
**“THIS = THEN =
THAT”**

PROPOSAL

Professor: Elio Bidinost & Sabine Rosenberg

Course: CART 360

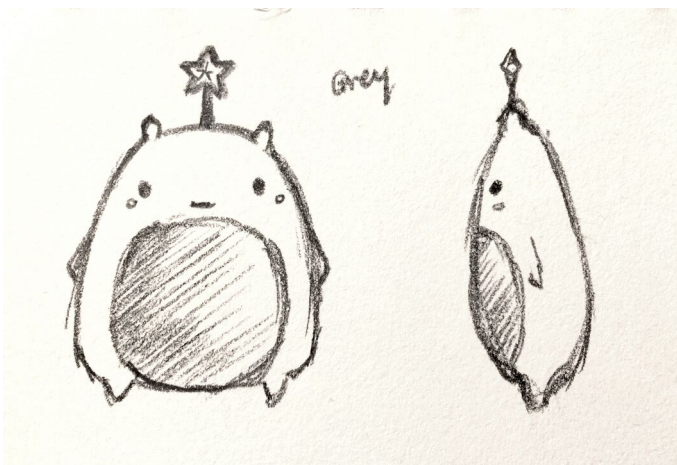
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Github repository URL: <https://github.com/Liu-WenYue/cart360-2019>

Idea Description - touchMyStomach

This project is inspired by a tangible interactive project called *The Tangible Score*. This project investigates the possibility of soft materiality of the musical interface, and it explores the extent to which a musical interface can help people regulate their emotions. To eliminate the cultural difference and individual preference, I would like to introduce this musical interface as a cute soft toy that looks safe and approachable for most people (Fig.1 Concept Drawing). The soft toy's stomach area is where the user will interact with.



This mascot is in the size of smartphones, adults can hold it perfectly in their hands. Most importantly, they can reach the musical interface with their thumbs very easily.

Fig.1 Concept Drawing

Research Questions

Qn1: Think of a context and an environment where you would like to intervene. Where will you present your project? Who is it made for?

The target user group of this project will be people who are experiencing stress from their study and work. For instance, it can be students who are rushing for their project deadlines or feeling stressed about their exams, and office workers who are tired of doing paperwork and worrying about their KPI (Key Performance Indicator). This musical interface is made for people who feel anxious and want to find a way out.

Firstly, as a music-based project, it requires a quiet and comfortable space for users

to have an immersive interactive experience. The sound feedback from the musical interface is the first outcome produced by the musical interface. It is extremely important for users to hear that feedback and change their ways of interaction with the musical interface. Secondly, the color of the soft toy's body (felt material) changes according to the users' input. If the users' action is aggressive and intense, the soft toy's body will turn grey, and if the users' action is soft and slow-paced, the soft toy's body will turn pink. This change in color requires a space has good lighting, so that users can regulate their actions and emotions according to the color change.

I would like to present this project in a quiet corner of the university's lobby near the deadlines of users' projects or during the examination period. Comfortable seats will be provided to help users to feel physically relaxed. This project can also be presented in a closed space if the user feels that the interaction is personal. Or the user can interact with the soft toy anywhere they feel comfortable (at home).

Qn2: Think about the kind of relationship you wish to foster between your users and the artifact or installation. How can you use your project to destabilize the users and make them reflect on themselves, their environment and society?

During the interaction, the soft toy changes color according to the user's input to the musical interface. This real-time feedback from the interface simulates real-life human-to-human conversation. Interacting with this soft toy is like talking to a close friend who can feel the same with you. The cute appearance and the soft texture of this soft toy will have its users more willing to share their emotions with it. Moreover, the soft toy is more suitable for the role of a listener as it will not be mentally affected by any negative emotions.

The users' emotional states are changing throughout the interaction process. Before the interaction starts, the users are anxious, stressed, and worried. As they interact with the soft toy, they can express their negative emotions and regulate their emotions, and therefore, they will feel relieved after the interaction. This project intends to give its users an immersive healing experience with this musical interface, and the goal is to help users stabilize their emotional states.

