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Individual Sprint Document

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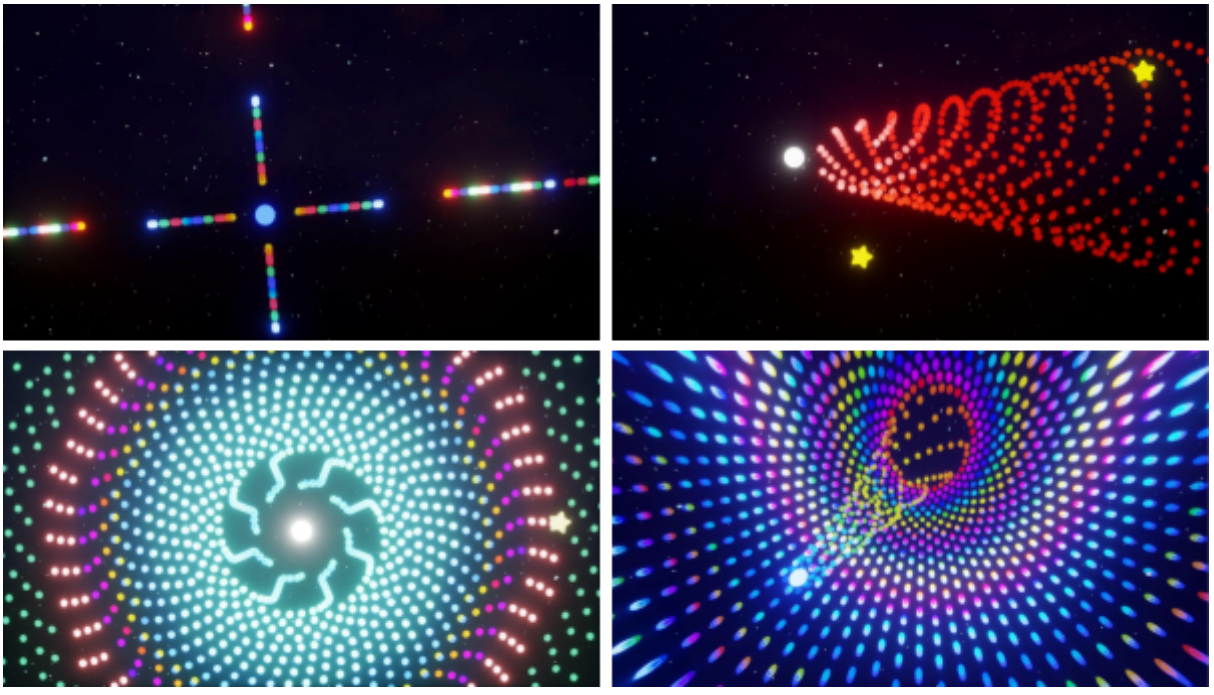
June 12, 2020

Sprint Questions

Our team decided to focus on three questions throughout our sprint. The first question we came up with was “How much musical knowledge should users require to be able to use our product?”. We determined this question was the most important factor in deciding the complexity of our application. The answer to this question would determine the amount of control we gave the users, which parts of the music were fine to be controlled by the algorithm with predefined parameters, the types of inputs we created for users, how to document our application, and how to generally structure our user-interface. The second question we asked was “What are the requirements for successful real-time musical collaboration over a network?”. Our team unanimously agreed that the network and collaboration aspects of our product would be the hardest to implement. Not only was it the aspect of our product that we collectively felt the least knowledgeable in from a technical standpoint, but we also knew that we needed to design an engaging user experience for communicating online. We wanted to make users feel as though they were truly collaborating with each other, but without getting in each other’s way. The last question we asked ourselves was “What are our standards for success and how can they be evaluated and tested?”. We needed to be able to collectively decide upon what we defined as a successful final product, ensuring we all shared the same goal. We did not feel knowledgeable enough before the sprint to define our end goal, but we knew that it was something we needed when moving forward with our iterative design. By the end of the sprint we wanted to have testable metrics that could be used to test future iterations of our product. We often went back to these three questions throughout our sprint, ensuring the sprint process would help us get the answers we needed to move forward.

