Mood Tent

An interactive installation

by

Qinyuan Liu

ABSTRACT

It’s an interactive installation that allows people to observe each others’ mood only through interacting with the projected image in front of them, which changes according to people’s facial expressions.

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CHAPTER 1

INTRODUCTION

Due to my interest, I have experimented with human's perception of time, space, religion, politics and culture in my artist practice.The further and deeper I think about them, the more I want to learn about how we perceive of emotions.It's something abstract, invisible, and very subtle. So i'm thinking of a way to perceive emotion an obvious way.

I immediately thought of X-ray, a technology that we can detect people's physical state that we can't see with our bare eyes.What if there's a technology that can detect people's psychological state? The best thing I know is the brainwave technology.However, the visual of waves form itself have nothing to do with the actually emotion.Imagine you take a look at the pattern of somebody's brainwave without explanation, we still can't understand what kind of emotion it is.

Another way is online chatting.People can't see each other directly, therefore they have a need to communicate with each other remotely.However, different from face-to face-communication, it's not live, and it lacks accuracy, even sometimes we can fake our emotions by making up text messages and emojis. And compared to brainwave technology I mentioned before, online chatting has been yet frequently used in daily routine.But why?The reason is simple, we are making full use of what online chatting brings us: isolation between our bodies, but still keep the intimacy in some extent.And we can express our feelings in an indirect way, through metaphors of emotions.The interaction among people while online chatting extends to another level, because our abstract emotions are transformed into something visible, obvious and vivid.

Online chatting platforms are also real-time.Just like face to face communication, it enables users to respond quickly with voice, texts, images, videos.However, compared to oral language, the recording of chatting can be recorded and its existence don't have a limit on time.

The tendency of communication platform will be more user friendly.Since it has been developing over time, from the early mail to text messages, to applications like Facetime, Facebook, Twitter, Instagram, and so on.It's developing faster and faster these years.So, what is the future communication platforms?

So my thesis project MoodTent is a hypothetical example of what future communication platform would become.It's an immersive installation that invites people to communicate with each other while sitting in a tent and can't see each others' face.The real time interaction is based on participants' facial expressions, and converts them into visual metaphors which are projected on the canvas between two participants.

(My goal is to combine the advantages of both face-to-face communication and online chatting, and create a better and more comfortable user experience than what our ordinary experiences in our real life currently.)

This paper is going to analyze the working process of Mood Tent, including inspirations, intentions, aesthetic issues and technical issues. It will contain some theoretical and technical research, and practical experiments to support the project.

CHAPTER 2

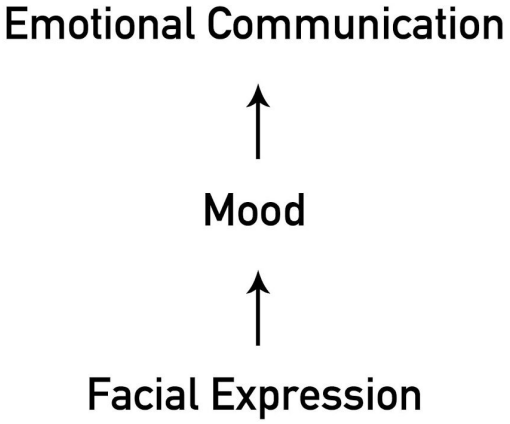
INTRODUCTION AND RESEARCH: EMOTIONAL COMMUNICATION

Human emotion is everywhere. According to the research paper *Importance of Emotion Awareness for Emotional Well-Being and for Improvement of Social Communications* by Valentina Sintsova and Pearl Pu, who teach in Federal Institute of Technology in Lausanne"The ability to feel emotions is known to be an intrinsic property of human beings. At every moment of our life we unconsciously respond emotionally to everything what happens to us.In turn these emotional states may define how we behave and perceive the situations we are going through." So, human emotion has a tight relationship with who are we and what we experienced/what we are experiencing.

Mood as a temporary state of mind state or feeling, which plays an important role in human psychology. According to the description of "mood" on Wikipedia, "In psychology, a mood is an emotional state. In contrast to emotions, feelings, or affects, moods are less specific, less intense and less likely to be provoked or instantiated by a particular stimulus or event."So, compared to feelings, emotions, and affects, mood is something more abstract because compared to emotion, it's harder to be described by words, but strongly reflects one's current psychological state.