As the soft toy's feedback system simulates human-to-human conversation and it changes color according to users' input. The users may also draw attention to the ways they interact with people in real life. The other goal of this project is to bring in the idea that people will treat you the way you treat them. The users may reflect on the ways they treat people in real life, and maybe in the future, change their ways of dealing with things and interacting with people - in a rather gentle way.

Qn3: Think about the notion of empowerment. Is your artifact really helping or challenging its users in any way or is it just another psychological prosthesis?

To reduce the cultural difference and individual preference on the design of the musical interface, I would like to incorporate the musical interface into a cute soft toy that looks safe, and easily approachable for most of the potential users. Moreover, its adorable appearance and furry texture give its users an immersive healing experience. All these physical features make the users willing to interact with the soft toy. And because the position of the musical interface is on the soft toy's stomach, it is just below the user's thumb when they are holding the soft toy in their hands. The users are very likely to touch the musical interface for their first interaction with the soft toy. Moreover, the different materials used for the soft toy's stomach make the users more interested in touching it. This soft toy's design intends to make it comfortable for its users to interact with it, and feel safe expressing their emotions with this musical interface.

On the next level of the interaction, the sound feedback from the soft toy changes according to the user's actions and movements. This feedback is like an echo from the sea when people scream at it. Users' input helps them relieve their stress, and the feedback makes them feel that they are heard by someone, and therefore, helps them calming down. Moreover, the color changes on the soft toy's body help users regulate their emotions, and the star on the soft toy's head swings like an upside-down pendulum which functions as an encouragement for its users.

Qn4: Think about something meaningful. What are you trying to tell us with your project?

Firstly, I want to explore the materiality of a musical interface, and how to incorporate the soft material as the musical interface. More importantly, the possible outcomes produced by this soft material musical interface. I am interested to see if the sound outcome will be different as compared to sound produced by a hard surface musical interface. Moreover, I also want to investigate the way of tracking and analyzing users' input and generate synthesis sounds in real-time.

In terms of functionality, this project aims to make an artifact that helps its users to relieve stress, regulate their mood and breathe. During this process, I wish to convey the idea that music is a great medium for people to express their feelings and thoughts, and everyone can make their own unique music. On the next level, this project wants to remind its users that people will treat you the way you treat them.

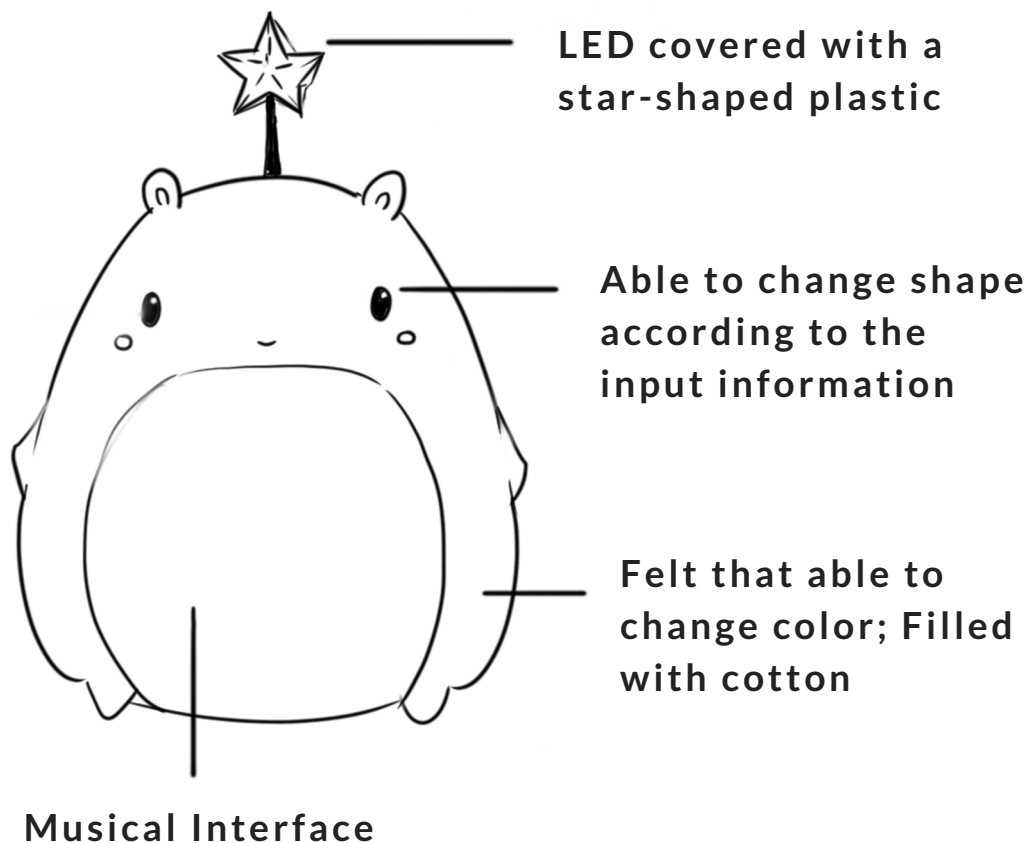
And they may reflect on their ways of interacting with people in real life and change their ways of treating people in the future.

