Interactive information process image with minute hand gestures

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Abstract

It is definitely an interesting job to work with V4 to create various contents emphasizing different interfaces like 3D graphics, and multimedia such as video, audio, and camera. Moreover, beyond the other interface, as it could be used in the many aspects of the sensory sign such as visual effects, auditory effects, and touchable effects, it feels free to make a better developed model. We intended the users to feel some kind of pleasure and interactions rather than just using in aspect of Media art.

1. Introduction

It took long time to induce the user's needs and insight and which one can be shown effectively as we think. So, we did a process of interaction design and HCI. Even though it doesn't need to do such a process compared with making application or something, we thought that it's better doing some analysis. That's because we're intended to make a work of user interaction work. Through the requirements analysis, we found out that Users feel satisfaction when they doing a meaningful behavior and when it is shown on physically. To summarize quick response between human and object is needed based on the meaningful behaviors. The 'Insight what we analyzes is-when the users see the physical response, they assign their behavior as an important issue and feel satisfaction. So, based on this idea, we planned a user behavior-based object.

1.2 Proposal

As we described above, the purpose of this work is to satisfice the user's requirements which is 'when the users see the physical response, they assign their behavior as an important issue and feel satisfaction'. There will be lots of things that we can do and but we referred the social issues. At first, we started from the issue of donation. As we did in theme of split screen before, lots of refugees are suffering from the war and poverty. By promoting the donation, we intended to give them a hope which method should catch the user's mind was an important matter. However, as it proceeds more and more, we recognized that before they doing donation, it is important to make the people to get interest about this issues. Physiologically, in the deep part of the internal mind, almost every people have a desire to 'be a helpful person by give a help to someone'. Because it means they feel satisfaction and self-esteem as they let the others know what they know. For example, people aren't reluctant to point the direction to a stranger. So, using this effects, we could make the people think that 'I also can be a someone who can help the others!" through this V4-arduino interaction. Although it isn't a huge donation behavior, it's enough to feel them as they are doing kind of direct interaction with the other people (such as refugee…) and can get interest.

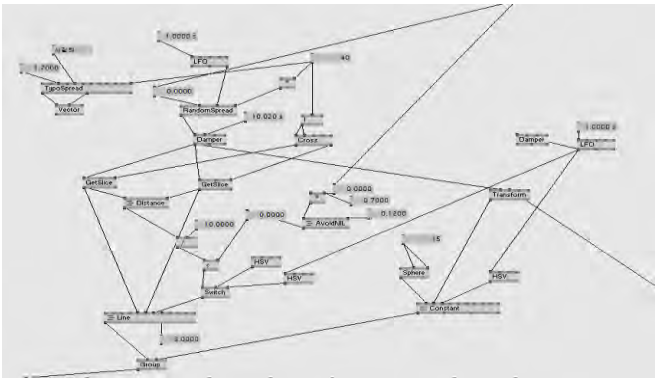
The intention of the work was based on the participations of non experts. This concept originally have constraints such as complex manual, expensive software and equipments, but by using leap motion, non expert participants can easily perform this work using only their hands. With cheaper and common devices, people can interact with the media art with convenience.

2. Experimental

2.1. Concept

As we mentioned above, psychologically, people feel they

are useful as they are being a part of helpful people to someone even if it's not a special behavior. Basically, based on the V4 interface, we used an Arduino to make an interaction between user and object. V4-Arduino is doing reciprocal actions. In our project, from the Arduino signals, the v4 screen is work.



(Fig. 1) Interface overall V4 Design.

Now, as a conceptual aspect, we designed a physical model as a 'circle'. We motivated it from the 'glass bead' which is often shown on the fairy tale to do a magic. By rubbing the ball slowly, something is happened. As it like, in our work, when the users are rubbing or touch the ball, the ball is started to glowing. On the aspect of the V4, it shows a series of models and when it receive the speak signal, the series of the model is mixed together and it looks like a whirlwind.
As a result, by rubbing the ball and saying the wishes at the same time, it's showing a direct response to the screen. So, the people can recognized easily and they feel like their wishes got achieved. Glowing ball could be a globe and when the people touch the sick part of the globe and saying some wishes, the V4 screens are acting like a "You wishes for the poverty is accomplished". From this, people could recognize that they do such an "kind" action to the refugees even though it is a simple behavior.
Performances such as orchestra, how the music is delivered depends on the conductor even with the same music and the same orchestra members. The speed and the volume of every sound are effective on the whole music and they are all different by the conductor. From this point of view, we have made VVVVJING where the performer is the conductor at the moment. They can control the volume of the music. They can also turn and turn off as well as changing the music. All these performances are done with their hands over leap motion and will be shown on a screen.

