2Sound is a program that translates motion properties into sound ones. This is done by using a motion detection system (Open Cv) and one can have as an input a live web-cam or a video. Several parameters are used to enhance the results such as 'intervals' for different scales, 'tunit' (based on psychophysics principles) for minimum time unit of sound generation and 'threshold' for deciding how much of the motion shall be captured and thus translated into sound. It can be a useful tool for different art forms such as video art, experimental dance, theater, etc. It works as a plug-in to sequencer programs such as fruity loops, cubase and others and as a stand alone as well. One can choose whichever virtual instrument he wants for generating sound or the in-built one.

Detailed Description

To clarify more on how the program works, some illustrations and images follow (Figure 1a).

![option one](image1a)

![option two](image1b)

Figure 1: Options usage of Motion2Sound

One can choose to put a video as the source of the sound to be created. Any videos with any kind of interesting motion may serve for that purpose. The program processes the video in real time and simultaneously sound is produced either by the inbuilt windows wave-synth or by plugged in to musical sequencers such as cubase, fruity loops etc.

Otherwise (see Figure 1b) one can use a web-cam to experiment with live motion to be also processed in real time, reproducing sound either as a standalone or as a plugin.
In the above image we have an example of a motion captured by a web-cam, detected with the openCV system and then translated into sound in real time. Here we chose to produce sound with a virtual piano, recorded into Cubase and the parameters ‘lkey’ and ‘ukey’ refer to the lowest and highest possible audible notes respectively, in the midi format system. One can choose from a database with many different presets for instruments, scales and other parameters that may give a different touch to the final output. Here whole-tone scale refers to the intervals that are permitted to be heard. In that way one can vary the mood or use the same ‘motion-loop’ to modulate from one key to another or from a particular scale to another one.

Motion detected on the Y axis of the screen is translated into pitch. If one chooses to make audible smaller registers of pitch then the position of each tone to be produced changes accordingly. (In this case it expands).

Above (panning effect) there is a motion particle detected on the right part of the horizontal axis of the screen (X). The horizontal axis defines the panning position of the sound to be produced. Here we have the parameter ‘pans’ which refers to how many panning steps we want. One can choose between 0 to 127 which means that we can either have no panning or 127 steps of panning. In the above example we have three panning steps. That means that if a motion is detected on any left part of the screen the sound produced would be 100% left, if in the centre 50% left-50% right and if as in this case on the right, 100% right. In total there are more than 12 parameters each one having a different function. There is an aim to expand the program functions with:

- Microtonal Intervals (intervals less or other than the semitone)
- Surround Panning
- Brightness defined Volume: Dynamics increase when brightness of the moving-object increases or decrease when the objects become darker.
Parameters

- **input**: Our source. Either video path or web-cam.
- **port**: The midi port to be used. A sequencer has a different port number than the stand-alone for example.
- **tunit**: Every time unit sound is produced. 200 millisecs. by default.
- **threshold**: Blocks motion intensity. (less motion to be captured).
- **lkey**: Lowest midi value to be allowed.
- **ukey**: Highest midi value to be allowed.
- **pans**: Panning steps. 3 by default
- **sustain**: If there is no motion or suspension of motion on can choose to either have total silence or produce sound every chosen time intervals.
- **lparticle, uparticle**: Refers to at least how many motion-particles we want to be detected. At least, means that there is an ongoing adaptation happening increasing the threshold or decreasing it according to the motion particles we want to be detected. If for example the motion particles are lower than 5 and we have chose: lparticle =5, then the threshold decreases to allow this optimum level. The uparticle is the same thing on the contrary . If we set uparticle to 8 and the motion particles exceed the number of 8 the threshold increases to block unwanted motion-particles.

Experimental Uses

One can play with the parameters to produce different effects. For example in the field of movie editing one can choose an abstract approach, non-descriptive but still synchronized with the visual events by limiting the motion to be captured. On the contrary one can capture every motion detail. (It would work good with the mickey-mouse effect that the cartoonists use).

Composers can acquire a new tool for making their music, more complex, more kinetic or even more spontaneous. Certain centers of tonality can be formed through the use of the parameters of the program. This would give the essence of a more structured musical piece. Also there is given the ability for one to improvise with free tempo, rhythmical structure and not worrying on how to accompany his free improvisation. While playing his movement is captured then translated to any other additional virtual instruments he/she wants to add and on any chosen scale, thus given with an extreme improvisational freedom.