Therefore, moods are moments of human emotion, which are emotional responses to things that are happening to us.It promotes emotional communication between two people.According to the chapter of Emotional Communication in research paper *Encyclopedia of Human Relationships* edited by Harry T. Reis & Susan Sprecher, Emotional communication refers to the process of using messages to exchange information about and

to influence each other's emotional states.Then, how our moods affect with each other in order to do emotional communication?People normally detect others' mood through facial expressions, gestures, speaking tone, rate of speech.People observe each other's mood mainly through facial expression, because it's instant, it boosts our understanding of one another effectively, and it even also work well in nonverbal communication.Other than words, Facial expression provides a more emotional experience during people's communication, which strongly reflects one's true psychological state.In conclusion, during emotional communication, people first observe others' moods, and then they use facial expression as a tool in order to give an emotional response which will also affect others' moods.



CHAPTER 2

INTRODUCTION AND RESEARCH: ONLINE CHATTING PLATFORMS

Online chatting platforms were invented to satisfy our need of communicating with each other remotely, because people can't see each other directly all the time.Online chatting has been yet frequently used in daily routine.

We are making full use of what online chatting platforms bring us: isolation between our bodies, but still keep the intimacy in some extent.We can express our feelings in an indirect way, through metaphors of emotions.The interaction among people while online chatting extends to another level, because our abstract emotions are transformed into something visible, obvious and vivid.Besides, online communication platforms aren't limited by time.It can be real-time, just like face to face communication, it enables users to respond quickly with voice, texts, images, videos.However, compared to oral language, the recording of chatting can be recorded whenever people want.However, different from face-to face-communication, it's not live, and it lacks accuracy, even sometimes we can fake our emotions by making up text messages and emojis.

The tendency of chatting platform will be more user friendly.Since it has been developing over time, from the early mail to text messages, to applications like Facetime, Facebook, Twitter, Instagram, Animoji, Wechat, Weibo and so on.It's developing faster and faster these years.They provide people with authenticity and efficiency during communication, and can achieve both real time and non-real-time chatting.Those platforms tend to help people keep a balance of isolation and intimacy, and tend to allow more private and mysteriousness feeling.The developers aim to create experiences which surpass experiences of communication in our real physical life.So, I believe that communication platforms in the

future would create better and more comfortable experiences in those aspects.

