

Touch Me Not - Synesthesia Experience

Statement of Work

Team: Zillennials

Team Member:

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1.Team Introduction

Table 1 Team members and skills

Team Name: Zillennials	Team Leader: Yingzi Zhuang
Team Member: Yingzi Zhuang Skill: Python, HTML,CSS, Visual Design and Arduino microcontroller	
Team Member: Chia-Jung Hsu Skill: Java, Python, PHP, HTML, CSS, JavaScript	
Team Member: Wanqi Yang Skill: Interaction Design, Evaluation, Research, Visual Design,HTML, CSS	
Team Member: Zhaoying Han Skill: Java, Python, PHP, HTML, CSS, JavaScript, docker and kubernetes	
Team Member: Ziang Song Skill: Python, Java, HTML, CSS, JavaScript, Vue, MySQL	
Team Member:Yunchong Chen Skill: HTML5,CSS3,JS,AutoCAD and 8051 microcontroller	

2. Project Outline

2.1 Project Name

Touch Me Not - Synesthesia Experience

2.2 Introduction

Synesthesia is often described as the idea of one sense being translated to another. A mainstream theory is that our aesthetics is the influence of our senses on our mind (Shelley, 2022). When the regular sensory inputs are crossed, new ways of understanding information result: an intentional synesthesia (Suslick K. S. 2012). In this project our team will design unique controllers that allow textures to be translated into music when used by people with varying levels of experience in music to inspire creativity for every user. In our project, different textured controls produce different outputs and users can make them into wonderful music. It will be a novel way for music production.

2.3 Purpose

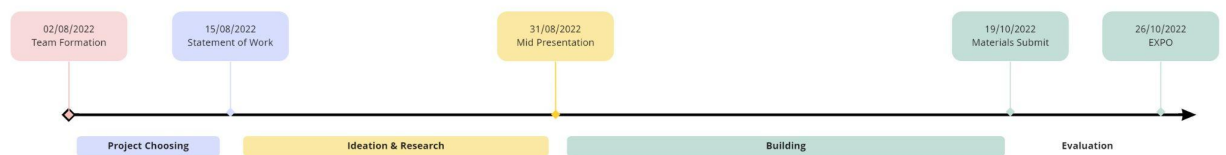
The purpose of the project is to develop a translator transforming the sense of touch into hearing, creating a synesthesia experience. Our design aims to inspire the creativity of music creators and everyone. It could be used in childhood music education,which can promote children's interest in music through entertaining.

2.4 Techniques Requirement

- Arduino and ArduinoIDE coding language
- Various sensor and usage, e.g.:
Force sensing resistor for measurement of textures' surface resistance, etc.
- Sound Generate Software: Adobe Audition / Studio One
- Graphic Generate Software: Unity/Processing
- Fundamental Music Theory

3. Project Features

3.1 Project timeline



3.2 Project milestones

Ideation Phrase

- Exhibition scene
- Texture & Material Identification
- User scenario

Research Phrase

- Synesthesia symptoms
- Music theory

Building Phrase

- Sound Design & Generation
- Visual Representation Design
- Coding part
- Synesthesia Connection

Evaluation Phrase

- User test & Evaluate

3.3 Project deliverables

- Variety Sounds corresponding to different textures(e.g rough, soft, hurt, smooth, sticky etc.) and the intensity(e.g pressure)
- Allow concurrent use by multi-players
- Synesthesia of touch and sound combined with built-in chords, allowing users without music background create dulcet tones.
- Fun physical control textures allow a higher level of play, with the output, a piece of music, being pleasant.
- The tones and pieces of music created by users are visualized.

3.4 Assumptions

Resource Assumptions:

- Project team members will have full access to the resources they need to complete their tasks.

Cost Assumptions:

- Project team members will have full access to the resources they need to complete their tasks.

Cost Assumptions:

- Project team members will share the cost of the project.
- The cost spent for the purchase and maintenance of the resources will stay within the planned budget.

Schedule-based Assumptions:

- Project team members will stay on top of the project's progress.
- Project team members must complete their tasks as the schedule sets.
- The expected project's timeline can be met, and the project will complete within the expected time.

