Game Design Document

1. Sonic Space

1.1. Tagline: A 3D Rhythm Visual-less Experience

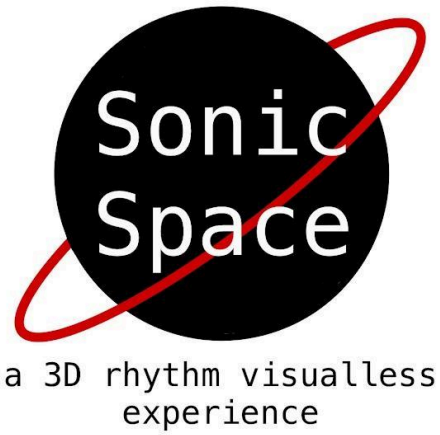
1.2. Team

Julia Griner

Committee: Jen Gutterman, Dan Warner @ Hampshire College

1.3. Version 1.1.0

Last Update: 04/24/2022



2. Game Overview

2.1. Game Concept
Sonic Space is a rhythm game that has the player rely on their ears rather than their eyes to center a piece of audio in their speakers and earn points.

2.2. Target Audience
This game is for blind and visually impaired people, rhythm game enthusiasts, and anyone who wants to try their hand at audio games.

2.3. Genre(s)
Rhythm Game, Audio Game

2.4. Game Flow Summary
> Menu (Play/Options) > Play > Level/Song Selection > Load Song > In Level > Song Completion > Play Again/Menu

2.5. Look, Feel, and Sound
Look: Black and white graphics, simple lines and geometric shapes.
Feel: Like navigating a maze where your only clue is your distance from the goal and the goal changes when you thought you finished the maze.
Sound: Electronic and upbeat songs. Can have lyrics to help distinguish the notes from the rest of the song, otherwise a distinct melodic line for instrumentals.

3. Gameplay

3.1. Objectives
Objective is to “center” the melodic line of the song in the player’s ears and earn points, eventually completing the song. The player moves around the grid to find the notes, which use binaural audio to simulate the grid being in a 3D space.

3.2. Game Progression
New songs/levels are unlocked once the player has completed a song with enough points.

3.3. Game Play Mechanics
Controls: Default is set to WASD keys as well as the arrow keys. Players cannot use them interchangeably within a sequence, however. The spacebar or enter key acts as the confirmation key; pressing one will select highlighted text.

Combos: The game will keep track of how often the player hits notes. If they get 10 in a row, the combo starts tracking the notes hit after that. The combo is over when a note is missed.
Combo calculation: Current score + (Perfects in a row * 2)

Metronome: There is a metronome that plays during the song, as well as to count in the player before the song starts. It is able to be turned off during the song, but the count-in is always there.

Unlocking Songs: 3 songs including the tutorial are immediately available upon download. Once the player earns a high enough total combined score (only achievable through playing and completing available songs), new songs are unlocked in groups of 2 for a total of 10 songs (plus tutorial). Any songs released after that will be in updates.

3.4. Level Structure

Each level has the player start in the middle of a 4x4 grid. Once per measure a note will spawn, which emits whatever song the player chose. The player must move along the grid to reach the note and center the song in their speakers. Depending on how quickly they find the note, they earn a different number of points:

"Perfect": The player gets 10 points, or perfect points, if they hit the note within the time signature (If the song is in 4/4, they have 4 beats to find it. If it's ¾, three beats, and so on.). Getting enough "Perfects" in a row and the player will start a combo, which continues until the song ends or they get anything but a Perfect.

"Good": The player gets 8 points if they hit the note within two measures or double the time signature.

"Bad": The player gets 4 points if they hit the note within three measures of its spawn.

"Miss": The player gets 0 points if they take longer than 3 measures to find the note. At the end of the fourth measure, the note disappears and a new one spawns.

Once a note is hit (or missed), a new one spawns somewhere on the grid at least 4 moves away from the player's current position.

3.5. Player's Controls

Player uses WASD or the arrow keys to move. The spacebar or enter key acts as a confirmation button. Remapping the controls is an option.

3.6. Winning and Losing

Winning: The player wins if they finish the song, earning a score. There is no real way to "beat" the game; the player can replay songs to earn better scores and combos to unlock new songs.