CHAPTER 2

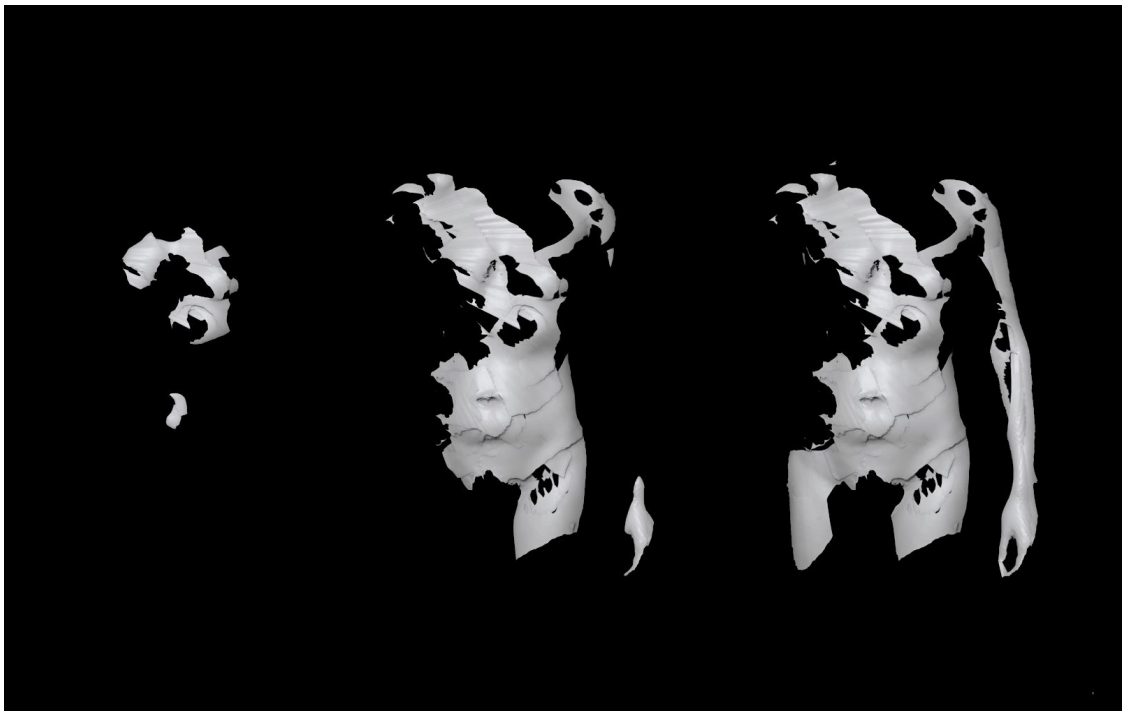
INTRODUCTION AND RESEARCH: SYNTHETIC STATUES

Synthetic Statues is a video installation created by the artist Sophie Kahn.She's a Brooklyn-based digital artist and sculptor, whose 3D printed artwork explores technology's failure to capture the unstable human body.The picture below(Figure 3) describes how the scanned human body shards gradually revealed to views in her video.The revealing process allow people recognize gradually about what the 3D object is.

What inspired me most is the process of slowing revealing a shape. Imagine I'm sharing my mood with another person.If we are chatting without being face-to-face, the process of understanding my mood won't just be a moment.It should last for some time.This process of receiving another one's mood is like the process Sophie revealing her 3D scan.It takes time,

and it was gradually becoming clearer until the moment views recognize the shape of the object.

Furthermore, imagine being in this scenario, one person is trying to convey his/her mood to another person.I can use different methods to reveal a shape/object to represent to state of one person's not understanding another's mood.For instance, I can mess up the order of a group of objects or hide some parts of objects, letting them hard to be recognized/understood what it's trying to say.And then if the person begins to understand the other one's mood, those objects become complete or group into a certain understandable order.So, this kind of motion design can be the metaphor of the level of how well one understand or agree with another during their mood interaction while communicating.



CHAPTER 3

ISSUE OF CONTENT: INTENTION

Human emotion actually exists at every moment of our life.When people communicate with each other face to face, their emotions would spread into the air, forming into a kind of atmosphere that would affect everyone at presence.It's something abstract, invisible, and sometimes too subtle to notice. So can we perceive it in a visible way?Then people's moods will be obvious to notice.This is also a good way to keep the complexity and delicate of human emotion during the emotional communication, because visual is also very complex and flexible.Plus, through visual, it's also not hard to amplify people's moods into something more apparent.

As I mentioned in chapter 2, people emotional communication highly depends on facial expressions.As we can see, with the uprising of multiple digital technologies, people are trying to push the boundary and the virtual world and reality for better communication.For instance, the invention of video chatting, emoji, animoji and so on, they prompts the interest and efficiency of emotional communication.However, no matter what kind of new way of emotional communication will appear in the future, the demand for both live interaction, authenticity and privacy would be always existing.Therefore, according the research I did, I would like to create an installation which is a hypothesis of what future emotional communication will be like.