Quality/Specification Assumptions:

- All the team members will possess good qualities of the required skills in the project.

Technology Assumptions:

- Project team members will seek help if they encounter any technical issues.
- Project team members will immediately report the raised problems of the project.

Location Assumptions:

- Project team members will have a fixed location for the installation.

3.5 Team personnel resources allocation

After the ideation phase, we will be divided into two groups, which is the Arduino technology group and music technology group. The Arduino group will be responsible for sensors and related codes, and the music group will be responsible for the audio generation.

- Arduino group: Yingzi Zhuang, Yunchong Chen, Chia-Jung Hsu.
- Music group: Ziang Song, Wanqi Yang, Zhaoying Han.

3.6 Risk matrix and mitigation

Risk control and mitigation is vital for project management. This risk matrix and consequence criteria (table 1) we made was derived from the NASA S3001 – Guidelines for Risk Management standard. Then we came up with risks affecting the project to be successful and listed the possible causes on table 2. The mitigation plan was designed for both preventing and addressing these risks.

Table 2 Risk Likelihood and consequence Criteria

Score	Likelihood of Occurrence(P)	Severity(S)	
		Description	Criteria
1	Possibility(P)<20%	Minimal	The problem can be solved within a day/The problem will cause minimum consequences
2	40%>P>20%	Minor	The problem can be solved within a few days/The problem will cause minor consequences
3	60%>P>40%	Tolerable	The problem can be solved within a week/ Not all the goals and objectives of the project can be achieved but the outcome will still be acceptable

Score	Likelihood of Occurrence(P)	Severity(S)	
		Description	Criteria
4	80%>P>60%	Critical	The problem can be solved within a few weeks/ Multiple or major goals and objectives of the project will not be achieved but the minimum success can be till achieved
5	P>80%	Fatal	The problem takes more than a month to address/ The project will fail

Table 3 Risk Mitigation Plan

Risks	P	S	Impact P·S	Mitigation
Team members unable to complete their tasks. This might be because of getting sick, technical difficulties, unavailable resources or accidents.	4	2	8	<ul style="list-style-type: none"> The team member who has problems should notify the team as quickly as possible. The tasks might be redesigned or rearranged to others. The deadline of each task will be a few days before the last day of assignment submission so that there will be some extra time allowing the team to catch up for the delay.
Unexpected or unassigned tasks. This problem might be caused by negligence, the adjustment of the project direction, or updating the plans.	4	3	12	<ul style="list-style-type: none"> All the tasks should be listed on the MS team with the name of team members who will be working on them. All major adjustments on the project should be checked carefully for any possible extra workload they might bring. The adjustment with tasks will be recorded on MS teams. The deadline of each task will be a few days before the last day of assignment submission so that there will be some extra time allowing the extra tasks to be completed.
The outcome of design or development is not desired. This might be caused by misunderstanding of the tasks or requirements, and communication issues between team members.	2	3	6	<ul style="list-style-type: none"> The team should frequently check in with the teaching team to make sure to be on the right track. The thoughts of each member on the project should be confirmed by the team. Team members should check in on progress frequently.
More funding is required for the project than expected. This project requires hardwares and materials which can be costly.	2	3	6	<ul style="list-style-type: none"> The costs and budgets should be a factor considered carefully during the ideation and research phase. If the problem occurs, the team should adjust the plan. If adjustments cannot fix this problem, the team should seek for more fundings.

4. Collaboration Plan

Meeting:

- Team members are required to meet internally on Wednesday afternoon.
- Extra meetings will be held if necessary.

Communication:

- Microsoft Team will be the main collaboration tool.
- Miro board will be used for brainstorming and sharing multimedia information.
- Google doc is used to co-edited project-related content.

Reference

Shelley, J. (2022, February 28). *The concept of the Aesthetic*. Stanford Encyclopedia of Philosophy. Retrieved August 10, 2022, from <https://plato.stanford.edu/entries/aesthetic-concept/>

Suslick K. S. (2012). Synesthesia in science and technology: more than making the unseen visible. *Current opinion in chemical biology*, 16(5-6), 557–563. <https://doi.org/10.1016/j.cbpa.2012.10.030>