Danc.in.rain
Learning space with installation
Technologies for Creative Learning
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Dancing in the rain

Today the rain
Drops upon the world,
Tap, tAp, taP.
It falls all over,
Clop, clop, clop.
It's all mushy on the grass.
Squish, sqUish, squish.
Playing on an umbrella
Tapping on the windowpane.
I make beautiful music.

-Jason

01
DIR abstract

DIR, or "Danc.in.Rain",

is an interactive playing field that allow audiences to interact with sound scape based on the integration of GUI software platform, space and behavior. **DIR** allows the physical to be readily combined and taking an advantage of digital benefit. By your physical gesture and interactive movement to **DIR**, you can experience body of the sound creating difference modular compositions audible.

DIR was designed for the young, people who interested in sound and performance art, and digital novices in order to extend the capability of interface to compose and express each unique imagination without musical or performance art background. Every Performance with **DIR** is unique because the sequence, timing, quantities, position, size, color, effects, filters and transition combination possibilities are completely in hand for the creator.

DIR is envisioned as a poetic interaction tool to enhance ability to learn and experience the world. This endeavors to develop an interface bringing both the physical and digital together which anyone can operate at will, freely in a three-dimensional space and heightens awareness of the diverse experience, sound dimensional and learn to question the givens in their surrounding environment.

Interactive embedded in our living. **DIR** strives to bring the interactive art experience to younger audience engage physically and intellectually in different dimensions. The media will have a low floor accessibility and understandability by playing.

02
Interactive Rain

DIR was inspired by

new media
Inspire and expand the physical interactive interface

Rain
sound, body, transformation

Many tool and software have been invented by using GUI to allow people to create the new perception of sound. However the limited interface ability has also limited sound experience which consists of multi dimension.

DIR intends to enhance play ability in learning environment by extending the limit of interface and bounding the digital advantage with the physical world. With the existing technology, DIR provide a platform to support multiple learning styles to emphasis each imagination and allow learner to "learning by playing" foster creative expression and define their own pattern of exploration with soundscape.

03

Software and Installation as Influence and Inspiration

Software

DIR is the integration of MAX/MSP, jitter and Cyclops in order to explore the advantages of GUI opportunity.

Max/MSP is a graphical environment for music, audio, and multimedia. In use worldwide by performers, composers, artists, teachers, and students, Max/MSP is the way to allow computer do things that reflect personal individual ideas in the most effective way. By using GUI, MAX/MSP is very ease to use and open to the future possibility technology input.

Jitter is a set of 135 brilliant video, matrix, and 3D graphics objects for the Max graphical programming environment. The Jitter objects extend the functionality of Max/MSP with flexible means to generate and manipulate matrix data.

Cyclops is a Max object for analyzing and tracking live video. Through a simple interface, Cyclops can track performers and users with a video camera and analyze information from the live image. This program allow users to use the resulting Cyclops data to control audio, video and anything else with Max.

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Installation
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There are a number of installation art and interactive media that influence **DIR**. The criteria to compare and analyze for **DIR** is technology system, effective space, interaction approach and sound management.

Case Studies

Hyperscratch
Haruo Ishii

Hyperscratch is an interactive installation in which one can control light and sound by moving one's hand within a certain space.

There is an invisible three-dimensional interface before the participant. Within the interface are eight horizontal rows, five vertical rows at two levels, front and rear, of invisible switches 480 in total, which the participant can control by "touching" the switches which operate the light and sounds from a device in front. Before the participant is a frame 8' in height, 13' wide, and 10' deep in which there are arranged again 480 (10/6/8) copper pipes with motors and light bulbs. As the participant "touches" the invisible switches the pipe which corresponds to that switch emits sound and a light comes on.

The interface exists within a three-dimensional space and enables the participant to operate the devices without using one's hands; freely and unhampered. Furthermore, the objects to be operated are spread out in a three-dimensional space and provides the participant with a new experience, namely to operate a mechanized device in a separate place. The activated sound is not made by a computer but the sound of a copper pipe hit by a motor accompanied by a flashing light, and will be a refreshing change to the ears of people accustomed to hearing computerized or digitalized sound. Computers and digitalized equipment is used to detect hand movement and

activate the light and sound, but is not seen by the participant. The theme of this object is the physical movement of the participant's hand and the simple but meaningful sound of the copper pipe, and the light. This expresses and symbolizes my personal philosophy that computers and other high-tech equipment, as it supports our daily lives, should not have a strong visual presence.

Fuge for Piano

This is a touch-sensitive music installation for Figarohaus, Musician Memorial Sites, Vienna. 1995 by Christian Moeller and Elsa Prochazka

Because most people find it difficulty to read music notation, most visitors to the Figarohaus, the former residence of Wolfgang Amadeus Mozart , his exhibited original sheet music is by itself less interesting than other items on display.