CHAPTER 3

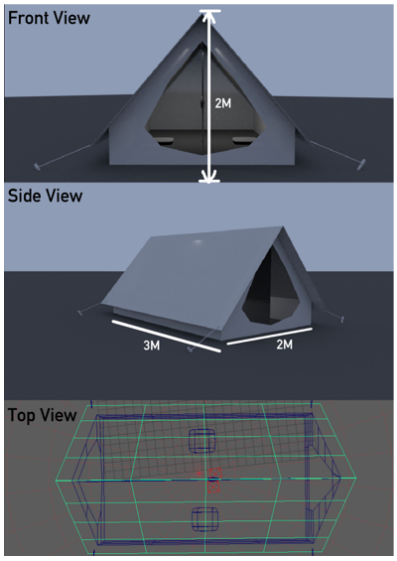
ISSUE OF CONTENT: PHYSICAL FORM

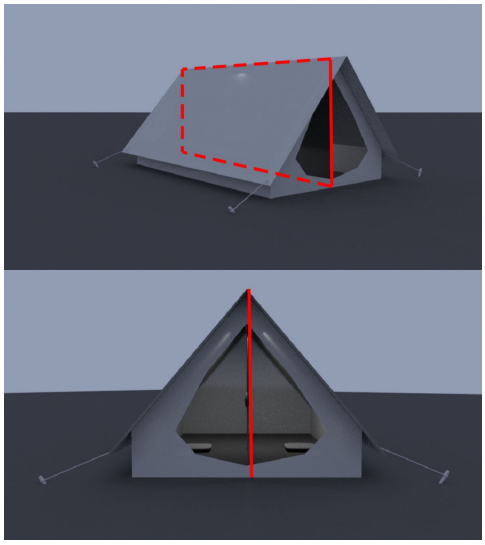
Speaking of emotional communication, I thought of intimacy immediately, because sometimes people that don't know each other aren't willing to express their moods easily.So,

I want to create a space that encourages people to get close to each other in a comfortable way, and also give privacy to them.

Then I thought of building a tent first, because it's a place for people to sleep/rest when they are camping, of course they get close to each other.Usually, only people who know each other would sit together in a tent.So, if two people even strangers enter the tent I build, a sense of intimacy will occur naturally and automatically.Besides, I see how a tent work as something that forces people to sit down and allows them to stay for a long time to play with my stuff. It also provides some kind of privacy and mysteriousness for each participant.

So, the following picture(figure 4) shows the structure and scale of my installation.It's a tent that only allows two people to sit in.Figure 5 shows where's the projected image.It will be placed between the two participants.The tent should be located in a dark environment with only two spotlights lighting two participants' faces that enable the two cameras in front of them capturing their facial expressions.



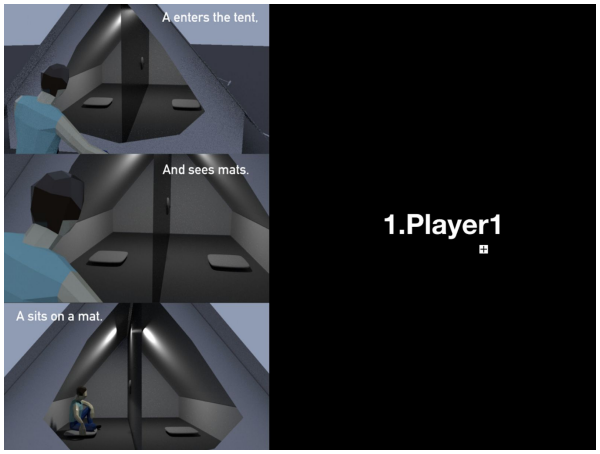


CHAPTER 3

ISSUE OF CONTENT: INTERACTION

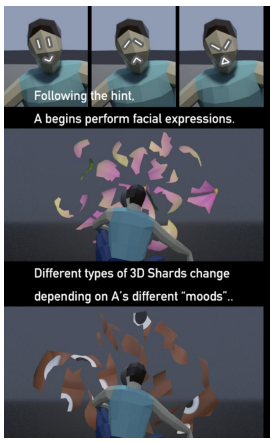
Ideally, the process of two people's interaction can be a loop.Imagine this interaction as a game, and the two participants are player1 and player2.The first step is the entrance of player1.The second step is the hint for the first interaction appears for player1.The third step is the first type of interaction by player with the projected image. The first type of interaction is that player1 changes the visual elements of projected images depending on his/her different facial expressions which represent his/her different current moods.The fourth step is the entrance of player2.The fifth step is the second type of interaction of player2 which would affect the first type of interaction on player1's side.The second type of interaction is that player controls the position of the 3D objects depending on his/her different facial expressions which represent his level of understanding or agreement with player's current mood.Then the last step will come back to the third step.Then the loop occurs.

The following pictures(figure 6 -11) is my storyboard of how the interaction will happen in my tent installation.The whole process of the interaction is constant happening all the time, because it's live and the cameras are constantly checking participants' facial expressions.Additionally, the two types of interaction won't interrupt each other, because the two types of interaction are controlling different aspects of the images, even of player1 and player2 are changing the images at the same time, two kinds of changes can be noticed in a clear and obvious way.Player1's changing the visual elements of projected images by his/her facial expression, player2's controlling the position of the 3D objects.