Lightning Demo Ideas

For my lightning demo, I presented an audio-visual music creation game called Synesthesia. The game was created by the Playstation Network user Digitalthing inside of Dreams for PS4 [1]. The player controls a glowing circle that can move around a 2D screen, with the ability to rotate. Each button on the PS4 controller is mapped to a specific musical sound and colour. When the player presses a button, its specific sound is played and its specific colour is emitted in a stream from their circular avatar. The longer the player holds down the button, the longer the sound is sustained and the longer the length of the colourful stream. The player also has the ability to make their circle move fast or slow by toggling a button. When moving quickly, all of the sounds are in a higher pitch, and conversely when moving slowly, the sounds are in a lower pitch. Synesthesia also supports multiplayer, where each player gets their own circular avatar that can create its own sounds and colourful emissions. I presented Synesthesia to my team because I wanted to make us think more abstractly about our user-interface design. I wanted us to escape the idea that a digital music creation interface has to be a bunch of knobs and dials. I also found it interesting how the music was being played in real time, and thought that this could help address our question of "How might we provide instant feedback/playback while users collaborate".



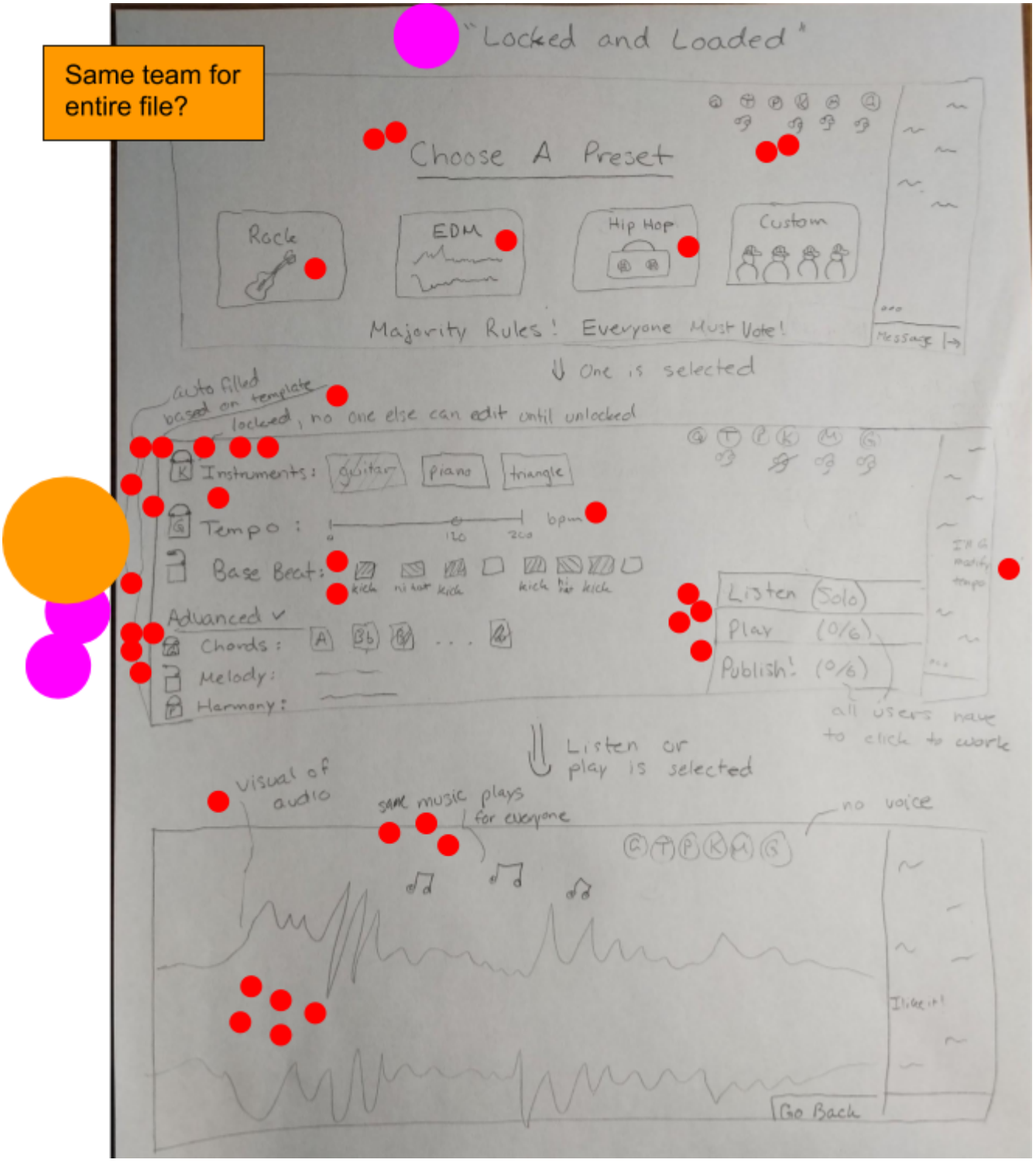
Four different screenshots of Synesthesia gameplay

One way I thought we could implement something like Synesthesia was by creating a similar platform and using the location of the player to modify an always changing fitness function. The idea was that the user would be able to toggle between musical attributes (ie range of chords, volume), with certain spots describing different manipulations of that attribute (ie. small and large, quiet and loud) located around the plane. The speed the user moved their circle could be used to determine the tempo. The music would constantly be playing, but as the user moved their piece and modified the fitness function, the music would gradually shift to match the changes. The issue with this approach to making a music platform is that it better replicates a jam session more than a recording studio, which does not align with our sprint map. Our map includes a feedback loop between making and listening to the music, allowing for incremental modifications. Our map also ends with the user publishing their song and being able to listen to the final product. In this approach, it could be possible to record the whole session, but the final product would be unpolished, and likely a lot longer than a traditional song.