For future developments, I am thinking of having different outfits for the soft toy. Users can give their soft toy a unique outfit to make it customized. Not only design, but the outfits can also be made of different fabric materials that each of them may generate different synthesis sounds. If this is possible, the artifact will also become an audiovisual musical instrument for performance. Artists may use this musical interface to break the limits and make new unique compositions.

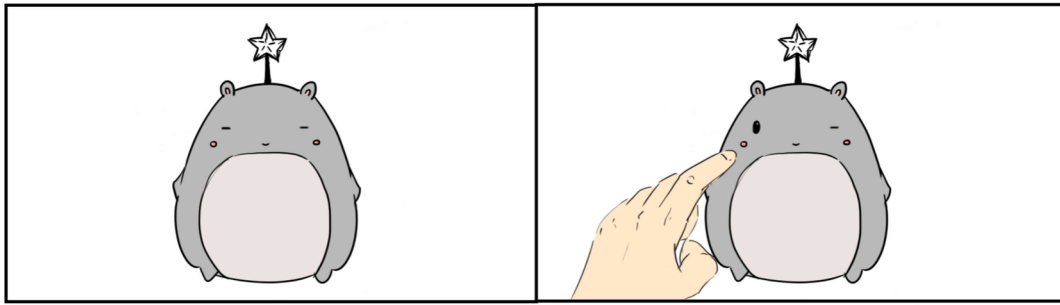
Project Intention

By tracking and analyzing the input information (action, movement, pressure) from the user, the soft toy changes its color and produces sound feedback in real-time. The color change guides the users to relieve stress and regulate their mood. Moreover, the star-shaped decoration on the soft toy's head functions like a metronome which also helps regulate users' breathe and action.