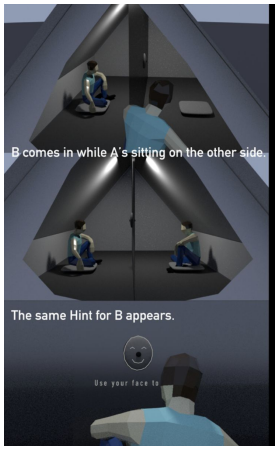


1.Player1

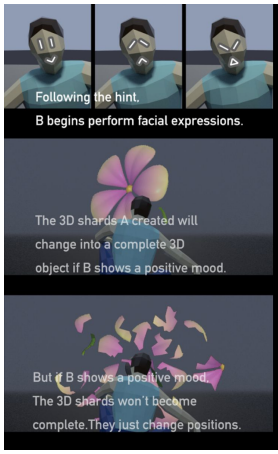
2.Hint



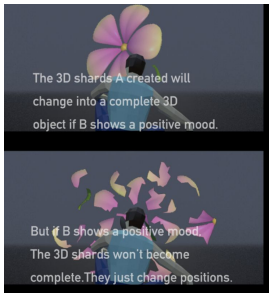
3. 1st type of Interaction



4.Player2



5. 2st type of Interaction



6.A Loop

Constant Interaction:
While B is interacting with the 3D object,
Which is seperating/grouping the object,
A can still use his/her face to swith different objects.

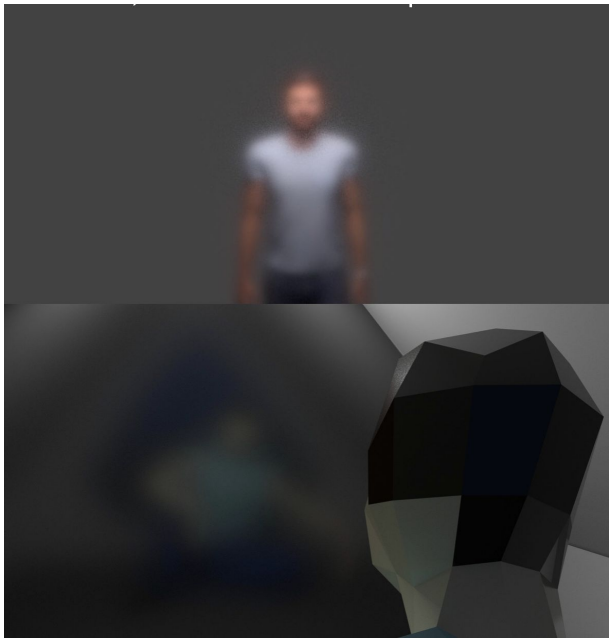
CHAPTER 4

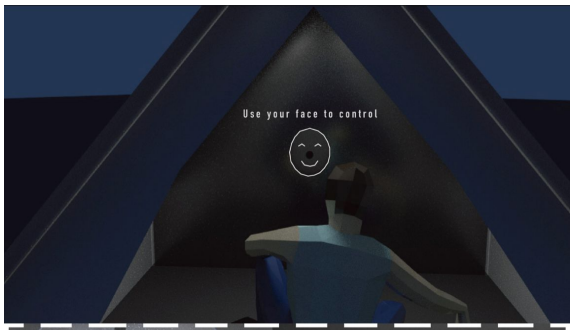
AESTHETIC ISSUES: MATERIALS

First, I did a material test for the medium of projected image.This material decides how clear can the two see through.I hope both participants can see each other that are on the other side in a very blurred way.They won't know how the other one looks like, neither the facial expression.So I hope the medium for the projected image is half-transparent.Figure 12 is the simulation of how clear they can see through.Figure 13 shows the position of two cameras and the structure that hold both the two cameras and the projected hint for first interaction.

I tried some materials for the projected media such as opaque and transparent acrylic, velvet materials…But the crepe/chiffon works the best.In figure 14, we are in the view of a participant, and it's apparent that we can see there's someone on the other side.But we can't see his/her facial expression.That's the perfect case for my situation.