The uses of the program go as far as ones’ imagination. A final example for this paper is the Painting2Sound. One draws with a virtual painting program such as the windows in-built one. A bright color is used and while the drawings move to form the painting a web-cam captures them translating them to sound.

![Figure 4: (drawing sound)](http://www.youtube.com/watch?v=Rb_jRCUF-Rs&feature=user)

Links

[http://www.youtube.com/watch?v=Rb_jRCUF-Rs&feature=user](http://www.youtube.com/watch?v=Rb_jRCUF-Rs&feature=user)
A tactile actuation blanket to intensify movie experiences with personalised tactile effects

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Abstract. To enrich a movie viewing experience with personalised tactile effects, the Touch Blanket was created. It is a flexible blanket for use on a seat or sofa, with inside a 2D matrix of 176 small, individually controllable vibration motors attached to the fabric. One or two users sitting on the blanket can experience a range of tactile effects at their legs, arms and back, synchronised to events in a movie.

Keywords: Tactile stimulation, vibrotactile actuators, immersive experiences

1 Introduction

In television and movie entertainment, there is an ongoing trend towards a more engaging, realistic and immersive experience. In this context, systems have been built to involve the human senses of smell and touch [1] [2] in movie viewing. Our research focuses on the touch modality to intensify and enrich a movie viewing experience at home. In a domestic situation, it is not feasible to have state-of-the-art multi-sensory effects devices as found in theme parks. Key requirements for home use are: low cost, aesthetically unobtrusive, easy to install, easy to move and easy to use.

Commercial products in this area are tactile transducers [3], providing a tactile sensation in the viewer's seat, based on the low-frequency audio band of the movie being watched. However, these products are typically heavy, hard to install (e.g. bolted to a seat or floor), not easy to move, and offer little personalisation of the type of tactile effect and the intensity of the effect in case of multiple viewers.

To overcome these disadvantages, we created the Touch Blanket building on the work of Lemmens et al. [1]. It is a haptic actuation device to enrich a movie viewing experience at home with personalised tactile effects, including effects targeting specific body parts.

2 Touch Blanket system overview

The Touch Blanket exterior and interior are shown in Fig. 1. On the outside, it looks like a conventional blanket and it can be conveniently spread on top of a seat or sofa.
Inside, it contains 176 small, individually controllable small vibration motors (1cm diameter), arranged in a 2D matrix. Each motor can be set to 25 different intensity levels with an update period of less than 50 ms. Two persons can sit on it simultaneously, experiencing personalised effects at their legs, arms and back. The blanket form factor offers an easier way to experience the effects than the tactile jacket [1].

Figure 1: (left) Touch Blanket spread over a sofa; (right) inside view, showing the wiring and part of the matrix of vibration motors attached to the fabric.

To control the Touch Blanket, a C++ PC application was developed that generates tactile effects synchronised to a movie. This application uses effect scripts specifying what tactile effects are to be played, but it can also render effects based on video/audio features extracted from a movie.

What constitutes a good tactile experience is a matter of personal taste. Therefore, a suitable UI to allow personalisation is essential to have. In our current system, basic controls are available for users to easily adjust the intensity of effects and type of effects with minimal interruption of the movie experience.

For future work we consider (1) investigating in more depth what ways of user interaction are most pleasing and effective to let one or more persons control and personalise the Touch Blanket during movie viewing; (2) user tests to establish how much the blanket enhances the enjoyment of a movie and to what degree it increases the immersion of viewers. Our ultimate goal is a product that provides a truly personalised experience.

References

Multi-Touch: FeelSound and Mu3

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Abstract

FeelSound
FeelSound is a multi-user, multi-touch, table-top music composing application. Users place (and move, and remove) any number of partial compositions on a long music bar along the center of the table. A time indicator cyclically tracks along this bar, playing the partial compositions as they are encountered. Users collaborate in the space outside of the music bar to create new partial compositions. They can claim 'composer stones', which allow them to create partial compositions for a specific instrument by drawing on the table in the composing space. These compositions can subsequently be moved onto the music bar to be played. Users can also claim 'control stones', which allow them to control one of the compositions in various ways, e.g. changing volume or tempo. The result is an ever-changing collaborative piece of music.