One aspect of Synesthesia that we all agreed should be implemented in our product is having a visual play alongside the audio. Audio visualization can help people interpret and judge music's structure, and it is a widely used and appreciated concept [2]. For our prototype, we ended up implementing audio visualization by having the notes, chords, and beats of the generated song appear in a grid. When the user plays the music, a highlight effect will move along the columns of notes, chords, and beats, in sync with the audio.

We could take this idea of implementing audio visualization even further in the future by creating a specific listening page within our user-interface. If the users wanted to listen to what they created, they could navigate to this page, where the sole purpose would be to listen to the music without the visual distractions from the controls of the music creation interface. The listening page could be predominantly a visual effect used to enhance the auditory experience. The hypnotizing types of effects used in Synesthesia could fit in well for this use case, further drawing the user into the experience. This page could also be used as a resource that users can share to show off what they have created. It's akin to an abstract music video and it could help entice others to stay on the page longer in a world of saturated media and short attention spans [3].

Solution Sketch



Overall many features of my design were liked, and my design as a whole received a big vote from the straw poll. The feature that my team liked the most was having specific controls for different parts of the music, with the ability for each user to individually "lock" those controls. This feature received many dots from the heat mapping exercise, as well as two big votes from the straw poll and one super-vote. The locking would disallow other users from making changes to the selected control until the user that initially clicked the lock chooses to unlock it or lock another control. This was liked by my team since it addresses our sprint question pertaining to successfully allowing for musical collaboration. It attempts to replicate physical cues such as seeing a hand on a dial, which would allow users to keep track of what their partners are modifying. This feature also dictates how the users will actually make the music, which we decided was the key event in our sprint map, by displaying which musical elements the player can modify. My team also liked the idea of having a play button that causes everyone to hear the music together while watching a visual representation. This step addresses one "How Might We" we decided to focus on being "How might we provide instant feedback/playback while users collaborate?". By having all the users listen together, it ensures that everyone is on the same page and allows for discussion on which parts need reworking. The visualization also adds benefits for analyzing the music, as was discussed in the Lightning Demos section of this report.

One part of my design that did not receive any dots was the voting aspect when choosing a genre. My teammates questioned this step since they mentioned we may want to allow for different people to work on the project at different times. They suggested that there is no need to force a vote on the users that are logged on during the project initialization phase. The group's desired genre could be communicated in other ways, or the project creator could select the genre themselves. Another section of my design that did not receive very many dots was my suggested methods for communication. I included microphone icons to indicate the users could communicate by voice, which received two dots, as well as a text chat along the side, which received one dot. During the speed critiques, one of my teammates noted that they hadn't even noticed the voice chat until the last second. The feature was clearly not well displayed, and unintuitive. The text chat was actually something we returned to later in our prototype since we decided it could be a good way to communicate without interfering with the ability to listen to the music. I believe one reason that it didn't initially get as many dots could be since our focus for the prototype was on the music making aspects.

Testing Notes

I acted as an observer during our user testing. We ensured to interview people of varying musical backgrounds. Two users had little to no musical knowledge, two users currently play hobby instruments and previously played in school bands, and one user is currently studying music at Wilfrid Laurier University. I have highlighted my notes to indicate repeated comments and concerns. Yellow indicates two users sharing a thought, blue indicates three users, green indicates four users, and orange indicates all five users.