So, I decide to keep the background of image black, people can kind of see through this kind of material.I also tried to project it on material like frosted plastic.I think both of them are a good choice.



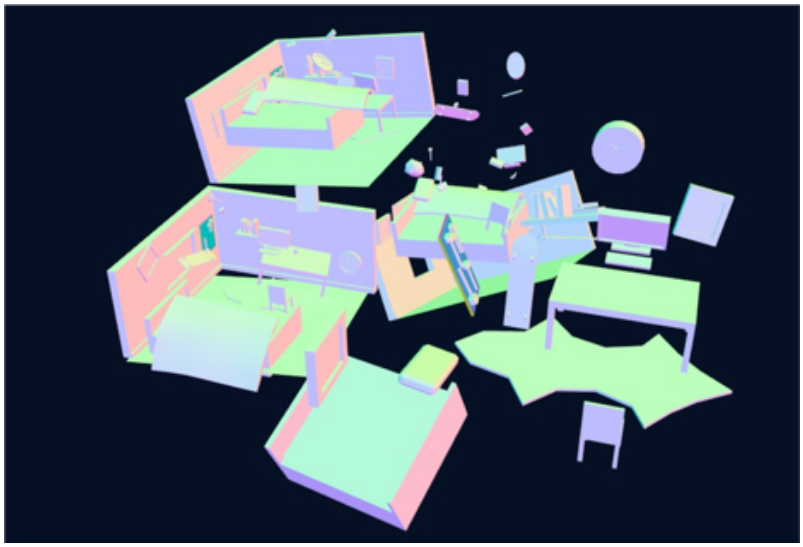

Use your face to control


This is the structure
designed for the hint.
Use your face to

CHAPTER 4

AESTHETIC ISSUES: PROJECTED IMAGES

The projected images between two participants are metaphors of all kinds of moods, and they will be interactive 3D models, consisting of shards of a complete object, and complete objects that are grouped into some kind of scene(figure 15).The background of these images will be pure black so that there's no light projected on the background, and two people can see each other a little bit.Different 3D models and different animations will be triggered depending on participants' different facial expressions.



I want the hint of the first interaction to be projected on an opaque boards (figure 16), because if it's projected on the crepe material, people can see through it, and they may not concentrate on the hint.So, in order to reduce the risk of people ignoring the hint, I want to build the two boards.They also should be in the similar size of human faces so that the installation looks neat.