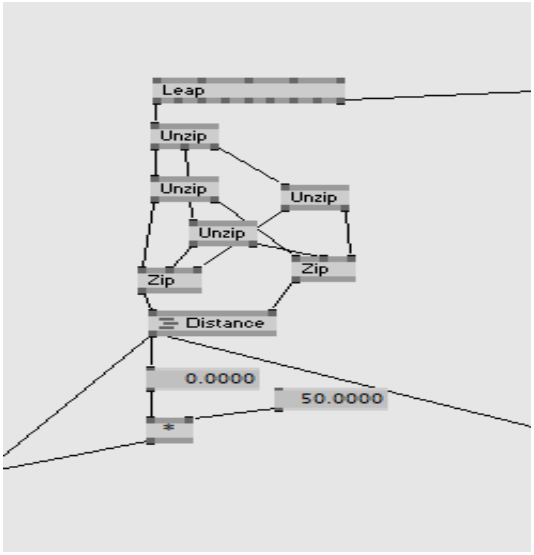
2.2. System development

1. Decide the main device : Leap motion
2. Plans on designs : weather a projector is needed, physical space, stage design
3. Research on what we can do with the device :Position of two hands, circle gesture, swipe gesture, one hand recognition etc.
4. Research on how we can connect visual performance and sound
5. Get reference
6. Develop source with sound and visual performance connected
7. Combine everything
8. Test and demonstration

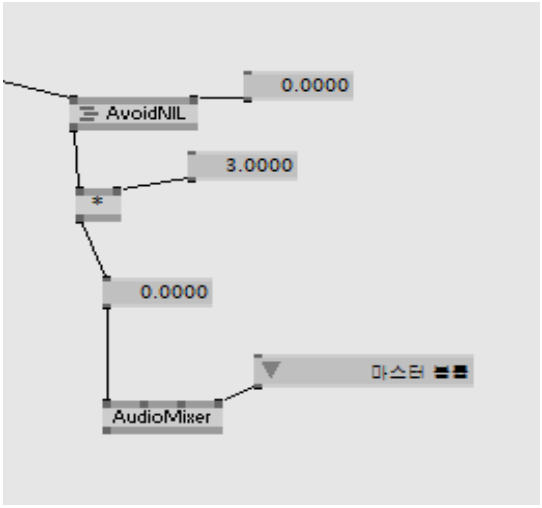
2.3. Process of work and functions

There are two main functions of VJING. One is controlling with two hands, detecting two hands and getting the distance as an input. This input will control the sound of the music and visually show the output. The visual effects include variation of the line color, shape, length, damper, and distance. When the distance of two hands get smaller, the lines also become smaller and converge into the center of the screen. Of course the sound of the music decreases. When the distance gets bigger, the opposite happens The other function is to detect one hand gesture. It will detect when the hand gesture is making a circle in the air. If the radiation of the is big enough, it changes the music from the file.
When there is no hand detected, the music stops as well as visual contents. Two hands are back again, the music starts playing with the visual effects.

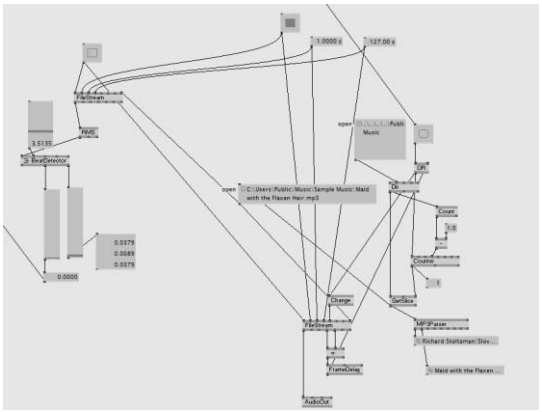
- length by the distance of two hands
- circles when beat detected from the music
- color randomly
- speed randomly
- cross randomly



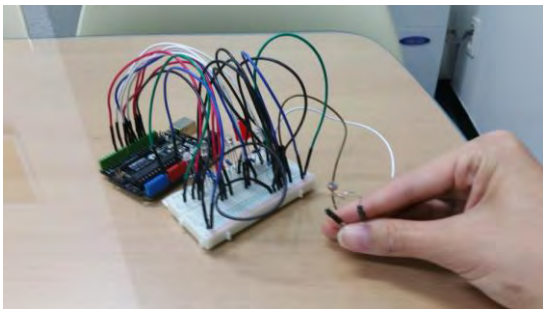
(Fig. 2) Line variation random with distance between two hands



(Fig. 3) Audio output connect to distance output



(Fig. 4) Beat detector gets the circle gesture



(Fig. 5) LED photocell equipped on Arduino in globe

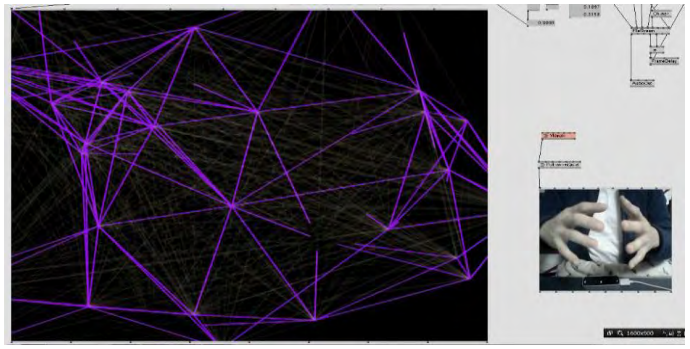
2. DEMONSTRATION

First, sound and visual effects are show on the screen affected by the distance. Lines that are connected with circles are colored, and others are gray. The color of the circle and the lines changes randomly.