Losing: There is no fail condition; the game only counts how many notes you hit or missed

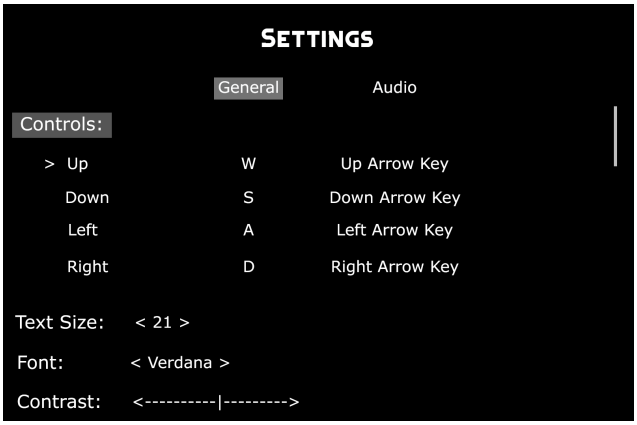
3.7. Screen Examples

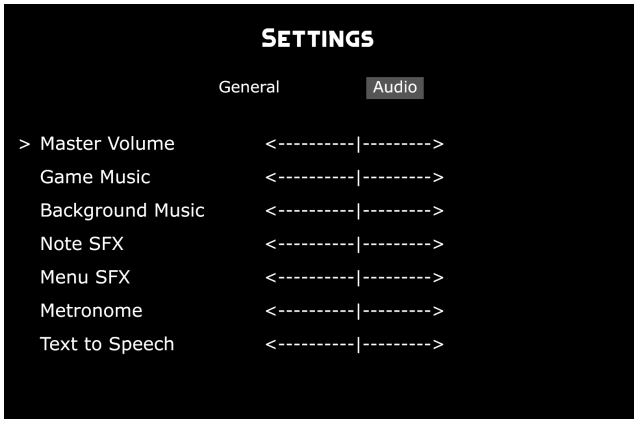
Main Menu: The Main Menu screen has a plain black background. Upon load up, a robotic voice reads out the title of the game. The title music is playing– an ambient song so that the TTS can be easily heard. The title is prominently displayed in a white readable font at the top of the screen. Below it, there are 3 options: “Song Selection,” “Settings,” and “Quit.” There are pointy brackets around the first option to indicate it being highlighted/ready for selection. If the player uses the WASD keys (specifically S or W), the brackets move in that direction (if at the top and the player tries to go up, it loops to the bottom). When a new option is highlighted, the same robotic voice reads out the text. The player then can hit the spacebar or enter key to select an option.

Settings: The Settings screen is split into 2 different sections: General and Audio. The top of the screen is similar to previous screens, where large white text reads “Settings.” Under that in a smaller size are text options that say “General” and “Audio.” Using the left and right keys, the player can flip between those menus to adjust any settings. A sound plays to indicate they are switching between menus, and the same sounds from before play when moving up or down. Most of the settings use the left and right keys to either move a slider or increase or decrease a setting. The specific settings are as follows:

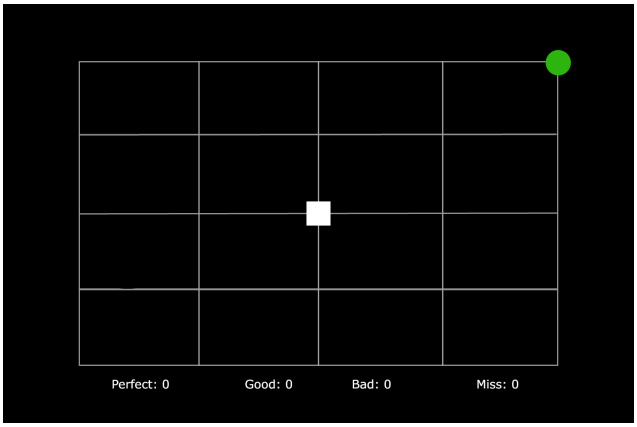
- General:
  - Remap Controls (Up, Down, Left, Right, Back, Confirm)
  - Change Text Size
  - Change Font
  - Adjust Contrast
  - Change GUI Size
- Audio:
  - Master Volume
  - Background Music
  - Game Music
  - Note SFX
  - Menu SFX