The original sheet music of the Fugue for Piano, op. 154 is exhibited beneath a touch-sensitive sheet of glass, fitted within a normal picture frame.

By touching the glass above any given note of the music, the visitor is able to hear it played by a sequencer developed for this installation. In this manner it is possible to play the entire composition by tracing the bars of music with one finger. The speed with which the visitor traces the notes determines the tempo of the playback transmission.

JMB Composing

JMB Composing is the work by Daniel Liebeskind for the Jewish Museum of Berlin. He developed different alphabets for different section of the museum. In composin, the visitor can use one of these alphabets to create both a piece of music based on the 12-tone composition method.

Taptap

TapTap is a construction toy by Andy Huntington and Louise Klinker. This fascinating device was designed for those fascinated with rhythm and fidgeting. It is built out of individual knock boxes. Each box has its own memory and is completely self-contained. As you tap on the top of a box, the box waits for a few seconds and then taps back what it has heard, but only once. If you want more you add another box. By tapping for longer than delay period, you play a duet with the box as it repeats your earlier rhythms. The boxes themselves do not learn or loop, they only repeat.

The famous Grouse

The complete re-development of this visitor Venter was undertaken by Land in 2000. Seismic floor sensors combined with a series of six computer-processed data projectors enable groups to splash through digital water.

04
DESIGN
Products design process

Key Features that support creativity are

1space
DIR sensor device will create seemless territory for audience to be the manipulation platform integrated digital and reality. This space can be control and program for by break up perspective element, the crowd perception and the territory like wind, sun, sky fragmented place, position, status, and information.

2observing, collecting
Foster people to question and observing their surrounding and collect data (music file) to be and artifact for DIR manipulate.

3tool
Seamless tool and ubiquitous control.

4physical
Nurture the variation of interaction and investigate the impact from information, self, and other people.

5community
With open ended functional and adaptive interface DIR can become any learning style either game to play,media to study music and performance art and also allow people to learning from one another.
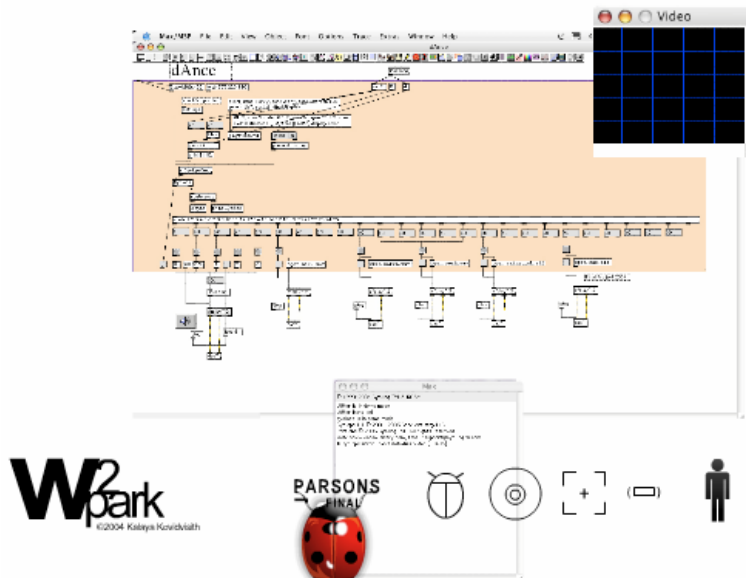
05
Product

DIR's proposing

Ability to Express and Compose Yourself.

DIR will be your knowledge computation so that You don't have to play the piano. You don't have to read music. You don't   even have to have rhythm. If you know what you like when you hear it, you can   make your own kind of music.

Programing
by programing the relation between space, people and physical, DIR will allow you to generate the possibility of sound through your programming space.
Triggers
Building conditionals and generate the criteria available for creation such as effects, filter, transition or particular sensor setting. Most of trigger built in DIR is based on movement, time (speed) and position.
Actions
Action is the main interface to control and interact with By using the simplicity of physical and digital connection and using drag-and-drop will support

standard system requirement and encourage people to participate and create new composition.

Sensor

The sensor is the device to depict user interface. DIR provide an optional sensor to be use in different aspect and user's interest. By using Cyclops, The movement can be captured by any digital or wireless devices and sent to the computer as location information.

06

The scenario

If I were the rain,
I would drop so lightly.
But, when I am mad,
I'll drop hard!
When I am sad,
I won't drop at all.
When it's cold,
I'll turn into snow.
-Seth

DIR design scheme introduces a series of exploration for people in different ages with their diverse specific interest.