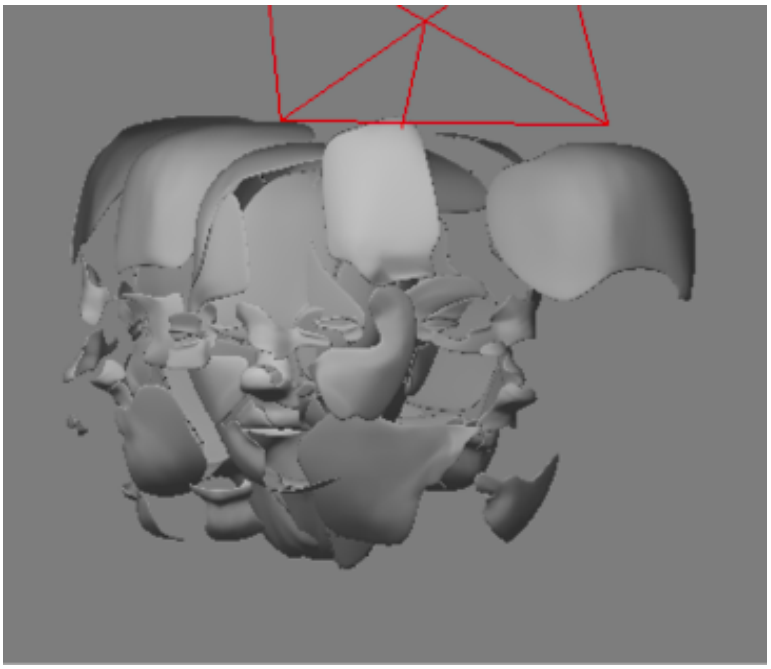
CHAPTER 5

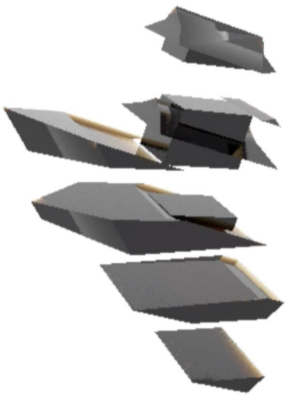
TECHNICAL ISSUES: 3D MODELS AND MOTION SYSTEM

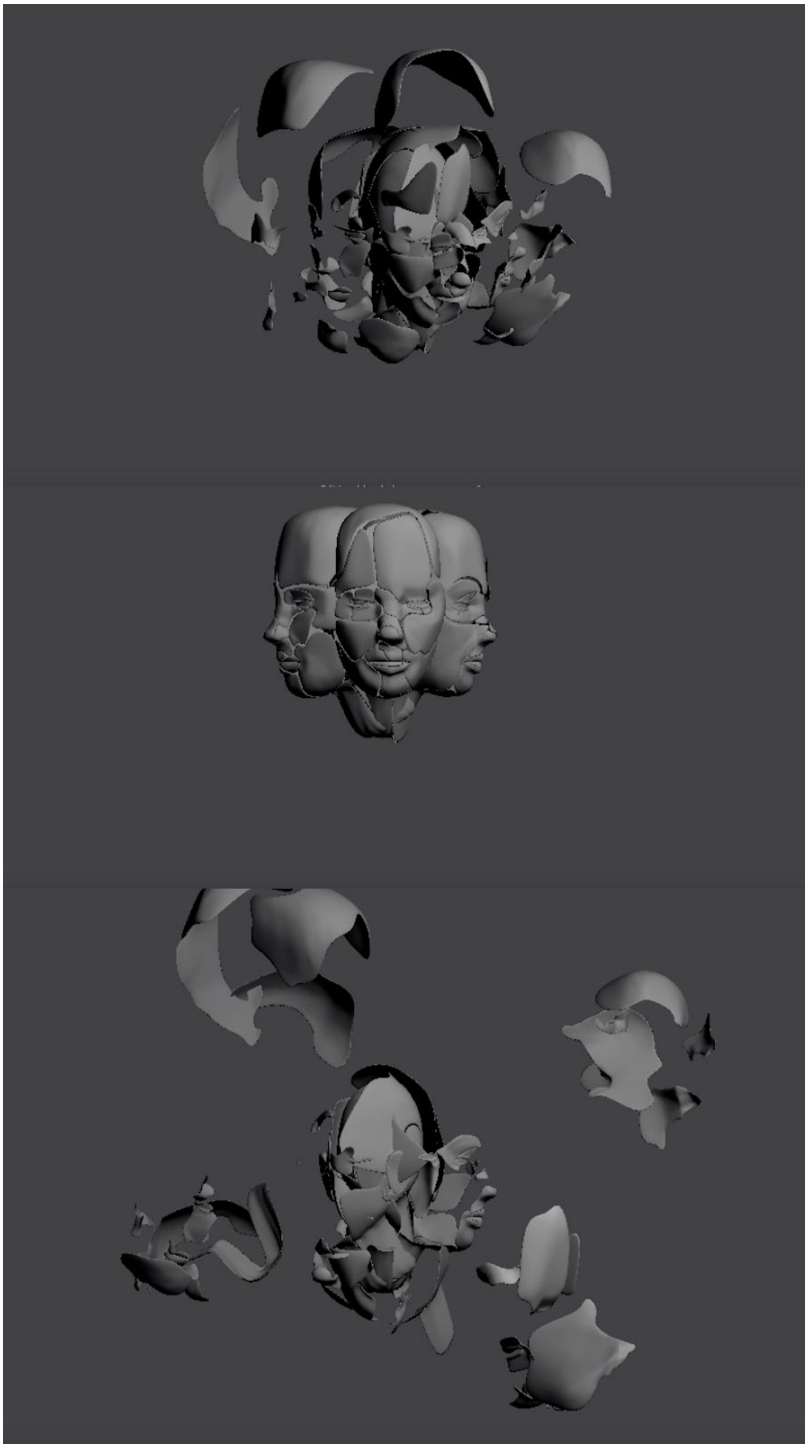
I make 3D models mainly in Maya and Zbrush.As I mentioned before, they are metaphors of all kinds of human moods.The next thing I do is to break them into pieces, which paves the way for the motion effects later.The basic motion of my 3D objects is that they transform from recognizable entities to an unrecognizable ones.The process represents how the other person understands/agree with one person's current mood.