Mu3
Mu3 stands for multi-touch, multi-user multi-tangible and it is an open source framework layer that abstracts from the multi-touch hardware that is used. It provides a single multi-touch interface that application developers can connect through. Technology specific support is broad and ranges from support for non-rectangular shaped surfaces to multi-user recognition to capacitive coupling and TUIO input to tangible object recognition. The FeelSound music composing application is just one of the applications that runs on top of Mu3, showing the ease of use and facilities that Mu3 provides to multi-touch application developers.
Navigating a Maze with Balance Board and Wiimote

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Abstract
Navigating a Maze Game with the Balance Board and the Wiimote
Users navigate an avatar over a course to the end. They use the Balance Board or the Wiimote to move the avatar through the hallway. The path is blocked by a number of doors and they can be opened by pressing the correct button on the Wiimote while standing on the doormat. It is a race to complete the course as fast as possible and making the least possible errors by touching walls or closed doors.

Control with the Balance Board and the Wiimote
The user can control the avatar with the Balance Board or the Wiimote. On the Balance Board the user is required to shift his centre of gravity over the surface. By leaning left the avatar goes left, by leaning right the avatar goes right. The same counts for leaning to the front and back, where the avatar goes up and down. With the Wiimote controls the user needs to tilt the wiimote. By pointing the wiimote up the avatar moves up and by pointing the wiimote down the avatar moves down. As the wiimote doesn’t support yawing, pointing the wiimote left and right aren’t used. Instead the wiimote needs to be twisted left and right to let the avatar move left an right.
Runesinger: A Case Study in the Coupling of the Elements of Language to the Rules of Play

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Abstract

Runesinger is a demo of a PC videogame to speak and spell Korean. The player practices a few nouns and verbs by serving food to hungry villagers in North Korea. The player sings a jingle while a ball bounces on each iconic syllable. Through a spelling puzzle, the player composes each syllable in Hangul. Subsequently, the player sings with Korean subtitles. The virtual environment and user interface embody the rules of Hangul.

Overview

The process of secondary language (L2) learning generally includes tedious exercises for at least an hour a day for several years. Therefore, improving the emotional satisfaction of the language learning exercises would improve the quality of life for millions of practitioners. Furthermore, motivation to continue using computer-assisted language learning (CALL) is a potential barrier to the software’s efficacy. Apart from the educational content, such drills have little intrinsic motivation [3]. This lack of motivation makes a case for a serious game. During the past decade, videogames have begun to supplement some secondary language learning. For the most part, the educational content has been out of context and the use of rules and play has been trivial.

Runesinger is a demo of a PC videogame to practice speaking and spelling Korean. This computer-assisted language learning teaches a few meaningful nouns and verbs through the task of serving food to hungry villagers during the North Korean famine of 1997.

Figure 1: The user sees a simple 3D virtual environment, rendered in OGRE (left). A ball bounces on each syllable. At first, Hangul is replaced with icons, which makes the user feel more comfortable (right).

Inspired by melodic intonation therapy [1], the phrases are embedded in jingles. While the user listens and sings each note, a bouncing ball synchronizes the phonemes and iconic placeholders for the graphemes (see Figure ). The user learns a subset of E han-gul, the Korean alphabet,
through a spelling puzzle (see Figure ). Subsequently, the user sings to same language subtitling (SLS) in Hangul [4] (see Figure ).

Figure 2: The user clicks on each letter to slide it into the syllable block.

Embodied cognitive linguists believe that in order to learn a natural language, the learner must interact with a physical environment [2]. Although an immersive interface is beyond the scope of this project, Runesinger displays an interactive virtual environment in three dimensions (3D) (see Figure ). On screen, iconic objects are rendered in three-dimensions, which according to a neural theory of language (NTL), enhances the neural binding of image schemas to spatial tasks and language use [2]. The abstract representation of the characters and objects makes them easy to recreate and apply to diverse experiences.

A single English word is shown to teach each Korean word, and no English is provided for the phonetics. Except for introducing the interface and story, the user is gently immersed into the target language. While playing, the user is presented with minimal English, which would interfere with language acquisition. Animation, sound, and graphic design provide context to the learning. In small increments, new letters, syllables, and words are introduced and practiced.

The virtual environment, user interface, and story were designed explicitly for the spelling and phonetic syntax of the Korean language. Thus, a user can mentally simulate physical objects behaving under physical mechanisms that embed mnemonics of the rules for spelling and pronouncing Korean. This suggests rich possibilities for designing for other secondary languages, in which the virtual environment and user interface are tailored to that language’s unique rules for syntax and grammar.