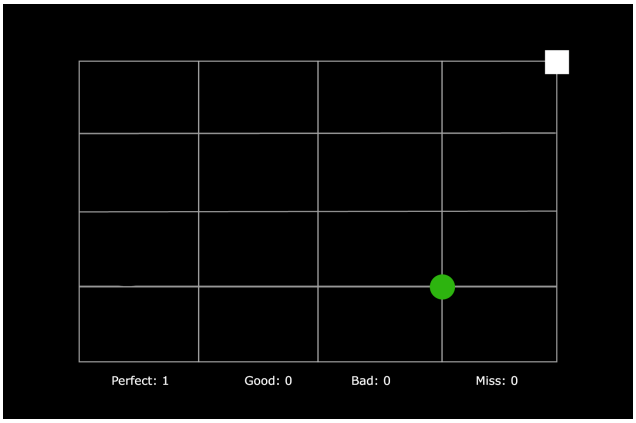
Metronome
Text to Speech (default on)





Game Play: A light gray 4x4 grid with the player as the white square starting in the middle. The note is represented by a green circle– The melodic line emits from it while the player listens and presses the keyboard to move to the nearest intersection in that





direction. Below is text counting how well the player is hitting the notes (with Perfect, Good, Bad, and Miss)

4. Sound Design

4.1. Music

Music will be upbeat, EDM/electronic music. Can have lyrics, but is not a necessity. Must be copyright free.
Music Volume Up/Down

4.2 Sounds (SFX)

Menu Selection/hovering
Option Selected
“Go Back”/Return Selected
Game Volume Up/Down
Narrator
Narrator On/Off
Narrator Volume Up/Down
Note Hit/Missed
Metronome
Metronome Volume Up/Down

5. Accessibility

5.0.1. Sources

This section is adapted from the Game Accessibility Guidelines’ checklist (source). Click the link to the full checklist for all relevant guidelines here.

5.1. Goals

My goal for Sonic Space is to make a game for the blind and visually impaired. By making this an audio game, I understand that I’m making it inaccessible to deaf and hard of hearing people. As you can see by comparing the lists below and the GAG checklist, the hearing section is omitted from this document. In the checklist itself, the only highlighted guideline overlaps with the “visual” one that is separate volume controls or mutes for effects, speech, and background/music. Some general accessibility mechanics included:

Details of accessibility features provided on packaging/website/in-game
All settings are saved/remembered
Soliciting accessibility feedback
People with impairments included in play-testing
Autosaving after the end of a song and before quitting the game

5.2. Visual

No essential information is conveyed by color alone
Easily readable and adjustable font size/text formatting
High contrast between text/UI and background
Surround sound
Adjustable contrast
Distinct sound/music choices for key objects/events
Separate volume controls or mutes for effects, speech, and background/music
Pre-recorded voiceovers for all text (built-in screenreader)
Simulates binaural recording

5.3. Cognitive

Simple, clear language and text formatting
No repetitive patterns/flickering images
No fail condition
Adjustable game speed (player is not on a timer to hit a note)
Replayable tutorial

5.4. Motor

Remappable/reconfigurable controls
Controller support
Windowed/Fullscreen support
Resizable interfaces
Precise timing is not essential to gameplay
Cool-down period of 0.5 between inputs

6. Key Features

6.1. Number of Levels

10 total songs at release, with 3 immediately playable upon download (includes tutorial). The rest are unlocked in groups of 2 after earning a high enough total score (combination of all previous scores).

6.2. Time of Game Play

2-3 minute songs, where each song is a level. The player can play one song, or multiple in the span of one session.

6.3 Replay ability

It should be challenging that the player can't complete the levels easily, but motivate them enough to continue playing/retry/replay levels.

6.4. Audio Specifications

Access to stereo output (speakers, headphones). The user should use headphones for the best experience, but can use computer speakers as well.

6.5. Graphic Specifications

Minimal graphics, easily playable on laptops with low graphics cards/ram.

6.6. Software

Game is currently made using Gamemaker Studio 2, however may potentially be moved to Unity for convenience and more in depth guides and manuals.

6.7. Device Compatibility

Windows, Mac