There are two ways to break a 3D objects into pieces.The first one is manually cut the cracks and then break the objects into shards.The other way is to use the shatter effect which set the cracks into random shapes (figure 17).So, the shards will also come out to be random.I did both methods, and I found that when I need the dramatic and messy feeling for a certain mood, it's better to use the random shatter effect.When I need make a clean and subtle feeling, it's better to cut out the shards manually (figure 18).

In order to connect the two kinds of shapes (complete ones and incomplete ones) into animation, I use blendshapes in Maya, which is a powerful function that remembers deformation of a series of shapes of a single object, and this allows a controller to it's gradual deformation.Figure 19 shows three different deformations of one of the 3D objects.The last step I did was to export these blend shapes objects into unity to make the system interactive.

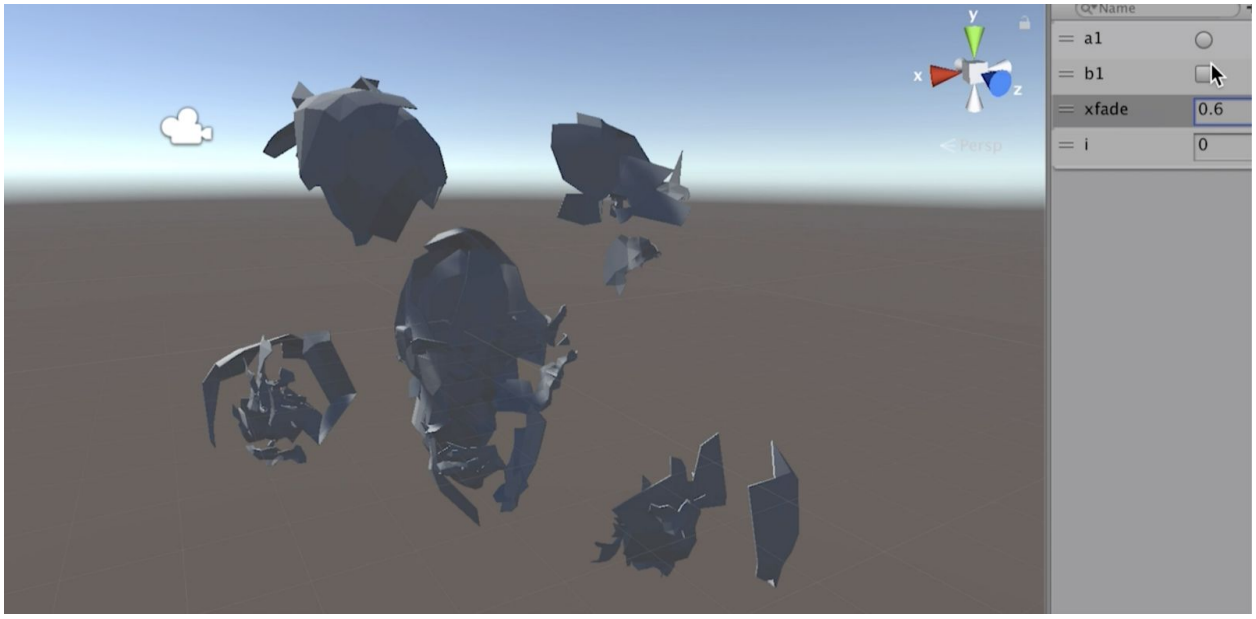






After I finished exporting the 3D objects into fbx files, I import these fbx files, and use different sliders and buttons to control the animation system.These sliders and buttons stand

for the data comes from live facial expression analysis.In this way, the prototype of interaction was born (figure 20).



CHAPTER 5

TECHNICAL ISSUES: FACIAL EXPRESSION RECOGNITION

Not yet.

CHAPTER 5

TECHNICAL ISSUES: GALLERY IMPLEMENTATION

Not yet.

CHAPTER 6

CONCLUSION

Not yet.

CHAPTER 7

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Not yet.

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