Proposed Materials for the Artifact

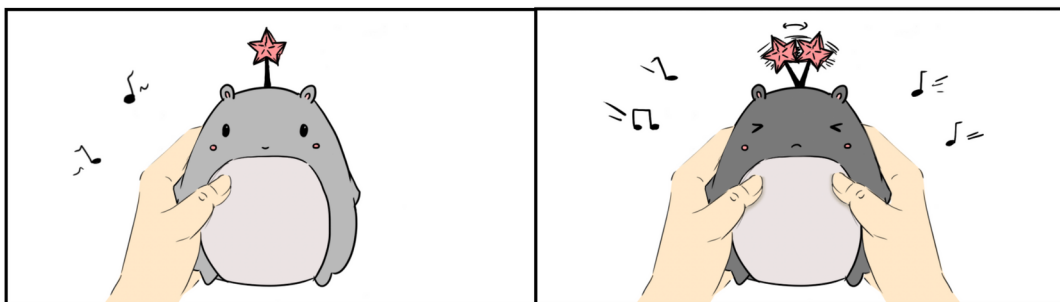


Project's Proposed Interaction Design Strategy



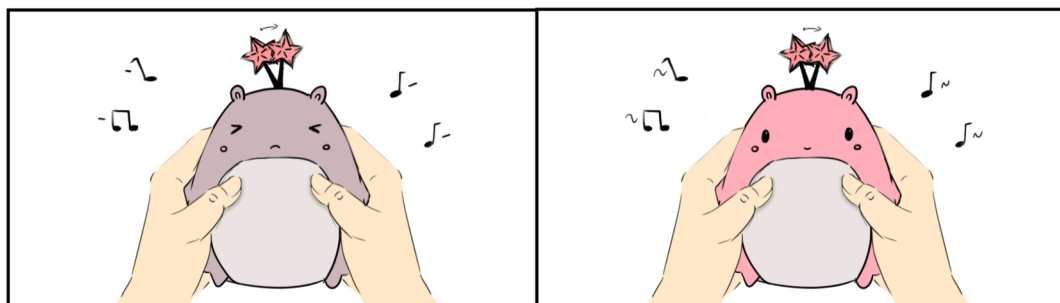
Sleep mode

Opens eye when user poke it



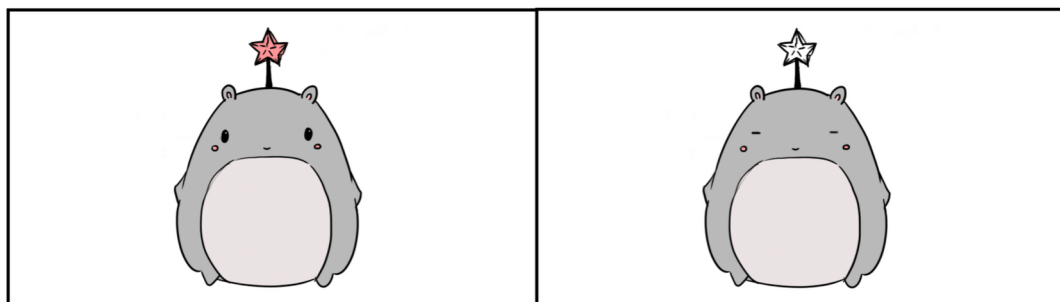
Starts to react as user squeeze it

The body become dark grey and the star swings quickly if user's input is aggressive



The body becomes pink if user's input becomes less aggressive

The star swings slowly



The body goes back to grey color when no user input found

Goes back to the sleep mode

Summary of Three Similar Projects

#1 - Tangible Scores

Enrique Tomás, 2018, “The Interface Score” - Electronic Musical Interface Design as Embodiment of Performance and Composition.
<https://tamlab.ufg.at/projects/tangible-scores/>

Diemo Schwarz, Corpus-based Concatenative Synthesis
https://econtact.ca/16_2/schwarz_corpus.html

This project is one of the tangible interaction design projects done at The Tangible Music Lab, an artist research group at the Institute of Media Studies at the University of Art and Design in Linz, Austria. The author of this project is Enrique Tomás, and he chose “The Interface Score” as his doctoral thesis in 2018. This project is supervised by Prof. Dr. Martin Kaltenbrunner and Prof. Dr. Gerhard Eckel.

The Tangible Score, as its name suggests, it is a physical or graphical representation of the musical score. More importantly, the users are able to interact with the score directly on its surface to generate electronic sounds. The embodied score now is also a musical instrument. Moreover, each musical interface is unique as they use different source musical scores and the graphical representation can vary depending on the author. In this project, the author had the graphical notation engraved on the musical interface, its textual appearance makes people want to touch it and feel it.

In this project, the author implemented Corpus Based Concatenative Synthesis (CBCS) by Diemo Schwarz. This synthesis method is able to take information from the gestural control and audio input of the users. And when it comes to the real-time tactile and maybe also some sonic input, it redefines both gestural signal and sonic components and produces new synthesis sounds that imitate the input signals. Moreover, the author also used touch sensors and contact microphones to capture the gestural signal. All these features made it possible for a live performance and music improvisation.