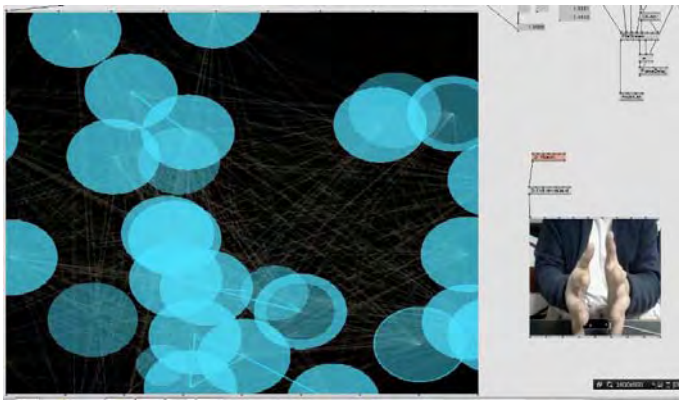
Secondly, circle on points of the lines appear when beat is detected. The size of the circle is determined randomly. And color and length of lines change by the distance of two hands.

There could be lots of developments in the extensive field. In the concept of 'glass bead', it stimulates the user's curiosity no matter whom they are. We describe below.

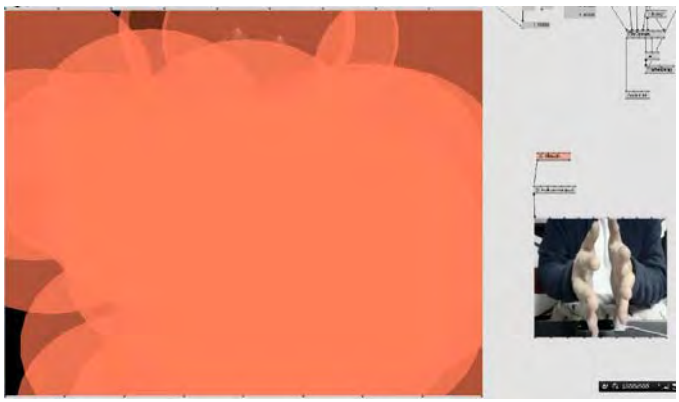
1) On the Christmas season, targeting for the children. 2) Could be used for the donation 3) could be focus on adult. For instance, in the point of kidult market is arising, for the adults, it can be a memory of their childhood. And they'll get the desire troubling the glass bead and saying the hope as if they go back to the children. And for the child, it could be a tool waking their imagination. As a result, it can be an interactive media through the all the people as it evoke the imagination and curiosity.



(Fig. 6) both hands detect and coordinates



(Fig. 7) when the system detects the beat



(Fig. 8) when the system detects the beat

3. CONCLUSION

Through the process, we have to focus on interaction with people. On this project, we intended to give the people message of the hope by using Arduino and VVVV. Motivated from the ‘glass bead’ which is on the fairy tale. We extended it to the donation induce method. It is finally working when it gathered group of people’s hands. That is, we wanted to produce a content which is working when the hands are gathered together, rather than used by one person. The background space is set on the screen (or the projector) in the dark space. It is to make a direct interaction and give them a message by using LED and screen image. We had a time to ponder about the way of using media between relations with the users. Before we accomplished the project, we made a several prototypes as a iterating over and over. We are planning to have a demonstration video in case the project won’t work on the moment for any reason. For the performance, five to six music is prepared which goes along with the visual effects and appropriate for the performance. A projector is not necessary since it is shown on a rendererview.

The further usage of VVVVJING is the use in the actual field with VJING table. With leap motion on the music table, visual contents can be on the projection and the music can be controlled by any two hands. Further development on the function might include diverse gestures by hands, detecting not only two hands but also ten finger tips and their movements. From those inputs, more visual patterns can be detected and turned into special visual effects. It could also be connected to webcam and show the actual hands and their movements.

References and Notes

[1] Thomas Dreher. History of Computer Art, Chapter. VI:Networks, Participation, Hypertext.

[2] Schneider, B. (2011, January 6). From Clubs to Affinity: The Decentralization of Art on the Internet « 491. 491. Retrieved March 3, 2011, from

[3] Sedig, K.; Parsons, P.; Babanski, A. (2012). "Towards a characterization of interactivity in visual analytics". *Journal of Multimedia Processing and Technologies, Special Issue on Theory and Application of Visual Analytics* **3** (1): 12–28. Retrieved July 29, 2013.

[4] Kiousis, S. (2002). "Interactivity: A concept explication". *New MediSociety* **4** (3): 355–383.