

Interactive Communion Tabletop

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Abstract. Interactivity, the most prominent characteristic of digital media paradigm, generally means a relationship in the communication between human and human, human and machine, or media and media interacting each other. This work is interactive art and is produced to prepare a foundation for closer communication between human and human based on technology.

Keywords: Interactive ivy, Interactive design, Communion hand, Digital media art.

1 Introduction

The paradigm in technological development moved from sensibility, communion and communication in its value standard. In other words, it becomes more important whether the user can feel comfort and respond sensibly to it through digital. Digital technology opens a new horizon of sense with the advent of new technology that experiences new senses never felt before and recognizes the organic combinations or information of sensors. Through this, the foundation for closer communication between machine and human being or human to human has been laid. Therefore, the non-verbal interactions in this work provides the basis to intentionally extend the knowledge about interactions, nurture behavioral pattern and actively utilize the communication. In addition, the social interactions with strange others can deliver the meaning to others through body language and understand and sympathize each other through the message extracted by others.

2 Concept

Interactivity, which is implemented by digital technology, provides feedback on actual situation in real time and takes on an aspect with more instant commitment through human body. At this moment, the body of a spectator functions as body interface and sometimes it becomes just a tool of the work running the work. When a spectator realizes instinctively that his/her body is changing with the image of the work while he/she does specific exercise with his/her own body, or fully understands the instruction to run the work, he/she could be aware of any situations controlled by dynamic objects, spectators, and any intangible immaterial interface, that is, hidden

computer or other devices with the whole body. The distance occurred by the relationship between such interfaces forms a structure of situation and such structure based on spectators is generated from an external space with regular experience.

This work is meaningful to get the way to try to get rid of the wall about strangers and forge closer relationship. A wall is an actual visible presence, but in the work, the wall means mental wall in people's mind, disconnection against exterior intercourse. The wall with cold property interrupts between the outside and the inside completely. So we need to learn many approaches to break down the invisible mental wall and try communication with each other. When you put your hands on the table carefully as if you express your heart, virtual trunks and leaves of ivy are out from your fingertips and go toward the wall crossing each other. The trunks from each hand get tangled for communication and safely get to the wall freely and convert the existing cold wall with a sense of alienation into the wall of communication.

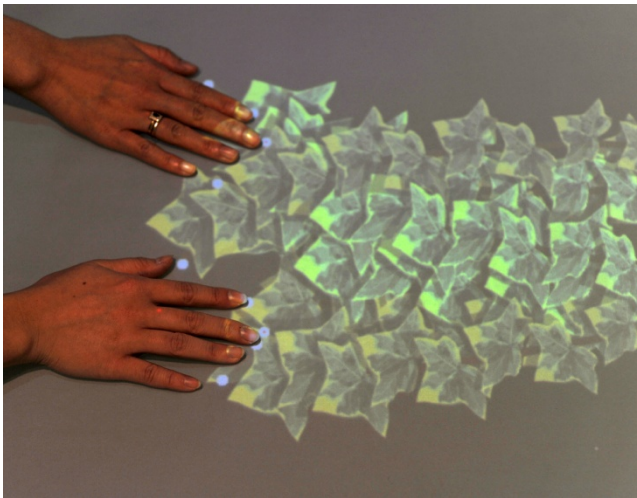


Fig. 1. Hand Feature Detection

3 System Process

Hand Ivy is composed of an interactive tabletop and a vertical screen to represent the climbing of ivy. Because of using two displays, we should adjust the resolution of two screens and calibrate them to make sure that there is no loose connection between them. Those processes which is adjusting the resolution and calibrating them are performed in the software.

3.1 Hand Feature Detection

Hand features, such as width, height, fingertips and palm center, are used to represent the user's characteristics by passing down the characteristics to the ivy leaves. Then

the leaves are generated with the received information like the ratio of the width to height of hand. There are five vines of ivy from each fingertip and the fingertips are the roots of each vine. So we need to know where the fingertips are.

When user puts his or her hand on the interactive tabletop as shown in the Fig.1, the system takes its shadow using a camera. Then we extract the region of interest, after making the binary image from the acquired image from the camera. At the first, the region is applied to the morphological process to detect the palm center and a skeleton of each finger as you can see in the Fig.1. Then find the tips of skeleton of the opposite direction to the palm center for each finger to detect the fingertips. If the system has some trouble during the procedure, it determines that the shadow on the tabletop comes from unknown object instead of user's hand.

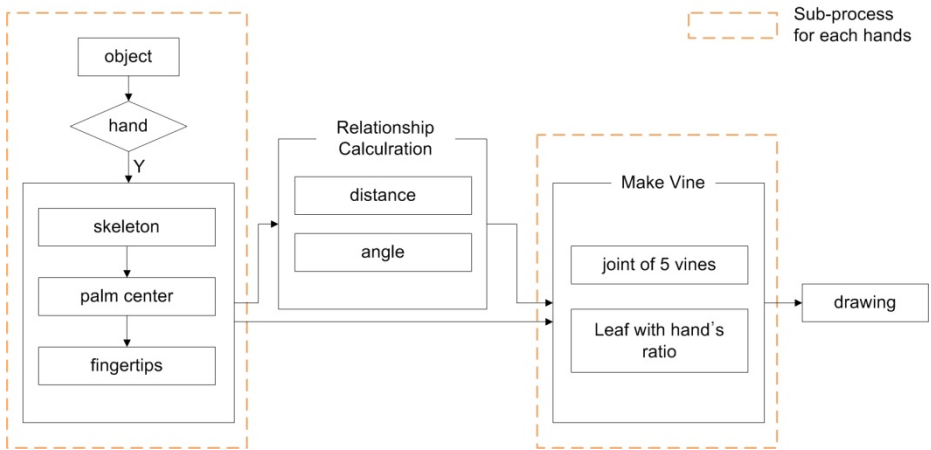


Fig. 2. Diagram

3.2 The Relationship between Users from Hand Features

The twisted vines imply the communicating and breathing together between the users by their hands on the interactive tabletop. It means that they are more intimate when they put their hands closer or toward each other. We inferred their closeness by considering the distance and the angle between their hands using the hand feature. Their intimacy is expressed graphically on the screen with the vines and its connection.

In modern society, we are able to communicate more freely taking advantage of the media development in IT era including digital media and communication devices. However, as the communication becomes freer and expanded, it becomes more difficult to build communicative relationship because of increased indirect communication. Direct encounter, gesture and non-verbal emotional exchange might lead to true communication, even though it is not verbally done.

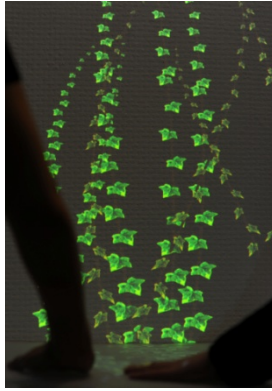


Fig. 3. The way to get the user's hand

4 Conclusions

Human beings maintain their life through the relationships with others, and the desire to build relationships and communicate with others is one of the basic natures of human beings. However, all of us living in this modern era build our own wall and boundary to make a physical space isolated from outside due to environmental factors or others. Therefore, I intended to construct a media art that can soften the cold wall blocking communications with warmth through sensible approach.

References

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