#2 - Scrapple (Installation)

2005 | Golan Levin

<http://www.flong.com/projects/scrapple/>

This audio-visual installation project was done by Golan Levin in 2005 and supported by the Ars Electronica Futurelab. It had been exhibited at various museums worldwide since it is made. This project is also a tangible interaction design of the musical interface. The author used a three meters long table covered with a dry-erase whiteboard as its musical interface. The users are able to arrange different objects onto the table at any of their preferred locations. There is a digital video camera set up just above the table. The location of the objects will be tracked by the camera and the light will shine on the objects to signal that they have been detected by the software. The system then scans the whole table to generate sound. The author included a projector that projects a scanner bar on the table to tell its users which object produced which sound. It functions as a current-time indicator. The variations in objects' shape make this project more interesting as the different shape will lead to different sound outcomes. The three meters long table is able to produce 4-second long audio.

This project is similar to The Tangible Score project as it also explored the physical representation of musical scores. However, the interaction in this project is not as real-time as The Tangible Score project, the system has to scan the table after the arrangement is done and then plays the generated sounds. There will not be any sound produced during users' first interaction (placing the objects onto the table).

#3 - Tquencer

Martin Kaltenbrunner, Jens Vetter, 2018

Tquencer: A Tangible Musical Sequencer Using Overlays

<https://tamlab.ufg.at/projects/tquencer/>

This project called Tquencer is also one of the tangible interaction design projects done at The Tangible Music Lab, an artist research group at the Institute of Media Studies at the University of Art and Design in Linz, Austria. The authors of this project are Martin Kaltenbrunner and Jens Vetter.

This project explores the tangible interactive token-based music sequencing device. These tokens trigger different musical events, and each token contains a set of digital data. More importantly, the token is resizeable - the users are able to stack the round token on top of each other. By having this feature, there are more possible sequencing outcomes which will then make the performance more interesting and unpredictable. This simple interactive design produces complex and diverse sound outcomes.

Moreover, there are also touch buttons that control the events. The users have the choice of keeping the event after removing the token or clear the events that were tracked earlier. There are also three buttons located at the side of the Tquencer to control the global installments of the tokens and events.

The project used an Arduino Micro (Leonardo compatible) micro-controller board to manage all the input information. And for the sound synthesizer, the author implemented the engine using the SuperCollider2 sound programming language that is available on GitHub. Lastly, the author used Jack Audio Daemon to manage the audio output.

This project not only investigated the physical representation of the music score, but it focused on the method of overlay tokens to achieve an engaging sequencing music experience.

Why is this project different and impactful?

The tangible score and the Tquencer project are more intended for musicians and performers, but, for my project, the design and the intention suit a larger group of people. Young adults and adults may use it as a device that helps them relieve stress, kids and elderly can also interact with it as a toy, performers can use it as a tool to explore the possible musical experience with this soft toy. Moreover, my musical interface makes the users reflect on their ways of treating people in their real life. On the other hand, as compared to the Scrapple project, my project is more interesting as the users receive the feedback instantly when they interact with the soft toy.

As compared to the three projects that I mentioned above, this project is more approachable and easily usable. The interactive design is simple and the design itself gives it a natural signal asking people to touch it. Moreover, the soft material used in this project gives its users a totally different textural tactile experience as compared to all three similar projects that are done on hard surfaces.

I introduced a narrative background in my project as my musical interface is incorporated into a soft toy character. The user may feel intimate to the soft toy, therefore, feel safe to interact with the musical interface. Moreover, the star-shaped pendulum on the soft toy's head made the soft toy more lively and vivid. The light from the LED and the movement make the whole musical experience more dynamic and memorable.

References

Enrique Tomás. 2018. The Interface Score: Electronic Musical Interface Design as Embodiment of Performance and Composition.

Golan Levin. 2005. The Table is The Score: An Augmented-Reality Interface for Real-Time, Tangible, Spectrographic Performance.

M. Kaltenbrunner and J. Vetter. 2018. Tquencer: A Tangible Musical Sequencer Using Overlays.