	Novice		**Intermediate**		**Proficient**
Sections of our Prototype	**User 1**	**User 2**	**User 3**	**User 4**	**User 5**
General	- Wants a share button to show to friends - Overall fairly self-explanatory	- Would appreciate more colour - Thinks an initial tutorial could be helpful	- Would appreciate more colour - Could use some more styling on login	- Would appreciate more colour - Could use some more styling on login	- Never seen a good digital music platform for collaboration
Selecting a genre preset	- Makes application feel more accessible	- Makes application feel more accessible	- Interested by genre but unsure how it'll work - Wants option for blank slate	- Intuitive	- Likes it since music varies so much - Wants to be able to blend genres
Sharing the project with a join code	- Should be able to access this later - Intuitive	- Intuitive	- Intuitive - Not large enough	- Intuitive	- Doesn't recognize as a URL
Locks indicating what user is modifying	- Thinks it might be hard to coordinate locking with just text chat - Unsure if user can lock entire musical	- Think they can lock multiple controls at once	- Thinks locks will permanently "lock in" a control	- Understands intended usage	- Understands intended usage

	section				
Text chat	- Appreciates collaboration - Wants ability to minimize - Wants voice/video chat as well	- Appreciates collaboration - Wants voice/video chat as well	- Appreciates collaboration - Hasn't seen this on a musical platform before	- First thing observed, simplest to understand	-Appreciates collaboration - Wants video chat but could be issue when listening to music
Generating / playing the music	- Displaying length of song is confusing with no reference to the grid	- Expects there to be a generate all button - Play button for whole song feels detached from play buttons for sections	- Appreciates ability to generate music, could help solve writer's block	- Wants more manual control for creation	- Finds computer generating music interesting
User input controls for musical elements	- Location of titles caused confusion - Needs more explanation for some controls - Wants ability to add or remove controls - Wants a tooltip	- Feels intimidated by names of controls - Needs more explanation for some controls - Wants a tooltip	- Needs more explanation for some controls	- Doesn't personally need more explanation but thinks it could be useful - Wants a tooltip	- Needs more explanation for some controls - Location of titles caused confusion - Wants to be able to change instruments - Wants units
Grid depicting generated music	- Wants to modify music from here	-Inexperienced with this type of UI	- Wants to modify music from here - Worried there aren't enough rows	- Wants unit labels - Enjoyed this feature most	- Wants unit labels - Wants it to be zoomable, with more bars showing
Separated musical sections	- Appreciates being able to listen to individual sections	- Appreciates being able to listen to individual sections	- Worried how sections will blend	- Worried how sections will blend	- Intuitive

Conclusions and Insights

After completing the sprint, our team has collected enough information to develop some answers to our original questions. One question we had was “How much musical knowledge should users require to be able to use our product?”. I think it should be our goal to make a product that is accessible to people with low musical knowledge, without impairing the workflow of a more experienced user. The novice users were able to create music, however they did not feel as though there was enough description within the control titles to fully understand what they were changing. Some of our more experienced users also found some titles confusing. A few users stated that they would appreciate a tooltip for more information on how their changes were affecting the music; however, tooltips should not include essential information for users to complete a task [4]. In the future we should try rewording our control titles and possibly adding a tutorial for beginners.

Another question we had was “What are the requirements for successful real-time musical collaboration over a network?”. What I took away from the sprint is that we need an intuitive way of representing where other users are located on the application, as well as a variety of methods to communicate. We attempted to replicate physical cues by placing user icons beside controls, representing which user is changing a part of the music, and restricting others from making changes to the same control at the same time; however, a few users found this locking feature confusing and unintuitive. We also implemented a text chat along the side of our application, which was generally liked; nonetheless, many users that tested our prototype mentioned it can be difficult to communicate bigger ideas in a text chat, and would appreciate a voice chat, or even a video chat as well. These methods of communication will be important to focus on during future iterations of our design.

The last main question we had before our sprint started was “What are our standards for success and how can they be evaluated and tested?”. After the sprint I would say our standards for success have become heavily focused upon having a user-interface that is intuitive for users of various skill levels, and allows users to collaborate seamlessly. We will know our product is successful when a musical beginner is able to collaborate with a musical expert and create a song that they both enjoy. We need to ensure that we keep testing users of various skill levels, and it would be good to test diverse users in groups, as collaborators, rather than as individuals.

References

[1] Digitalthing, "Synesthesia", indreams.me, 2020. [Online]. Available: https://indreams.me/dream/mZfNaaxdPTH/. [Accessed: 08- Jun- 2020].

[2] Y. Zhang, Y. Pan and J. Zhou, "Study on Application of Audio Visualization in New Media Art", Journal of Physics: Conference Series, vol. 1098, 2018. Available: 10.1088/1742-6596/1098/1/012003 [Accessed 10 June 2020].

[3] H. Griffey, "The lost art of concentration: being distracted in a digital world", The Guardian, 2018. [Online]. Available: https://www.theguardian.com/lifeandstyle/2018/oct/14/the-lost-art-of-concentration-being-distracted-in-a-digital-world. [Accessed: 10- Jun- 2020].

[4] A. Joyce, "Tooltip Guidelines", Nielsen Norman Group, 2019. [Online]. Available: https://www.nngroup.com/articles/tooltip-guidelines/. [Accessed: 11- Jun- 2020].