This project began with the question: How can a student design a videogame such that, while playing, a user learns a skill transferable to an academic, business, or artistic setting? In the course of a few sessions of fifteen minutes each, Runesinger practices listening, speaking, and spelling of a few Korean words. Assessment-driven design, based on the S-TOPIK (KICE 2009), was instrumental in evolving the software to satisfy its dual criteria of language acquisition and motivation to learn.
The innovation of Runesinger is to harness the tropes of videogames for practicing a foreign language in a meaningful context. While language learning software, such as Rosetta Stone or Declan, exists, in Runesinger, the user learns through meaningful play.

References


All the world’s a stage
- Designing for Urban Play

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Abstract

The way we can interact with the city is rapidly changing because of the possibilities mobile phones offer these days. With a fast pace phones are becoming full internet, media and navigation devices allowing you to connect to rich content at any moment triggered by your (GPS) position. Many location-based services focused mainly on local search and friend-finding have emerged over the last years, but we have only just scratched the surface.

The city with all its (hidden) information and landmarks presents us with a beautiful stage filled with historic events, personal stories, cultural meaning, demographics, social relationships and much more. Something has occurred on every street corner and every brick can claim its own history.

If we now consider the city an extension of an organisation, that deals with delivering high-quality content, the city becomes an exciting mobile space to publish to and reach people in new ways. Combining rich content with striking locations can easily create new meaning, but?

But what truly makes a mobile city experience? What will we experience when we pick up our phones in the years to come and decide to “play” what is published to our surroundings? We believe it can be much more than typical point-of-interest interaction.

So, the bigger question here is how to design for urban play and what kind of tools are needed. We take the theatrical approach of the city as a stage for which you create scenarios, write stories and design (game) rules for social interaction. We see 7scenes as one of these new tools, a mobile and online platform making it easy to create, play and share GPS games and tours.

In a ±30 min presentation this mobile city scenario can be illustrated with projects in which a.o. museums exhibit on the streets, students are taught on location, a public park talks about her activities, tourists travel back in time, residents respond to their city’s design and much more.

A live demo - such as a small GPS treasure hunt - around the venue is also very much possible with an exclusive behind the scenes view of how the demo is constructed. GPS-enabled mobile phones will be brought along for small groups (up to 12 people) to enjoy the same time and demos last about 20 minutes. Only other requirements are a healthy broadband internet connection so 7scenes can run properly on a laptop.

Speaker bio

Ronald Lenz (1974) heads the Locative Atelier at Waag Society, a medialab in Amsterdam, The Netherlands, that researches how creative technologies can be applied for social innovation in healthcare, education, culture & arts and the public domain. Ronald is also creative director at 7scenes, a company that develops a GPS platform for games and tours.
Abstract

αWoW (alpha-World of Warcraft) is a demonstration of how you can control a character in the virtual environment of the popular videogame World of Warcraft, just by using your brain. In the videogame you play a druid. You are very close to nature and can also make use of its magic. In your human form you are very capable of casting spells, but you are also more fragile. You can change into your bear form, which is naturally more suited for claw-to-claw combat. Each form requires a unique style of play.

The brain activity is analyzed for alpha activity, which is brain activity within a very specific frequency band (8-12Hz). Different frequency bands have been linked to specific mental states. Alpha activity is, for example, related to relaxation. A short period of stress will trigger the bear form which is great for dealing with enemies in close-combat, while being relaxed will revert you to your human shape in which you can use your mind to cast useful spells.
Enhancing Mediated Interpersonal Communication through Affective Haptics

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Abstract

Driven by the motivation to enhance emotionally immersive experience of real-time messaging in 3D virtual world Second Life, we are proposing a conceptually novel approach to reinforcing (intensifying) own feelings and reproducing (simulating) the emotions felt by the partner through specially designed system, iFeel_IM!. In the paper we are describing the development of novel haptic devices (HaptiHeart, HaptiHug, HaptiTickler, HaptiCooler, and HaptiWarmer) integrated into iFeel_IM! system, which architecture is presented in detail.
Opinion Elicitation in Second Life

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Abstract

The demo shows a novel method for opinion elicitation, which is based on the popular 3D online world of Second Life. Here people, as avatars, are put into a somewhat realistic context related to the topic for which opinions are sought. In our paper, we hypothesise that this kind of concrete, interactive context supports the evocation of opinions better than non-context methods, e.g. only showing related images.