Workshop

Scenario one
Mission   :   Pattern of Exploration
Place   :   Parsons School of Design, New York
Audience :   exhibition visitors
Note   :

1DIR is officially a project for Design and Technology: Sound and Vision workshop.
2No question, no method but observe the visitors in order to evaluate the ease of use for DIR and people's pattern of exploration

Here's the beginning;

Set up the installation and wait for the victim.

One man entered and found the empty room with the camera standing and heard the sound of rain.
He approached to the camera to see what it was.
DIR started working, the man got panic.
He stepped back and that made the sound change.

Scenario one

He started to walk around and notice the sound position.
He started to move (on feet) to specific spot and that create the rhythm and composition.
His hand accidentially sway and that cause add another filter.
He noticed this and begin to move and swing in very fast. The sound was played faster.
Now he begin to move his body in different way, speed and position and start create his own dance.
His friend came to this room and wondered what his friend's doing.
He enter the area and that caused the rain sound changed again.
They start dancing together and laughing.

Scenario two
Mission   :   Singing by acting
Place   :   Juilliard, New York
Audience   :   between 6-10

My teacher, Paul Serrato who have been teaching in Juilliard for many years had told me about the problem of Juilliard students. They are very talented but now the teaching and learning culture effect them in the unfortunate way. They are mastery in dancing exactly like the description but they don't know how to express their uniqueness and see the variation.

After he heard about DIR, he allowed me to use it in his acting class in order to let children explore and learn how to express themselves in their own way. This session, we allowed students to pick up their own sound and set up their own condition. They learnt how to do it very fast and finally have fun at the end. The result from the session is the application development for locate the activator and increase the perception computation in the program.

Here's the beginning:

Paul introduce DIR as a game.
Paul lead his students to the main library to find their favorite music and save it to the computer.

He taught them to drag and drop sound file to DIR.
He taught them how the Camera setting work.
Each students put their song in DIR and set the effects, filter, transition on the sensor grid.
One by one, they start to play.

Ella picked up Vivaldi- Spring from 'The Four Seasons'
She use sensor grid by using the gravity command.
When she move slow, the sensor will activate the sound one step slower.
When she move it very fast, the sensor willl activate the sound very sharp and contrast.
And then she dance….

Scenario three
Mission   :   TAngible music
Place   :   Din Sor Si, Bangkok
Audience   :   over 14
Note   :

Din Sor Si is a private school for co-education between the normal and special   needs   students ranging from having the special needs joining   in only non-academic activities, joining in a few academic subjects to   joining in all subjects with extra tuition if necessary.

This workshop organized with Ladda Prasertsindthana (B.Education). Tangible music is the workshop that use DIR to compose music. We started from brought students to the park and let them collect the sound. After that we brought them back to the studio and taught them how to put it in DIR and set the sensor. They started to interact with their setting space and recorded their sound result. This workshop aimed to let students learning to create the music from this develop application to support and manipulate sound in 3 dimensional   space and extend effects, filters and transition combination possibilities.

07
Conclusion

What we have learned

Scrutinize human perception
Existing technology provide people an opportunity to extend and emphasize each senses. Moreover, DIR can be a tool for receiving feedback and learn The limit of physical Interface.

Creation doesn't require the complexness but simply
DIR basically formed and metaphor by the nature phenomena. (rain) With each approaches from students, there is no such a thing like complexness but the repetition of simple formula that combined together.

Blur the borderline of digital and reality frontier
By taking the advantages of ubiquitous technology interface, I envision the future possibility to change the visual organization of the elements on screen to the motion skill and explore by heart and using perception as and interface bringing digital into life.

Benefits obtained by the special need children and society
The special needs children will gain exposure through DIR to new group of friends. Normal children will improve their understanding of special needs children and learn how to assist them while they are playing and exploring. If normal children make their special needs counterparts feel accepted, this will enable those with disabilities to integrate into the group easier. They will not have the pressure to separate themselves from the rest of the class. Instead their positive attitude towards the group is likely to motivate them to be a giver to the group.

All in all,

The popularity of interactive art is fully benefit in both the art world and in educational region. Bringing this form of expression to a young generation will bring their attraction from the square box media to the physical environment. This advancement values not because it is important that we develop more interactive media but because it is possible to develop a certain sensibility in younger generation. By easily integrating existing media and available technology, DIR provides an opportunity to express themselves in new ways and find their answer by themselves.

Future Development

1. Implement the functionality of the prototype
2. Adding another sensory interaction or explore in other perception.
3. Test with children with autistic, hyperactive child and cognitive disabilities such as low-cognitive levels.
4. Solving the limited light control in DIR space.
5. Design the effective sharing knowledge space.

09

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