In the virtual environment, two agents will tell the users opinions about genetically modified tomatoes. The users can respond to the agents, which will thank the user and store their response. The environment also boasts tomato fields with both biological and GM tomatoes.
This research has been supported by the GATE project, funded by the Dutch Organization for Scientific Research (NWO) and the Dutch ICT Research and Innovation Authority (ICT Regie)
GATE*: Game Research for Training and Entertainment

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Abstract

To advance the state-of-the-art in gaming, to facilitate knowledge transfer to companies, and to show the potential of gaming in public sectors, the Dutch government has funded the GATE project with a total budget of 19 million Euros. The project runs from 2007 till 2012 and involves partners such as Utrecht University, Utrecht School of the Arts, TNO, University of Twente, Delft University of Technology, Waag Society and Thales. In this session we will survey the GATE project (http://gate.gameresearch.nl/) and we will in particular look at research that aims at agent modelling and the use of virtual reality technology.

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Scottie: Playful affective communication

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Abstract

Within GATE\textsuperscript{1} (Game research for training and entertainment), Waag Society takes the lead in the Innovative Pilot Healthcare. The pilot healthcare focuses on developing a playful communication system that supports affective communication between people that share a close or intimate connection, but who are not in the same location. The pilot’s primary target group consists of hospitalized children, separated from their family, friends and classmates. Will playful, non-verbal remote communication with loved ones contribute to a child’s well being?

\textsuperscript{1}This research has been supported by the GATE project, funded by the Dutch Organization for Scientific Research (NWO) and the Dutch ICT Research and Innovation Authority (ICT Regie)
AGENTS LUDENS: Agents for Fun and (Serious) Games

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Abstract

In this talk I’ll discuss how intelligent agents can be used to model virtual characters in (serious) games. Starting off with the concept of an intelligent (BDI) agent and how one can program it, I go on with explaining how this can be employed for modeling virtual characters as well as HCI-like applications such as a companion robot. I’ll also indicate how BDI-modeled agents / characters give rise to further developments such as characters with a theory of mind, mental state abduction, explanation facilities and natural dialogues. The material covered is primarily based on work being done within the GATE¹ project, but I’ll also touch upon related projects we are doing in Utrecht.

¹This research has been supported by the GATE project, funded by the Dutch Organization for Scientific Research (NWO) and the Dutch ICT Research and Innovation Authority (ICT Regie)
Modeling natural communication

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Abstract

With the increasing amount of virtual, intelligent agents in serious games and in training and educational simulations, there is also an increasing demand for more natural and realistic behaviors. As such, one of the objectives in the GATE project is to study how the cognitive behavior of such agents can be modeled. At the university of Twente we are trying to create an accurate model of the cognitive processes that are involved in natural communication, focusing on how, why and which cognitive processes direct the production and realization of appropriate verbal and non-verbal behavior by virtual characters in a conversation with the user.

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1This research has been supported by the GATE project, funded by the Dutch Organization for Scientific Research (NWO) and the Dutch ICT Research and Innovation Authority (ICT Regie)
Hands-on activity

INTETAIN 2009
Abstract

Designing for Emergence in Games

There is beauty in games. For some the beauty of games is directly related to dazzling visuals or emotional immersion. However, there is also the rich game play so many games offer using only a handful of rules. The age-long tradition of Go is testimony to power and beauty of this richness. Every session of play becomes a performance; a ritualized dance that is focused and confined by the game’s rules and premise, but which is never the same twice. These days, many game designers agree that, at least in certain types of games, game play is an emergent quality of the game system. But emergent behavior is notoriously difficult to predict and can uncomfortably feel like magic. A defining characteristic of emergence is that the most convenient way to find out what happens in an emergent system is to simulate it, or have the system run its course. This explains why using iterative process with many prototypes is the most effective way to design games.

Joris Dormans has developed a method to help the game designer get a grip on the emergent dynamics of his or her game. Using abstract models of possible game mechanics, he shows how one can influence the emergent characteristics of the game by changing the possible interactions between players and the game, or making use of the interaction/interference between different game rules. During the hands-on session at the INTETAIN he will introduce the method to the participants, together with Remco van Swieten. Subsequently, the participants are invited to apply the method, working in small groups on the design of new games. The results of this activity will be collected, and presented shortly during the conference dinner.

Speaker Bio:

Joris Dormans (http://www.jorisdormans.nl) got an MA degree in Cultural Studies after finishing a thesis on the grammar of visual design. After his graduation he continued to expand his academic knowledge and shifted his attention to the study of games. Through this website he publishes his articles and reviews of books and games. Joris works as a lecturer teaching courses on game design, game theory and interactive narrative. He also has his own company that builds websites, designs games and does other media-related jobs, and recently he started working on his PhD dissertation.
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